



US-60/Grand Avenue

Corridor Optimization, Access Management, and System Study (COMPASS)

Loop 303 to Interstate 10

Technical Memorandum 4

Principles and Practices of Access Management

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List of Abbreviations

AASHTO	American Association of State Highway Transportation Officials
ADOT	Arizona Department of Transportation
AMP	Access Management Plan
AMS	Access Management Strategy
BNSF	BNSF Railway
CDOT	Colorado Department of Transportation
COMPASS	Corridor Optimization, Access Management, and System Study
C.R.S.	Colorado Revised Statutes
CTRE	Center of Transportation Research, Iowa State University
CUTR	Center for Transportation Research, University of South Florida
FDOT	Florida Department of Transportation
GCMPC	Genesee County Municipal Planning Commission
I-10	Interstate Highway 10
I-17	Interstate Highway 17
IGA	Intergovernmental Agreement
IAMP	Interchange Access Management Plan
IOM	Institute of Medicine
ISU	Iowa State University
LUDO	Land Use Development Ordinance
MAG	Maricopa Association of Governments
MCDOT	Maricopa County Department of Transportation
MDOT	Michigan Department of Transportation
mph	Miles per Hour
MnDOT	Minnesota Department of Transportation
MPO	Metropolitan Planning Organization
MPC	Municipalities Planning Code
NAE	National Academy of Engineering
NAS	National Academy of Sciences
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
NRC	National Research Council
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
PennDOT	Pennsylvania Department of Transportation
RAME	Region Access Management Engineer, ODOT
RSR	Regionally Significant Route
RSRSM	Regionally Significant Route for Safety and Mobility
RTP	Regional Transportation Plan
SLDO	Subdivision and Land Development Ordinance
SR-101L	Arizona State Route 101 Loop
SR-303L	Arizona State Route 303 Loop



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

TRB	Transportation Research Board
TxDOT	Texas Department of Transportation
US-60	United State Route 60
US-93	United State Route 93
USF	University of South Florida

1.0 Introduction

The United States Route 60 (US-60)/Grand Avenue Corridor Optimization, Access Management, and System Study (COMPASS) – Loop 303 to Interstate 10 is being conducted by the Maricopa Association of Governments (MAG) in order to identify a long-term solution for accommodating travel demand and adjacent property access, establish operating principles to improve the effectiveness of traffic operations, and prepare an Access Management Plan (AMP) that will provide a detailed milepost-by-milepost description of adjacent property access along the Grand Avenue corridor.

A Partnering Charter was signed on February 22, 2012, by the political leadership of the communities within the US-60/Grand Avenue COMPASS corridor. The outcomes of this technical study will address the following goals that were identified in this Charter:

- Cooperatively create an overall vision for the US-60/Grand Avenue corridor that embraces the important regional function of Grand Avenue as a significant high capacity, multimodal corridor and that can recognize the unique character of different sections of the corridor and the communities it passes through.
- Cooperatively define the operational character for the US-60/Grand Avenue corridor that will enhance economic development, maintain accessibility to adjacent land uses, improve traffic operations, and reduce highway and rail conflicts.
- Establish an access management system that provides an efficient means to accommodate intersecting roadways and access to and from adjacent properties. After the system is recommended and agreed upon, each stakeholder will incorporate the principles and recommendations into their transportation, economic development and community development.
- Develop guidelines for signage, landscaping and aesthetic treatments along the corridor recognizing the different communities along the corridor.
- Work together to provide the affected stakeholders, including daily commuters, local residents, and adjacent property owners and users with information about the project and opportunity to contribute to the study's outcome and recommendations.

1.1. Purpose of this Paper

After several years and millions of dollars in investments, US-60/Grand Avenue, today, is a fully developed six-lane thoroughfare of regional significance. It is a vital travel corridor, linking three regional freeways – Interstate 17 (I-17)/Black Canyon Freeway, State Route 101 Loop (SR-101L)/Agua Fria Freeway, and State Route 303 Loop (SR-303L). Grand Avenue continues south of I-17 toward downtown Phoenix, providing a connection with I-10 via the 19th Avenue traffic interchange south of McDowell Road, which is a half-diamond to the east. It continues south of 19th Avenue as a four-lane arterial roadway in downtown Phoenix. Grand Avenue, which is established on a northwest-by-southeast alignment, has skewed intersections with many of the major arterials forming the basic one-mile roadway grid system characterizing the Phoenix metropolitan area. Several

intersections have been grade-separated, eliminating the complex movements associated with the diagonal Grand Avenue crossing north-south and east-west arterials.

Connectivity with three regional freeways and numerous major arterials afforded by Grand Avenue has made this regional travel corridor an important transportation facility for northwest Phoenix and the greater West Valley. Heading north out of Phoenix, Grand Avenue, as an element of the National Highway System (NHS) as well as provides access to Glendale, Peoria, Youngtown, Sun City, El Mirage, Surprise, and Sun City West. Continuing north, Grand Avenue connects with United State Route 93 (US-93) in Wickenburg connecting the Phoenix metropolitan area with Kingman, Arizona, and Las Vegas, Nevada.

Local access is equally important. Early development along the Grand Avenue corridor took advantage of its status as a national highway and the railroad corridor that parallels the roadway for its entire length within the Study Area (on the east side south of Olive Avenue and on the west side north of Olive Avenue). Commercial and industrial interests generally dominate the corridor south of SR-101L and many retain direct access to the highway, particularly establishments on the east side. In addition, there are numerous intersections with local roads and streets. North of SR-101L, particularly on the west side, there are fewer industrial developments with access to Grand Avenue, but there are numerous commercial developments and local roads and streets that have access to the highway.

This paper is the fourth Technical Memorandum in a series of US-60/Grand Avenue COMPASS documents; it was prepared to provide background information regarding and an examination of access management policies and guidelines that can provide a framework for making decisions on local access as it affects highway functionality and property use. Such a framework will be useful in determining the feasibility and reasonability of proposed actions to protect highway functionality through controls on access while assuring reasonable access to fronting properties and local roads and streets. The majority of the research and evaluations presented in this Technical Memorandum were conducted in early 2013, at a time when plans and construction activities were underway in the US-60/Grand Avenue COMPASS corridor, which may affect the interpretation of the information included herein.

1.2. Study Area

The US-60/Grand Avenue COMPASS corridor begins at the traffic interchange (TI) with State Route 303 Loop (SR-303L) in the City of Surprise, Arizona, at US-60 reference marker 138.051 (expressed in miles) and ends at the Willetta Street intersection in the City of Phoenix, Arizona, at US-60X reference marker 161.880 (expressed in miles). The corridor is oriented northwest-southeast, and passes through portions of the City of Surprise, City of El Mirage, Town of Youngtown, City of Peoria, City of Glendale, City of Phoenix, and unincorporated Maricopa County.

US-60/Grand Avenue is a regionally significant six-lane roadway that serves as a vital link connecting four important regional freeways: Interstate 10 (I-10) Papago Freeway, I-17, SR-101L, and SR-303L (**Figure 1**). As an element of the National Highway System (NHS), US-60/Grand Avenue extends north to the community of Wickenburg, where it turns west to western Arizona and California. In Wickenburg, US-60/Grand Avenue connects with US-93, which is the primary link to northwestern Arizona and Las Vegas from the Phoenix metropolitan area.

Figure 1 – US-60/Grand Avenue Study Area



Legend

- US-60/Grand Ave COMPASS Corridor
- Freeway
- Streams/Washes

US-60/Grand Avenue: Loop 303 to Interstate 10

Corridor Optimization, Access Management Plan, and System Study




6/25/2013



US-60/Grand Avenue corridor includes the BNSF Railway (BNSF). The BNSF tracks run the full length of the corridor, parallel and adjacent to the roadway. They are situated along the roadway's southern edge south of Olive Avenue, and the northern edge to the north.

1.3. Historical Perspective

The following summary of the history and evolution of access management practices has been excerpted from *Access Management Policies: An Historical Perspective*:

The implementation of access management design principals on non-freeway arterials is in the public's best interest. Documentation of the benefits of access control has been available since 1902. Controlling the frequency, location, and design of access points along a highway is a critical element in overall highway performance and public safety. Data and other information, directly linking accident rates to access frequency, has been consistently documented by many research projects for over four decades. The conclusion of the research is that keeping access to the lowest frequency possible, providing good spacing and access design when it is permitted, will achieve accident reductions of 30% to 60%. The principals [sic] and standards are readily available for any state or local jurisdiction to implement access management and begin realizing the benefits in accident reduction and improved roadway performance.¹

1.4. Objectives of this Paper

Preparation of this paper has been based on two primary objectives:

- Understand local access management practices; and
- Develop a framework defining steps for implementing a program for access management.

1.5. Complementary Documentation

During the course of the COMPASS project, which by definition contains access management as a primary element of focus, a separate report was prepared to provide an assessment of "...existing access conditions and to explain how the current conditions on Grand Avenue relate to the potential strategies and techniques that might be recommended for the anticipated access management plan."² This report, attached as **Appendix TM4-1**, provides specific details associated with access management issues in the US-60/Grand Avenue corridor, such as sight distance, intersections and traffic signals, frontage roads, and speed differential. It then presents a review of existing conditions, specifically addressing operational and design issues, including: traffic signals, left turns, right turns, driveway locations, driveway design, sight distance, and frontage roads.

1 Access Management Policies: An Historical Perspective, Philip Demosthenes, prepared for the International right-of-way Association Conference, Albuquerque, New Mexico, June 23, 1999.

2 "Existing Conditions and Findings Regarding Access Management" Technical Memorandum (Administrative Draft), US-60/Grand Avenue Corridor Optimization, Access Management, and System Study (COMPASS), Loop 303 to Interstate 10, Maricopa Association of Governments, authored by Philip B. Demosthenes LLC in association with Burgess & Nipple, April, 2013 (Rev. October, 2013).

This report offers the observation the regional and local goals for the corridor would be well served by addressing and improving access conditions. A primary conclusion derived from the study of corridor access conditions states:

Absent access improvements and a plan to keep new access demands from further diminishing the transportation capacity of Grand Avenue, the goals of enhancing economic development, improving traffic operations and reducing transportation conflicts will not be met.

The report notes that increasing congestion will make the corridor less attractive for future economic opportunities, especially those requiring or dependent on efficiency of the regional transportation system.

The potential for more congestion to increase transportation costs and reduce the customer base requires action. The report also points out that formulating an AMP through a cooperative and collaborative process is a proven method for resolving competing interests and developing the best method of managing access. The emphasis on access management derives from the critical nature of existing conditions, which negatively affect corridor capacity, increase travel times, and have resulted in unacceptable crash rates, particularly at intersections. The information in this supporting documentation of access management issues and needs provides a basis for establishing design and operational principles that can be integrated with community transportation, economic, and general development plans and standards.

2.0 General Process of Access Management

Access management focuses on design and operational decisions relating to a major roadway that are intended to improve traffic flow and safety by reducing, even minimizing, the presence of conflict points. Access management is a growing effort by government transportation agencies to improve mobility and often includes changes to existing access to properties fronting the roadway and intersecting roads and streets. These efforts involve careful planning and engineering to determine the most efficient and effective location and spacing of driveways, street connections, and traffic signals. On major roadways, access management generally includes the use of raised median islands to channel left-turning traffic to safe locations, especially providing dedicated left-turn lanes at intersections to remove turning vehicles from through lanes.

Roadway with Multiple Access Driveways



Common Occurrence Associated with Accessing Driveways

Managing access to heavily traveled highways, such as Grand Avenue, can result in better traffic flow, fewer crashes, and, therefore, an overall reduction in the social and economic costs of travel in the corridor. The primary function of Grand Avenue as currently designed is to move traffic over long distances at higher speeds than typical arterial roadways. The process of access management seeks to carefully manage the functionality of the highway by ensuring requests for new access to fronting developments does not contribute to unsafe or congested conditions. Equally important is maintaining an ongoing assessment of access to assure accessibility to communities and developments in the corridor without significantly compromising the functionality.

Thus, the process of active access management has the ultimate goal of obtaining a balance of property and street access relative to the need of maintaining travel efficiency: a balance that is critically associated with level of congestion in the corridor. Increasing congestion, results in travel delays, which can have a

negative effect on the social and economic dynamics of a heavily traveled corridor like Grand Avenue. This means that a key aspect of the access management process is to understand the relationship between land use and travel demand which is typically expressed in terms of trip generation at points of access. Once this relationship is understood, specific engineering solutions can be conceived and tested to determine the effectiveness of each. The final step is to identify the most effective solutions and engage the public in a program of implementation.

Source: Access Management: People + Process = Safety, Genesee County Metropolitan Planning Commission (GCMPC).

3.0 Establishing the Program

An access management program is a coordinated set of plans, regulations, capital improvements, and other actions necessary to achieve identified objectives. Principal among these objectives is achievement of safe and efficient traffic flow while preserving reasonable access to properties fronting the roadway as well as intersecting roads and streets (**Figure 2**). A program to create reasonable access management is by its very nature regulatory in practice and effect. This sections looks at various methods employed by governments and communities around the United States to provide a substantive background for designing and adopting a long-term AMP for US-60/Grand Avenue.

3.1. General Guidelines

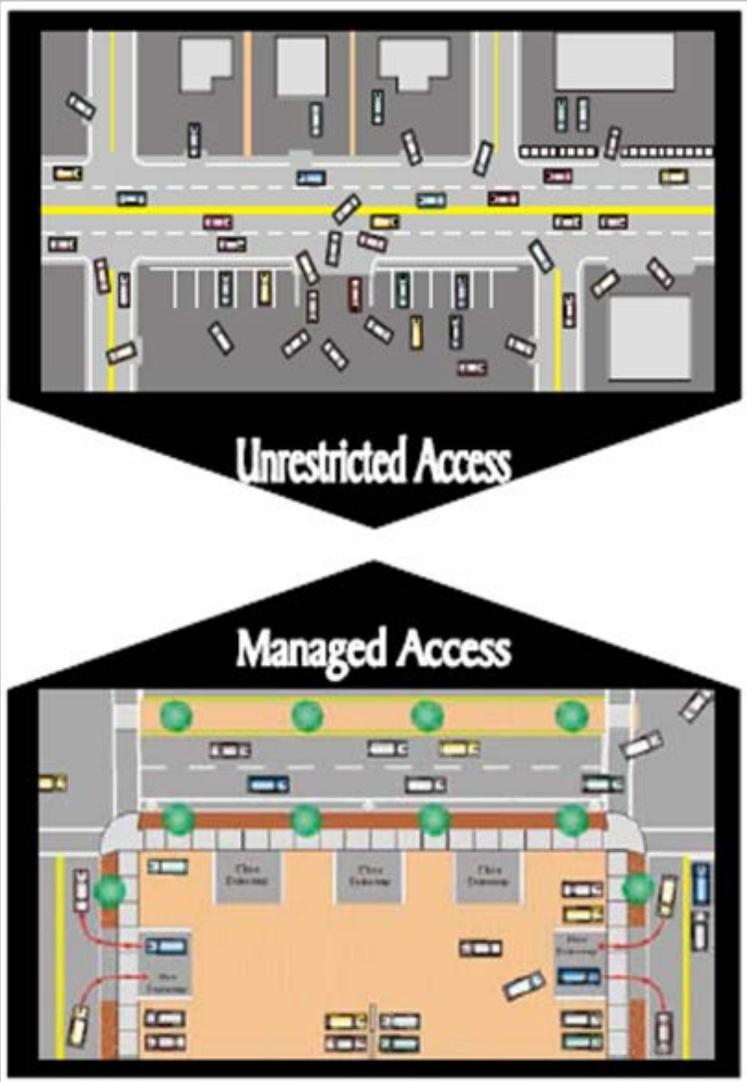
General guidance regarding the application of access management to major roadways may be obtained from numerous sources, at the local, county, and state levels. This section looks at selected examples of access management practices in Arizona and then presents guidance available from other sources outside Arizona.

An excessive number of access points adversely affect mobility and safety, which is a direct function congestion increasing as an increasing number of both access and through trips occur in the travel corridor. In addition, the number and severity of crashes generally increases, due to the large number of turning movements interfering with through movements and other conflicts at the side of the roadway. **Figure 3** summarizes the principal characteristics of access management relative to highway mobility and safety.

3.2. Review of Access Management Programs Outside Arizona

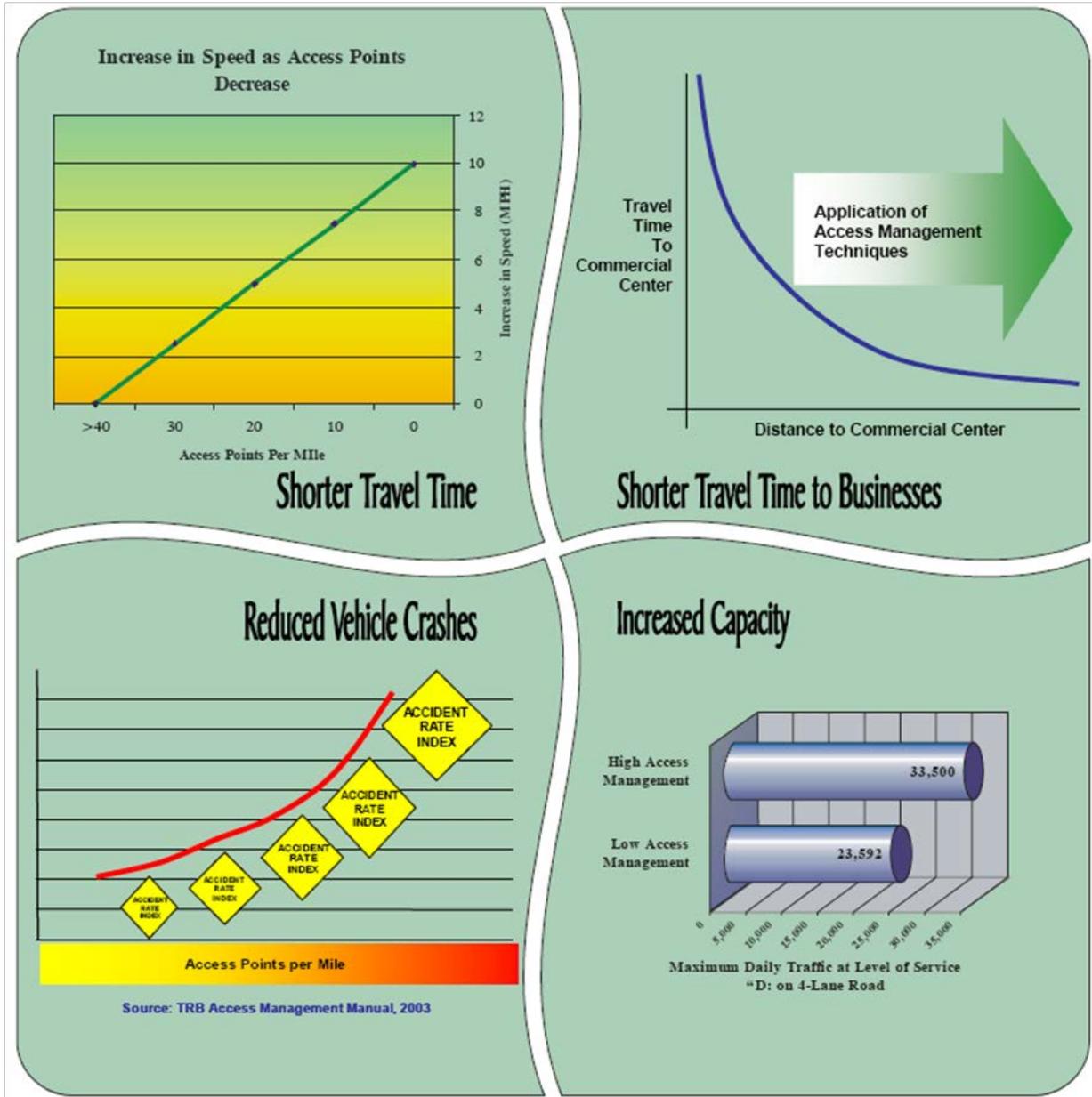
A review of access management programs installed and operational in states outside Arizona was conducted. This review was undertaken to gain familiarity with the types of activities and policies being pursued elsewhere and establish credibility for the practice as a viable means of traffic operations control.

Figure 2 – General Concept of Access Management



Source: Executive Summary, Regionally Significant Routes for Safety and Mobility, Lima & Associates, September 2008.

Figure 3 – Principle Characteristics of Access Management



Source: Executive Summary, Regionally Significant Routes for Safety and Mobility, Lima & Associates, September 2008.

3.2.1. City of Lawrence, Kansas

The City of Lawrence views access management as "...the process of managing access to land development while preserving capacity and improving safety." The City's access management program is focused on:

- Limiting the number of conflict points – Conflict points are good indicators of the potential for crash occurrences; the more conflict points at an intersection the higher the potential for vehicular crashes;

- Separating basic conflict areas – adequate spacing allows motorists to anticipate and respond to potential conflicts;
- Reducing interference with through traffic – Accommodate exiting, entering, and turning traffic to reduce potential conflicts; and
- Providing adequate on-site circulation and storage – Internal circulation opportunities reduce the need for ingress and egress points.

3.2.2. Douglas County (Colorado) 2030 Transportation Plan

Chapter 4 of this plan for Douglas County – Roadway Vision Plan – incorporates AMP Strategies. This section of the plan defines access management as “...the systematic control of the location, spacing, design, and operation of driveways, median openings, and street connections to a roadway.”³ The established purpose of access management is “...to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system.”⁴ The plan notes that uncontrolled access, represented by cumulative decisions regarding discrete access points, leads to a reduction in roadway capacity. Detailed AMPs are recommended for developing corridors to control access as development occurs. The essential elements of an AMP are stated as follows:

- Driveway consolidation and establishment of minimum driveway spacing;
- Locating driveways away from intersections;
- Inter parcel access requirements;
- Construction of a secondary roadway network and parallel access roads to provide access off of the primary roadway; and
- Integrating Access Management into other planning activities (such as land use plans, zoning and planning regulations, codes, and standards).

3.2.3. United States Route 36 (US-36) Sub-Area Plan, City of Broomfield, Colorado

This Sub-Area Plan, developed in May, 1997, addresses access management from the perspective of the functional classification of the roadway system serving that portion of the U.S. 36 corridor within the City. The express purpose of access management for planning purposes was stated as preserving “...the functionality and to enhance safety of the transportation system.”⁵ This purpose is served through a “...trade-off between allowing access to adjacent properties and diminishing the safety and capacity of the roadway for carrying through traffic.”⁶ From this interpretation, the City identified a hierarchy of streets with specific access management criteria associated with the Northwest Parkway and the various classifications of other roadways serving the U.S. 36 corridor (Table 1). Adopted criteria include:

3 Douglas County 2030 Transportation Plan – November 2009, Douglas County, Colorado, pg. 61.

4 Ibid.

5 U.S. 36 Sub-Area Plan, City of Broomfield, Colorado, May 1997, pg. 17.

6 Ibid.

- Separation distance from signalized intersections;
- Distances between intersections and access points; and
- Distances between two access points.

Table 1 – City of Broomfield Access Management Criteria				
Criteria	Northwest Parkway	Principal Arterial	Minor Arterial	Major Collector
Distance between signalized intersections ¹	1/2 mile	1/2 mile	1 / 4 mile	--
Minimum distance from access point to intersection	500 ft.	230 ft.	185 ft.	150 ft.
Minimum distance between access points	325 ft.	230 ft.	185 ft.	150 ft.

Source: U.S. 36 Sub-Area Plan, City of Broomfield, Colorado, May 1997.

3.2.4. Texas Department of Transportation (TxDOT)

The Access Management Manual of TxDOT applies to all classes of state highways and is intended to provide "...a mechanism for municipalities to be granted permitting authority to the state highway system."

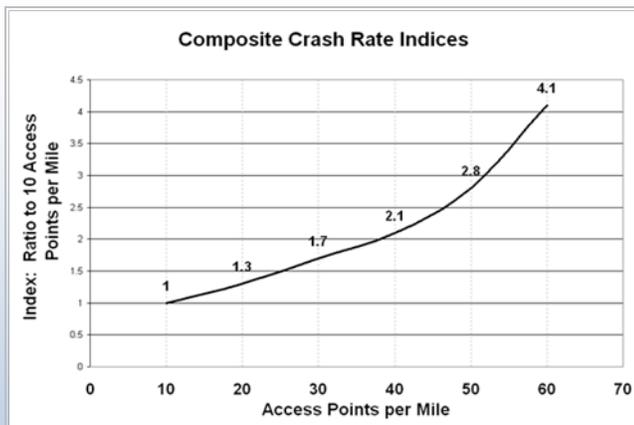
Municipalities may choose to handle access permitting through their own access management guidelines or adopt the TxDOT guidelines. Municipalities have a host of techniques available through subdivision and zoning regulations to control access, including: shared access and cross access for two or more parcels, lot width requirements, driveway throat length, internal street circulation, and general thoroughfare planning.

The manual points out that proper access management is beneficial to protecting public investments in transportation facilities by helping to achieve greater efficiency and safety and, thereby, minimizing the need for major infrastructure improvements. The general guidance regarding access management emphasizes the importance and benefits of the practice viewed in terms of potential positive effects on safety, facility operations, and economic interaction. Brief summaries of these three important aspects of access management are provided below:

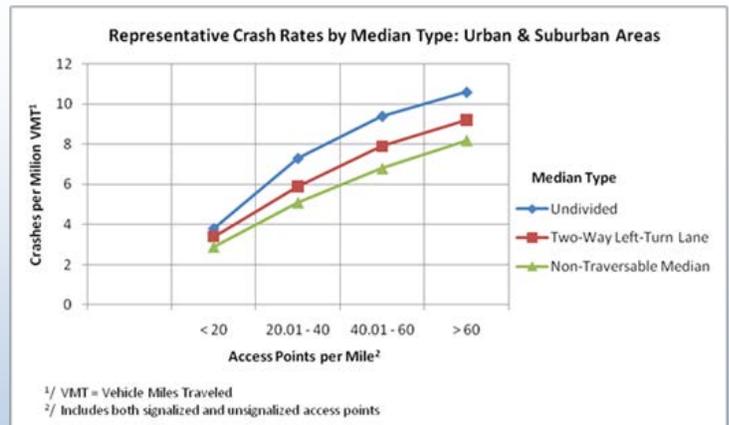
Effects on Safety

Safety attributes of access management are derived from: improved access design, making movements into and out of abutting properties more efficient; fewer access locations, reducing the number of opportunities for traffic conflict; and higher driver response time to potential conflicts, i.e., fewer side-of-the-road distractions. The manual includes the graph shown on the left in **Figure 4**, which shows the increase in the potential crash rate, using 10 access points per mile as a base and then averaging crash rates for increasing density of access points.

Figure 4 – Effects of Access Point Density on Crash Rates



Source: Figure 1-2, Composite Crash Rates, Access Management Manual, Texas Department of Transportation (TxDOT), July 1, 2011.



Source: Table 1-1: Accident Rates, Online Access Management Manual, Texas Department of Transportation (TxDOT), July 1, 2011.

Minimizing opportunities for traffic conflicts is the most effective method of reducing crashes. As shown in the graph on the right in Figure 4, the treatment selected for the center portion of the roadway cross-section has a definite effect on crash rates. The graph clearly shows that the number of access points has a direct relationship to the number of crashes, and implementing even the least effective median – the Two-Way Left-Turn Lane – can result in a notable reduction in crashes.

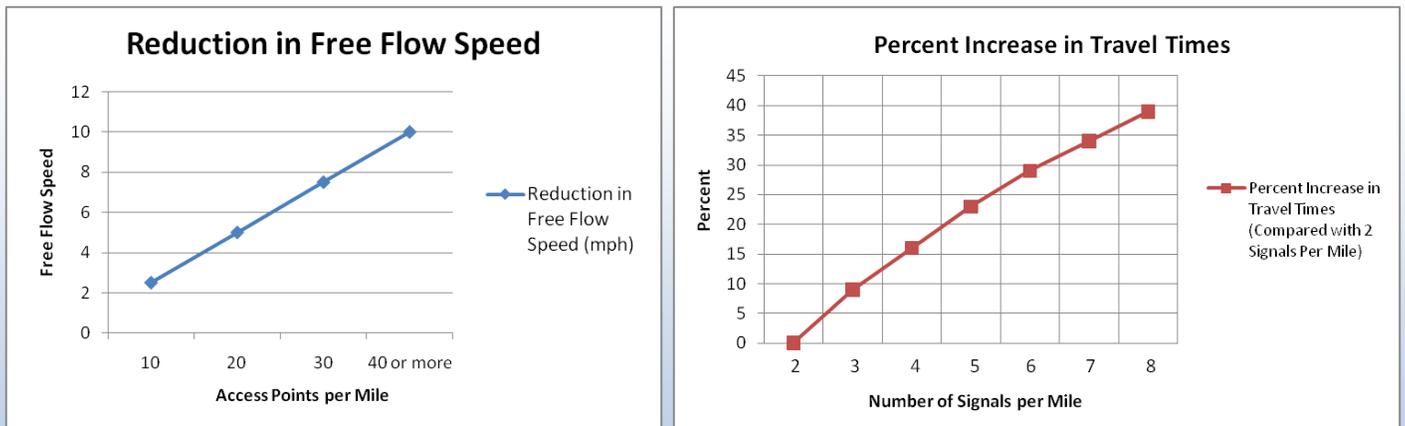
Effects on Facility Operations

The frequency of access connections has a major effect on the efficiency of traffic operations. Direct access points (e.g., streets, roads, driveways, parking lot egress/ingress points), median openings, and traffic signals are significant contributors to congestion, if too closely spaced. Thus, access management aids in maintain traffic flow, reduces delays, which, in turn, reduces fuel consumption and vehicle emissions. The graph on the left of **Figure 5** shows how the number of access points affects free flow speed on a roadway. The graph is based on procedures in the Highway Capacity Manual that indicate free flow speed (in one direction) decreases approximately 0.15 miles per hours (mph) per access point. Thus, it is clear that reducing the number of traffic signals, which area a function of access to the roadway, can significantly improve traffic flow. It follows that improved traffic flow will improve travel times. The graph on the right of **Figure 5** shows, for example, travel time for a roadway with four signals per mile is 16 percent greater than travel time on a roadway with only two signals per mile.

Economic Effects

The quality of the transportation system, measured in term of its efficiency and effectiveness, directly affects the efficiency and effectiveness of the local and regional economy. The transportation system determines how quickly goods get to market and the conditions of those goods. It has an impact on investors, who may or may be attracted to an area, based on accessibility and mobility advantages. The transportation system also directly

Figure 5 – Effects of Access Point Density on Travel Speed and Travel Time



Source: Table 1-2: Access Points and Free Flow Speed, Online Access Management Manual, Texas Department of Transportation (TxDOT), July 1, 2011.

Source: Table 1-3: Travel Time and Signal Density, Online Access Management Manual, Texas Department of Transportation (TxDOT), July 1, 2011.

affects the ability of businesses to access the desired market area and, therefore, the viability of those businesses. The TxDOT manual notes that access management treatments help to expand market areas by improving travel times for potential customers and can enhance property values by supporting good access to commercial development.

The manual cites the following study results as evidence that access management programs are beneficial to business vitality rather than having adverse impacts:

- Corridors with completed access management projects performed better in terms of retail sales than the surrounding communities. Business failure rates along access managed corridors were at or below the statewide average.
- Close to 80 percent of businesses reported no customer complaints about access to their businesses after project completion.
- Over 90 percent of motorists surveyed had a favorable opinion of improvements made to roadways that involve access management. The vast majority of motorists thought that the improved roadways were safer and that traffic flow had improved.

3.2.5. Michigan Department of Transportation (MDOT)

The MDOT Access Management Guidebook defines access management as "...set of proven techniques that can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes, preserve existing road capacity and preserve investment in roads by managing the location, design and type of access to property." The Guidebook asserts that access management extends the effective functional lifetime of a roadway while assuring safe, reasonable access to abutting properties. MDOT identifies three facets to its approach to access management practices and determinations regarding driveway or access point locations:

- Roadside: Number, location, and design of driveways and the relationship of driveways to the number of travel lanes, presence of medians, by-pass lanes, dedicated turn lanes, and signalization of intersections.
- Landside: Land uses considerations, include internal site design and circulation, shared driveways, connected parking areas, frontage and/or rear access roads, building setback, and sign design and placement.
- Special Considerations: Accessibility and mobility needs of pedestrians, bicyclists, mobility impaired, and bus users.

Decision making related to the road right-of-way and connection thereto varies with the type of road. MDOT has authority over state trunklines, which includes Interstates, U.S. Highways, and State Highways. County road commissions have authority over the county roadway network. Municipalities have authority over local roads and streets. These authorities must be reconciled with land use decisions and subsequent requests, even demands, made by private land owners regarding the access for parcels abutting the roadway. The Guidebook states: "Successful access management requires cooperation between property owners, local land use authorities, and local, county and state transportation agencies in order to provide safe access to private property and protect the public's investment in roads."

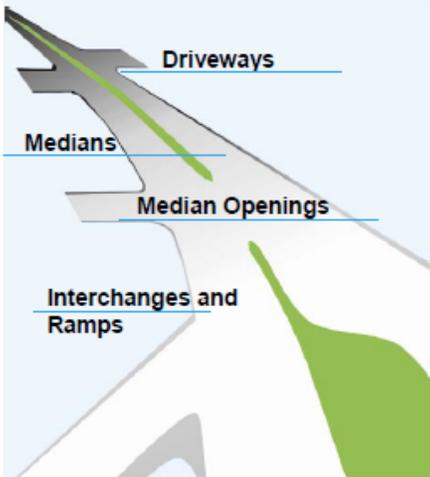
Thus, the access management planning process links transportation needs, access management, and land use to assure appropriate roadway/land use relationships – existing and future.

3.2.6. Florida Department of Transportation (FDOT)

The FDOT views access management as fulfilling two purposes: mobility – the efficient movement of people and goods; and access – getting people and goods to specific properties. Achieving these two purposes requires a proper balance through careful planning of location, design, and operation of driveways, median openings, interchanges, and street connections (i.e., intersections), which is given pictorial representation in the graphic at right. Mobility within and access to areas of a community are defined by the function of the roadway network components. Mobility, as it related to access to properties, is a matter of maintaining the specific function of a roadway in the network while permitting adequate access to properties to support functions on those properties (e.g., commercial businesses, industrial plants, parks, residences).

Access management, therefore, involves managing the movement to/from properties and intersecting streets with a minimum of conflict. It also involves managing traffic flow to assure the capacities of the roadways in the network are optimized. FDOT points out that "...good access management practices can delay the need to

Access management is the careful planning of the location, design, and operation of driveways, median openings, interchanges, and street connections.



The purpose of access management is to provide access to land development in a manner that preserves the safety and efficiency of the transportation system.

widen the road for several years.”⁷ The Department has determined that from various studies that access management actions do not negatively impact businesses. In fact, it concludes that by making a roadway more efficient, mobility benefits due to reduced congestion, and reduced congestion allows traffic levels to increase, and more traffic means greater exposure to businesses.

3.2.7. Genesee County Municipal Planning Commission (GCMPC), Michigan

The GCMPC views access management as one tool in the transportation “Safety Tool Box.” Access management boils down to reducing the rate at which motorists encounter conflicts, which reduced the rate of crashes. A focus of the Commission is understanding the relationship between land use and trip generation, which translates into access requests. Access management is seen as the practices of establishing and implementing design techniques to accommodate property access and solve common traffic problems associated with ingress, egress, and left turns. Managing the number of driveways and driveway offsets are keys to minimizing potential conflicts, and these attributes of the community are specifically tied to land use practices. Land use, which ultimately defines the number of driveways or access points along a roadway, essentially dictates the speed of travel. The Commission, in evaluating the speed limit law in Michigan and information in the MDOT Access Management Guidebook, considered adjusting roadway speed limits to reflect driveway spacing along a roadway as a means of improving safety.

3.3. Principles of Access Management

There is general agreement regarding the foundational principles supporting the practice of access management for regulating the functional efficiency and effectiveness of roadways. This section provides specific interpretations of these principles from two sources, one at the federal level and one at the state level.

3.3.1. Transportation Research Board

The TRB is one of six major divisions of the National Research Council (NRC), a private, nonprofit institution jointly administered by the National Academy of Sciences (NAS), National Academy of Engineering (NAE), and Institute of Medicine (IOM). TRB provides services to government agencies, public organizations, and scientific and engineering communities. TRB’s mission statement includes promoting of innovation and progress in transportation, facilitating information sharing, stimulating research, providing expert advice, and disseminating research results. The TRB Access Management Manual “...provides specific guidance to state, regional, and local agencies on developing and implementing an access management program or corridor access management plan.” The manual explains that access management represents a systematic program of control and design actions to:

- Increase public safety;
- Extend the operating life of major roadways;
- Reduce congestion;

7 Access Management, Balancing Access and Mobility – Answers to Your Questions, Florida Department of Transportation Brochure, System Planning Office.

- Support operations of alternative transportation modes; and
- Improve the quality, even aesthetics, of the traveled way.

The TRB manual identifies ten principles of access management (**Figure 6**) that are keys to achieving the goals of access management. These principles are central to and supportive of five key elements that form a comprehensive access management program:

1. Classify roadways into a logical hierarchy according to function;
2. Plan, design, and maintain roadway systems based on functional classification and road geometry;
3. Define acceptable levels of access for each roadway classification to preserve its function, including criteria for the spacing of signalized and unsignalized access points;
4. Apply appropriate geometric design criteria and traffic engineering analysis to each allowable access point; and
5. Establish policies, regulations, and permitting procedures to carry out and support the program.

Figure 6 – Effects of Access Point Density on Travel Speed and Travel Time

01. Provide a Specialized Roadway System
02. Limit Direct Access to Major Roadways
03. Promote Intersection Hierarchy
04. Locate Signals to Favor Through Movements
05. Preserve the Functional Area of Intersections and Interchanges
06. Limit the Number of Conflict Points
07. Separate Conflict Areas
08. Remove Turning Vehicles from Through Traffic Lanes
09. Use Nontraversable Medians to Manage Left-Turn Movements
10. Provide a Supporting Street and Circulation System

3.3.2. Michigan Department of Transportation

MDOT developed its Access Management Guidebook around 15 principles on which to base a wide range of access management techniques directed toward addressing common traffic and mobility issues, such as congestion, safety, flow, roadway capacity, and the need for roadway improvements. These 15 principles are presented in **Table 2**.

The principles and the relationship between access and traffic flow help define the differences between corridor management plans and AMPs. Each type of plan possesses the twin purposes of achieving improved traffic flow efficiency and safety and permitting reasonable access of properties in the community. There are distinct differences, which are outlined in **Table 3**.

The MDOT graphic shown in **Figure 7** illustrates the relationship between access and movement or traffic flow. It clearly shows how the function of providing movement is high for a freeway or expressway facility, while the



Table 2 – Michigan Department of Transportation Principles of Access Management

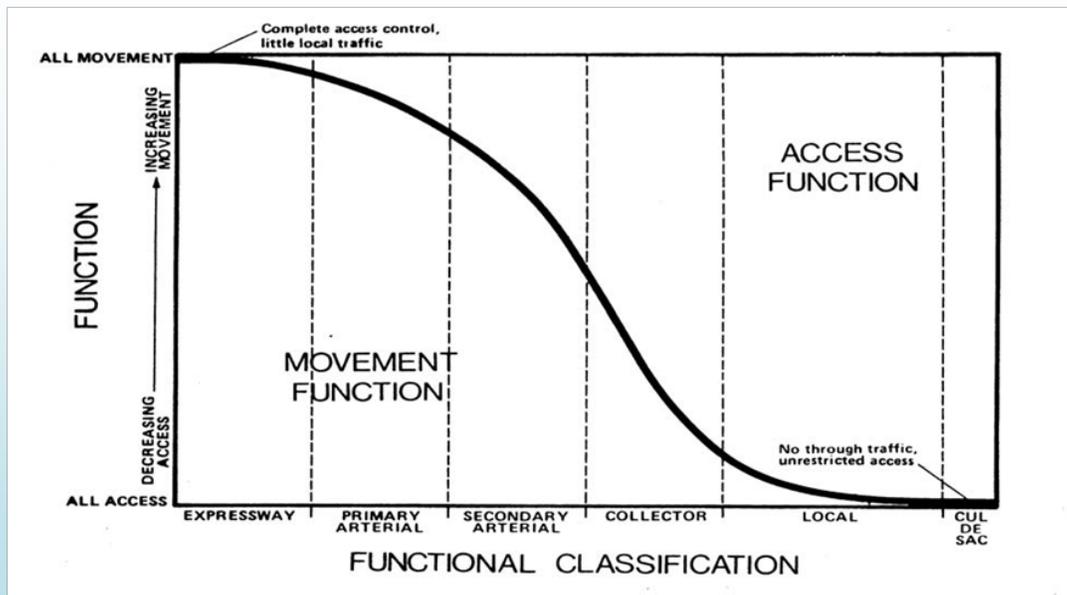
1. Assure reasonable access to abutting property; direct access is not a requirement if other access options are available.
2. Proper application of access management techniques assures (1) motorists and businesses safe and convenient access and (2) more cost-effective use of taxpayers' money spent on roads.
3. The greater the functional classification and, therefore, importance/significance of a roadway, the greater the degree of access management should be applied so the roadway continues to perform according to the function it was designed to serve (see Figure 6).
4. Interconnections between the existing street system and (a) adjacent sites on the landside and (b) new subdivisions/developments are important to the maintenance of safe and efficient traffic flow.
5. Limit the number of driveways and other conflict points.
6. Separate driveways and other conflict points.
7. Improve driveway operation by fitting the best design to the need
8. Remove turning vehicles from through traffic lanes
9. Reduce conflicting traffic volumes
10. Improve roadway operations on arterials by achieving proper balance between traffic flow and access to abutting property
11. Rely on local comprehensive plans and/or an access or corridor management plans to lay the foundation for correcting existing and preventing future access management problems.
12. To optimize the benefits of access management, coordination with all appropriate transportation agencies is essential when preparing access management plans, design techniques, and elements of local access management regulations.
13. To optimize the benefits of access management, multi-jurisdictional coordination with all appropriate transportation agencies is essential when applying access management standards on lot split, subdivision, site plan, and other zoning reviews.
14. Educate the public regarding access management benefits and encourage involvement in the development of access management plans and implementation activities.
15. Many access management techniques are best implemented through zoning; others through local lot split, subdivision, condominium, and private road regulations.
Source: "15 Access Management Principles," Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, Michigan Department of Transportation, October, 2001.

Table 3 – Comparison of Corridor Management Plan to Access Management Plan

Corridor Management Plan	Access Management Plan
Usually address more issues (e.g., need of future right-of-way, coordination of transportation and land use decisions)	Generally more targeted, localized
Usually apply to one corridor	Greater emphasis on community-wide guidance for all roadways
Usually respond to need for major improvements (e.g., increase capacity, new road)	Usually less extensive, less costly improvements with narrower focus
Generally involves a longer time frame and more detailed evaluation	Focus on smaller, more immediate issues, involving less cost
Requires longer amount of time for development, review, and approval	Generally involve less time and less effort, but can become more complex, depending on the issues
Provide guidance for managing congestion and preserving new capacity	Give greater attention to regulations, because these are often the principal implementation mechanism

Source: "Corridor Management Plans and Access Management Plans Compared," Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, Michigan Department of Transportation, October 2001.

Figure 7 – Relationship between Access and Movement (Traffic Flow) on Roadways by Functional Classification



Source: Figure 2-2, Functional Classification, Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, Michigan Department of Transportation, October, 2001.

function of access becomes increasingly important on collectors and local roads. Optimizing this relationship among the many and varied travel needs of the community is derived through the application of the principles of access management.

3.4. Model Ordinances

Generally, there are three legal foundations for or sources of access control by governing jurisdictions. These are: state legislation and codes; municipal, county, even regional planning and development codes or guidelines; and case law. A sampling of governing ordinances and regulations includes:

- Pennsylvania, Title 67, Chapter 441 of the Pennsylvania Code which governs “access to and occupancy of highways by driveways and local roads.”⁸ The focus is to “assure safe and reasonable access as well as safe and convenient passage of traffic on the State highway.”⁹ A response to this was publication of the Pennsylvania Department of Transportation (PennDOT) *Access Management Model Ordinance for Pennsylvania Municipalities Handbook*.
- The Center for Transportation Research (CTRE) at the Iowa State University (ISU) developed the *Iowa Access Management Handbook*, which includes model ordinances for counties and cities.
- FDOT has supported extensive studies to understand the relationship between land development practices and access management. This effort has been fully documented in *Model Land Development and Subdivision Regulations that Support Access Management* and given more focus through the *Model Ordinance for the Protection of Corridors and Rights-of-Way*.
- The Division of Multimodal Programs in the Kentucky Transportation Cabinet has published a *Kentucky Model Access Management Ordinance*, providing access management guidance for use by Kentucky cities and counties based on work accomplished in Florida.
- Lancaster County, Pennsylvania, referencing the PennDOT Handbook incorporated Access Management and a model ordinance in the *Harrisburg Pike Transportation and Land Use Study*, to guide development and transportation improvements in this regionally significant corridor serving four municipalities.
- The Minnesota DOT (MnDOT) formulated and adopted a Model Access Management Overlay Ordinance to complement existing zoning and subdivision regulations of municipal government in the State. The ordinance was designed specifically to apply to a single trunk highway corridor, but it can be modified to encompass multiple corridors or local roadways.
- MDOT, in its Michigan Access Management Guidebook, provides three options compatible with common local situations in the State.

This section provides brief summaries of guidance provided for some of the above ordinances.

⁸ PennDOT Access Management Model Ordinances Training, Chad Dixson & Angela Watson, Pennsylvania Department of Transportation.

⁹ Ibid.

3.4.1. PennDOT Access Management Model Ordinance

PennDOT published Access Management – Model Ordinances for Pennsylvania Municipalities Handbook (Handbook) in 2005 (updated 2006) to help communities understand access management and guide them in developing and implementing an appropriate and defensible access management program. The Handbook lays down the legal basis for access management in Pennsylvania. Two legal cases cited in the Handbook notes that court decisions have found that permit guidelines and the permitting process for access to State highways are subject to ordinances enacted by local government entities, which may be more restrictive.

At the state level, PennDOT has the authority to promulgate reasonable rules and regulations to govern the use and flow of traffic on State highways. Regulations governing access to and occupancy of the State highways have been adopted. These regulations require property owners to obtain a permit to access a State highway, and major traffic generators are required to perform traffic impact analyses.

At the local level, the Municipalities Planning Code (MPC) authorizes municipalities to adopt and enforce subdivision and land development ordinances (SLDOs) and zoning ordinances to control the layout, design, and location of transportation facilities within their jurisdictions. The Handbook notes that the municipalities should notify PennDOT Districts when they adopt an access management ordinance and coordinate with the district during review of an application seeking access to a state-owned roadway. Given the supremacy of local ordinances, coordination would be particularly important to assuring the integrity of the permitting process.

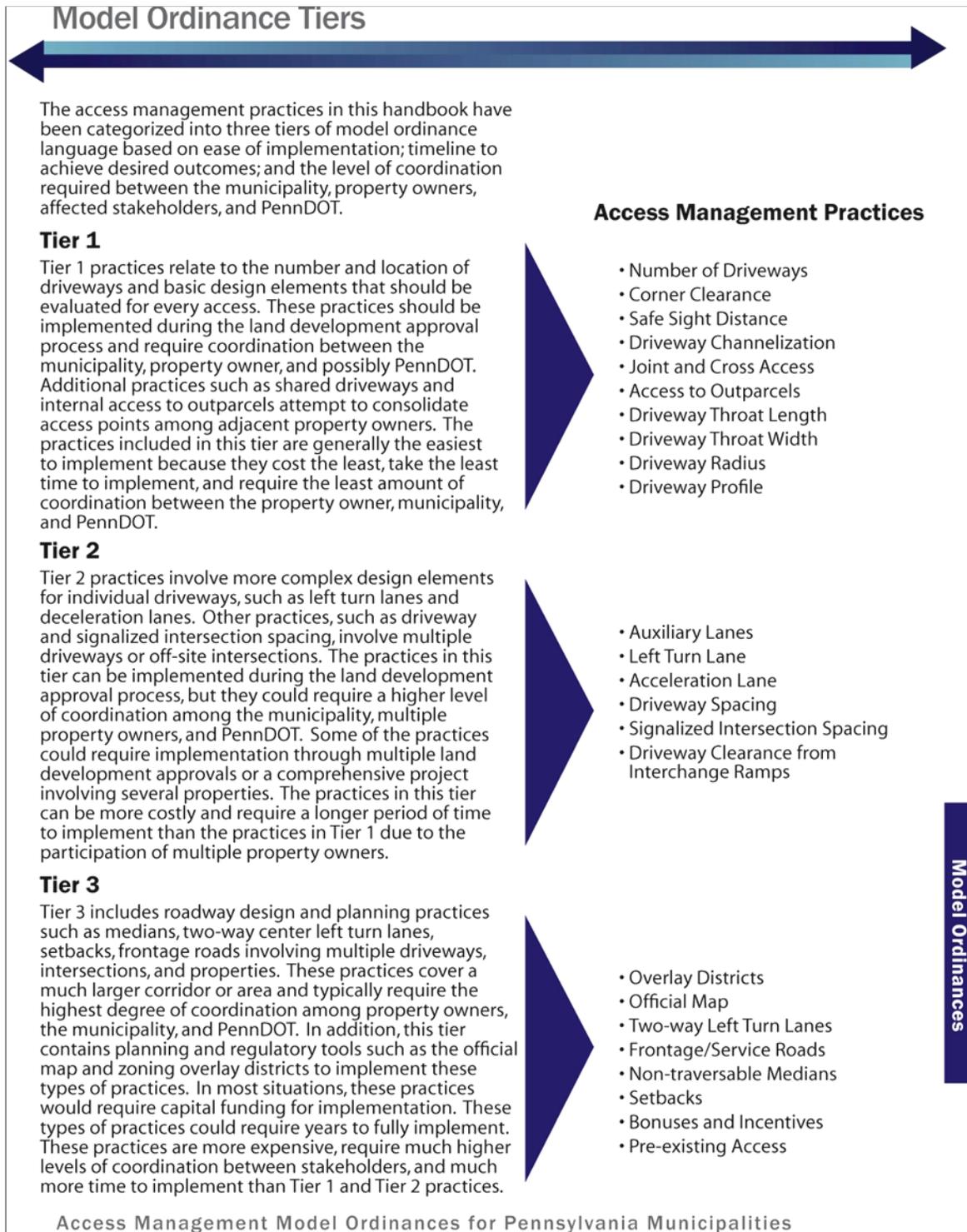
PennDOT developed a set of tiered model ordinances to facilitate customizing by each municipality to meet its particular situation and needs (**Figure 8**). The ordinances were developed for incorporation into the local SLDOs, as appropriate. The different tiers recognize differences between communities relative to: implementation requirements; timeline for achieving community goals and objectives; and the level of coordination required at the local and state levels.

The Handbook stresses the importance of establishing a cooperative, even collaborative, relationship with the PennDOT District as development and adoption of an access management ordinance progresses. Such a relationship will ensure consistency between the local- and state-level regulations and assure awareness of the action at the state level. The Handbook also notes that access management is most effective when supported with comprehensive planning and complemented with the preparation of corridor access plans and AMPs for specific problem areas. AMPs should be aimed at supporting the Future Land Use Plan and Comprehensive Plan (or General Plan, in some cases).

3.4.2. Minnesota Access Management Overlay Ordinance

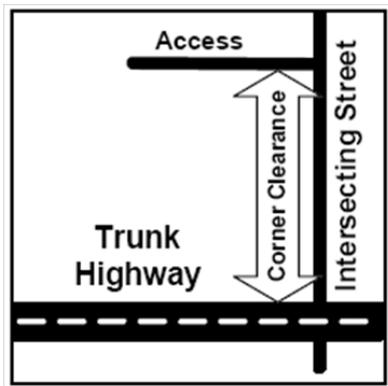
This model ordinance, published by MnDOT, was based on the Trunk Highway 7 corridor and zoning and subdivision ordinances of the City of Hutchinson (**Appendix TM4-2**). The initial section establishes the purpose and relationship to other ordinances, which is followed by a section providing applicable definitions. As an overlay ordinance, this model is intended to supplement requirements of a local municipality and it is noted that the requirements of the more restrictive provisions apply. The diagrams in **Figure 9** show some key provisions established in the definitions section to protect the mobility and safety of the State highway. A key provision of the overlay ordinance is recognition of existing non-conforming access with stipulations for assuring conformance in the future, if there are future changes to land use.

Figure 8 – Summary of PennDOT’s Tiered Model Ordinances



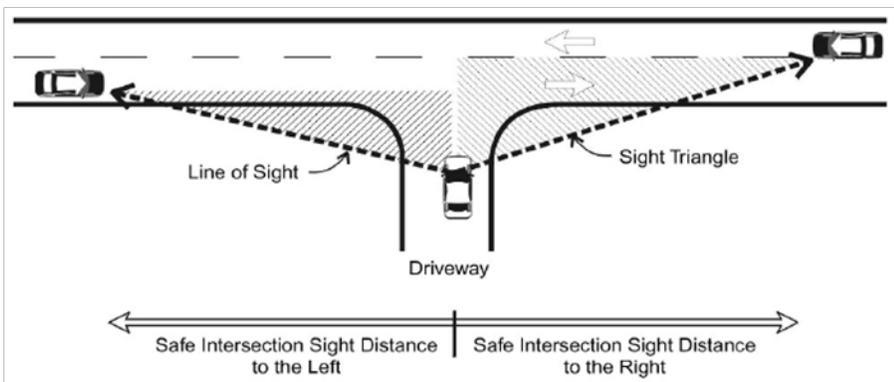
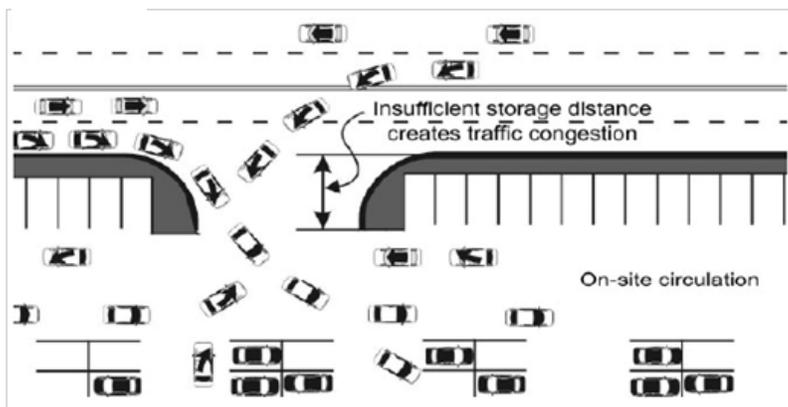
Source: Access Management – Model Ordinances for Pennsylvania Municipalities Handbook, Pennsylvania Department of Transportation (PennDOT) and U.S. Department of Transportation (USDOT), April 2005, Updated February, 2006.

Figure 9 – Critical Design Definitions Relating to Trunk Highway Access



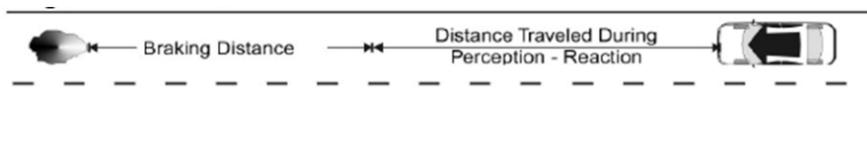
Corner Clearance – measured along the edge of the traveled way, from the nearest pavement edge of the primary roadway to the nearest pavement edge of the access on the connecting street.

Throat Length – distance from the shoulder of the roadway to the first on-site location where a driver can make a right or left turn.



Sight Distance, Intersection – distance visible to the driver of a stopped vehicle, as measured along the normal path of the roadway. This ensures that a driver can see far enough down the roadway to safely cross or pull out into traffic. In some cases, there may be another access within intersection sight distance.

Sight Distance, Stopping – The distance required by the driver of a vehicle, traveling at a given speed, to bring their vehicle to a stop once an object on the roadway becomes visible. Stopping sight distance is measured from the nearest edges of two adjacent entrances, which may be on opposite sides of a two-lane roadway.



The model ordinance establishes a requirement to create an AMP to identify the design and location of a new requested access and present information, as necessary (e.g., traffic impact study), relating to potential impacts on the State highway. In order to accommodate differing development conditions along State highways, the ordinance identifies three Access Management Overlay Districts:

- **Urban Core Access Management District** – segment of Trunk Highway in fully developed center of community (e.g., typical downtown area and immediate hinterland), where lower speeds (30-35 miles per hour) would prevail.
- **Urbanizing Access Management District** – segment of Trunk Highway through a current or planned urbanized area with a full range of urban service, where reduced operation speeds (40-50 mph) would prevail.
- **Rural Access Management District** – segment of Trunk Highway extending through area or region with long-term expectations of limited residential and commercial development (e.g., agricultural area), where higher operating speeds (50 mph and greater) would prevail.

The model ordinance indicates roadway segments would be assigned to one of the three Districts. Access spacing for intersections and allowance standards for driveways would be established for each District. Although not specifically incorporated into the model ordinance, it is assumed that there would be some connection to the area's Comprehensive or General Plan and Transportation Plan. Potentially, this connection may be accommodated through the tie in with local land use and zoning regulations.

3.4.3. Michigan Department of Transportation (MDOT)

The MDOT Access Management Guidebook (Guidebook) identifies three options for access management ordinances that fit common situations faced by local governments:

- Option 1: This option is best suited for a slow-growing, rural community with one or two state highways or major county roads.
- Option 2: This option is best suited for a rural community in the path of growth or a growing suburb with significant undeveloped land along major arterials.
- Option 3: This option is best suited for an urban community with little undeveloped land and many retrofit or redevelopment opportunities.¹⁰

These three sample ordinances (**Appendix TM4-3**) were adapted from numerous codes and ordinances adopted by several Michigan communities, as well as codes and model ordinances prepared by communities in Florida, New York, and Iowa. Other sources include the Center for Urban Transportation Research (CUTR) at the University of South Florida (USF), TRB, National Cooperative Highway Research Program (NCHRP), and the American Association of State Highway Transportation Officials (AASHTO). The sample ordinances in the MDOT Guidebook have been presented to help communities construct an appropriate ordinance to fit its

¹⁰ "Access Management Ordinance Options," Chapter *, Sample Access Management Ordinances in Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, Michigan Department of Transportation, October 2001

unique situation. Due to the legal technicalities of such an ordinance, the Guidebook stresses that communities should engage qualified planners and engineers to assist in this task, if the community does not already have this expertise on staff.

3.4.4. FDOT Model Ordinance to Protect Corridors and Rights-of-Way

FDOT developed the FDOT Model Ordinance to Protect Corridors and Rights-of-Ways as a supplement to local land use and zoning codes specifically to assure future rights-of-way for planned highways. The model has been developed to allow local government entities to modify the standards or procedures to assure consistency with local conditions and practices. The model ordinance (**Appendix TM4-4**) incorporates general provisions and two options for more focused regulation of access. One option supports system-wide applications throughout the community, and the other option focuses on establishing a corridor protection overlay district. The intent of the FDOT model ordinance is to support implementation of the local government's Comprehensive Plan. Information is provided to assist local governments in attaining consistency between the Comprehensive Plan and the language of the model ordinance. The objective of the ordinance is to preserve future corridors and provide a means for assuring needed right-of-way for a future corridor will be available when development of the roadway facility occurs.

3.4.5. FDOT/CUTR Model Land Development & Subdivision Regulations that Support Access Management for Florida Cities and Counties

FDOT collaborated with the CUTR at USF to develop Model Land Development & Subdivision Regulations that Support Access Management as a tool to be used with the Model Ordinance to Protect Corridors and Rights-of-Way. This FDOT/CUTR document encourages communities to "...establish a policy framework that supports access management in the local comprehensive plan, prepare corridor or AMPs for specific problem areas, and encourage good site planning techniques."¹¹ The guidance indicates that communities should amend land development and subdivision regulations to assure commercial development, parcels, residential strips, and other divisions of land along thoroughfares do not impinge on the safe efficient operations of these thoroughfares. A separate access management ordinance may need to be considered under certain circumstances, but all actions geared toward access management and the rationale for such actions should be supported by adopted Comprehensive Plans and/or Subarea Plans. These policy documents provide the legal basis for implementing access management regulations.

The model ordinance focuses on highways and other arterials (and selected collectors) that form the primary network for moving people and goods (**Appendix TM4-5**). It notes that without proper design of access and access systems, the key transportation functions of this primary network will be compromised. The ordinance seeks to establish a level framework for balancing the right to reasonable access against the need and right of the larger community to be assured of safe and efficient travel facilities. The foundation of this ordinance relies on explicitly identifying a structure for the roadway network; state and local highways have been categorized by function, then classified according to the purpose they serve, i.e., access provided and importance of that access. The hierarchy of highways is headed by the Florida Interstate Highway System; secondary consideration is attached to the primary regional arterial network. It is the intent of these model regulations,

11 Overview, Land Development and Subdivision Regulations that Support Access Management for Florida Cities and Counties.

when integrated with local land development and subdivision controls, to create a reasonable legal framework for:

...reducing traffic accidents, personal injury, and property damage attributable to poorly designed access systems, and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.¹²

3.5. Access Management Program Implementation

What is involved in the implementation of an access management program? The MDOT identifies access management as a planning process that links access principles with land use and corridor planning. The activity is intended to look at the big picture of transportation and land uses to ensure appropriate relationships between present and future needs. The implementation of access management occurs at three levels: during review of development proposals relative to local zoning and subdivision regulations; during the driveway permitting process, administered by local, county, or state road authorities; during definition of roadway improvements (planning and design); and during planning for specific capital improvement projects on targeted corridors with adopted access management or corridor improvement plans.

This section reviews applicable resources shedding light on the implementation of access management processes and programs that may be useful for implementing this US-60 plan.

3.5.1. Colorado Department of Transportation (CDOT)

The Colorado State Highway Access Code was adopted by The Transportation Commission of Colorado in 1998 under the authority of Colorado Revised Statutes (C.R.S.) §24-4-103 and §43-2-147(4). A copy of §43-2-147 is attached for reference (**Appendix TM4-6**). C.R.S. §43-2-147 establishes the basis and authority for CDOT and local governments to regulate vehicular access along public highways. It is made clear that the provisions of the statute shall not preclude or deny reasonable access to the general street system. Section One of the code states:

It is the purpose of the Code to provide procedures and standards to aid in the management of that investment and to protect the public health, safety and welfare, to maintain smooth traffic flow, to maintain highway right-of-way drainage, and to protect the functional level of state highways while considering state, regional, and local transportation needs and interests.

The Code recognizes that the functional levels of the State's highways must accommodate increases in traffic volumes and operational pressure which meeting the purpose of the Code. It also recognizes that property owners have a right of reasonable access and access management actions need to consider impacts on public and private land use decisions. The Code is organized in the following manner:

¹² Ibid. Section 1, Intent and Purpose.

- Section One – authority, purposes and structure of the Code and provides an extensive list of definitions.
- Section Two – administrative procedures for implementing the Code, including assignment of access categories.
- Section Three - defines eight categories of highways, based on function, and establishes criteria for determining allowable access to the State Highway System.
- Section Four – standards for the design and construction of all permitted access; standards are based on criteria and specifications necessary to ensure the public health, welfare, and safety.

Table 4 presents an outline of Section Two, Administration, of the Colorado State Highway Access Code as a reference for the organization and administration of access management actions. This section effectively sets forth the manner by which the Code shall be administered and implemented. Section Three contains Access Category Standards and Section Four establishes Design Standards and Specifications.

C.R.S. §43-2-147 specifically states that all State highways are declared to be controlled-access facilities in consideration of the purpose cited above. Therefore, the CDOT implementation of access management throughout the state includes development of Access Control Plans for each CDOT Region. As these plans are completed, the status of each roadway segment is logged in and a map is uploaded to the Department’s Web site. The maps identify status as: Completed Access Control Plan, Access Control Plan in Progress, and Access Control Plan in Consideration. Segments for which an AMP has been created are also identified.

3.5.2. Access Management Plan: Diamond Lake Blvd/N. Umpqua Highway (OR-138E) Stephens Street to Sunshine Park

This AMP was prepared as a collaborative act by the Oregon Department of Transportation (ODOT) and the City of Roseburg. It represents a comprehensive inventory of all public and private approaches to Oregon State Route 138E (OR-138E) and identifies strategies that meet or improve current conditions through the application of appropriate access management standards. The AMP was developed to balance the City’s land use, local street, and economic development goals with the State’s access management requirements. It is aimed at assuring safe and efficient highway operations. It addresses rights of access and includes relevant operational information as well as consideration of land use. It also provides the framework for implementing the Oregon Highway Plan, Oregon Administrative Rules (OAR) 734.051 – Highway Approaches, Access Control, Spacing Standards and Median. OAR 734, Division 51, specifically provides for Intergovernmental Agreements (IGAs) between ODOT and cities and counties that allow the local units of government to accept applications for private approaches and issue Construction Permits and Permits to Operate, Maintain and Use an Approach with respect to regional and district state highways.

Table 4 – Outline of Administrative Procedures: Colorado State Highway Access Code
Purpose
Access Category Determinations
(1) Maintenance of an Access Category Assignment Schedule

(2) Initial Assignment Process - Category Determinations
(3) Subsequent Changes in Assigned Categories
Permit Application Process, Obtaining a Permit
(1) Determining the Issuing Authority
(2) Pre-application Meetings
(3) Preparing an Application
(4) Sources, Data and Information Requirements
(5) Traffic Impact Studies
(6) Submitting an Application When the Department is the Issuing Authority
(7) Processing of an Access Permit Application When the Department is the Issuing Authority
(8) Submitting an Application When the Local Authority is the Issuing Authority
(9) Processing of an Access Permit Application When the Local Authority is the Issuing Authority
(10) Contents of an Access Permit
(11) General Permit Issues
(12) Access Requests by Local Authorities
Issuing a Notice to Proceed
Access Construction
Changes in Land Use and Access Use
Maintenance & Permit Transfer
Access Violations
Appeals
Internal Administrative Review Committee
Permit Fees, Forms and Records
Access Control Plans
Interchange Management Plans
Department And Local Government Highway Construction Projects
Source: State Highway Access Code, Volume 2, Code Colorado Regulations 601-1, State of Colorado, March, 2002.

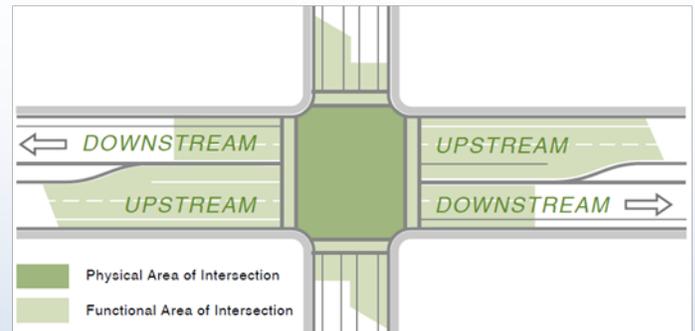
This AMP states that the purpose for implementing the plan is to have a framework in place to guide decisions regarding access spacing in accordance with stipulations in OAR 734, Division 51, and the Oregon Highway Plan. These decisions occur at the time of development, redevelopment, change of use, and/or construction actions. The AMP was implemented through a series of strategies designed to improve the number of approaches or access points along OR-138E. The City regulates development and redevelopment standards throughout the corridor, and property owners are required to comply with City development standards, guidelines, and ordinance. The City Land Use and Development Ordinance No. 2981, Section 2.3.025 specifies actions required at the time of development, redevelopment, or change of use. Implementation strategies to improve access conditions along the highway include:

- Eliminate abandoned approaches.
- Correct or eliminate illegal approaches.



- Examine feasibility of creating alternate access to streets of lower functional classification for properties with access to both the highway and a local street.
- Consolidate multiple approaches to reduce the density of access driveways.
- Relocated approach or reservation to an alternate location to permit consolidation of closely-spaced driveways, improve safety, and provide on-site circulation.
- Improve local street connectivity (including parallel service roads) and limit direct property connections to the highway.
- Consider raised medians for the purpose of restricting left turns and improving aesthetics.
- Modify existing approaches.
- Regulate access within the functional area of existing and future signalized intersections (**Figure 10**).
- Acquire reservations or obtain relinquishment of untenable approaches or approaches that no longer are necessary or feasible.

Figure 10 – Functional & Physical Areas of an Intersection



The functional area is generally defined as the area in which motorists must decide to stop, the maneuvering distance required to stop, and the storage length required for queued vehicles.

Source: Access Management in the Vicinity of Intersections, Federal Highway Administration (FHWA) Office of Safety; an abbreviated version of this graphic is included in Access Management Plan, Diamond Lake Blvd/N. Umpqua Highway (OR 138E) Stephens Street to Sunshine Park, Oregon Department of Transportation (ODOT) and City of Roseburg, 2003.

The strategies identified above provide the means to evaluate and remove or modify existing and reserved (future) approaches (roadway and driveway) along the highway. Based on implementation of all of the strategies, the AMP developed by ODOT and the City resulted in the list of 123 approaches for the highway. Full implementation of all strategies would decrease the total number of existing approaches 38 percent. The plan concludes that approximately 50 percent of approaches with the City could be eliminated, while continuing to provide reasonable access to properties fronting the highway.

The Diamond Lake Boulevard AMP incorporates the ODOT Approach Permit Process, which outlines the steps for obtaining an approach permit. In support of this process, the plan includes Access Deviation Findings to guide determinations made by the ODOT Region Access Management Engineer (RAME). Access Deviation Findings do constitute approval of an application that may be submitted, but examine the 123 approaches and determine on the face of known conditions whether they meet the requirements of OAR 734, Division 51. Deviations are noted with regard to: Private Approaches, Public Approaches, and Safety Criteria (i.e., how the plan satisfies safety factors). The plan also includes determinations regarding consistency with conditional approvals and the principle of reasonable access.

The AMP specifically recognizes that recommendations for improvements in access and adoption of access spacing requirements may not be economically feasible in the developed urban area of the City of Roseburg.

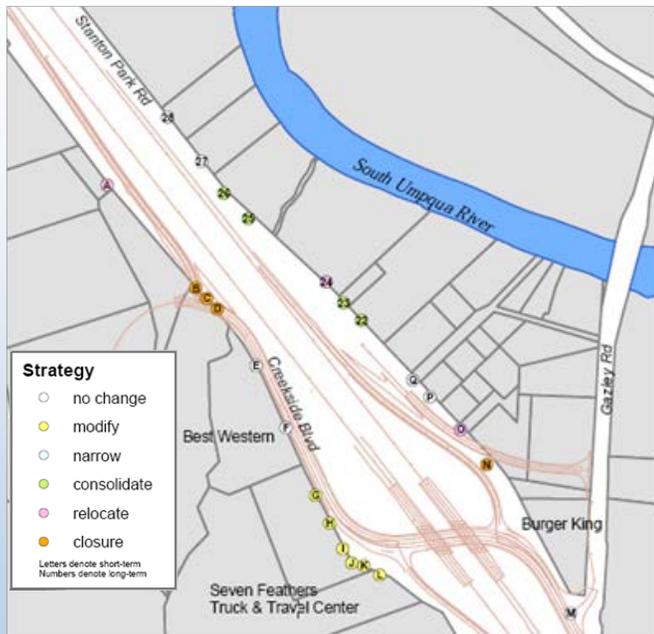
Requests for deviation may be associated with an access permit application, if access management standards are not met, but the safety criteria are not compromised. Deviations may be approved by the RAME, if the deviation does not result in significant safety or operational problems, if one or more certain conditions pertaining to access exist at the site including those that may be deemed appropriate for consideration by the RAME. Guidance on reviewing deviations of spacing standards is found in OAR 734-051-0135 (**Appendix TM4-7**). An appeal process is defined for deviation requests that are denied by the RAME; this process is highlighted in Section 3.5 of this Technical Memorandum.

3.5.3. I-5/Canyonville Exit 99 Interchange Area Management Plan, Oregon

The Interchange Area Management Plan (IAMP) satisfies ODOT requirements associated with plan for and managing grade-separated interchanges. The goal and timing of interchange design is to meet or, at least, improve spacing standards in accordance with Oregon Administrative Rule (OAR) 734-051-0155, Interchange Access Management Spacing Standards for Approaches (**Appendix TM4-8**). The IAMP includes both short-term and long-term strategies with a focus on existing and future land use and access requirements for the interchange's area of influence. The Access Management Strategy (AMS) identified short-term, project-specific actions only. Long-term strategies focus on the area outside the immediate project limits with ¼ mile of the interchange ramp terminals. The intent of the IAMP is to provide a framework for implementing short-term access management actions and support decisions by the local jurisdictions regarding future improvements to roadways in the area of influence. It includes an analysis of potential land use changes to support refinement of local land use regulations and Comprehensive Plan policies. The IAMP provides a mechanism for ensuring growth management around the interchange so that investments in improvements will not be compromised.

The Access Management section of the IAMP highlights a key axiom: Roads serve both mobility and access needs. Maximizing mobility typically requires minimizing access to abutting properties. At the other end of the spectrum, maximizing access necessarily means mobility will be reduced. The IAMP specifically addresses the practice of access management as it pertains to economic development and safety. After establishing standards for spacing in relationship to the interchange and requirements for compliance with the standards, the IAMP presents the Short-Term, Approach-Related Strategies for the Preferred Alternative (i.e., the AMS). The AMS generally includes closing, modifying, relocating, consolidating driveways and purchasing property rights. The IAMP then presents the Long-Term, Approach-Related Strategies, which is referred to as the "Plan." Long-term strategies include actions that must be considered by ODOT and local jurisdictions, when a roadway construction project is planned within the interchange area of influence or property is developed, redeveloped, or undergo a change-of-use. Strategies may include: encouraging consolidation of access points, encouraging shared access points between adjacent properties, offsetting driveways at proper distances to minimize the number of conflict points, providing driveway access via local roads where possible, and/or minimizing driveway widths.

**Figure 11 – Proposed Approach Strategies:
I-5/Creekside Boulevard Interchange**



Source: Canyonville Interchange, I-5 Exit 99: Interchange Area Management Plan, Oregon Department of Transportation, March, 2006.

The IAMP provides an inventory of approaches (e.g., public roads, private roads, driveways, etc.) affected or potentially affected by proposed improvements to the interchange for both the AMS and the Plan. The approaches also are mapped and, in some cases, aerial photographs are provided to enlighten the reader. **Figure 11** shows a portion of mapping used to identify existing approach locations and type of actions proposed in the AMS. Approaches are listed according to applicable zoning and land use with the specific strategy noted. The IAMP notes that requests for deviations to standards and recommendations may be submitted (see Section 3.5, Dispute Resolution).

Due to the elements of time and management processes, it is often difficult to establish whether an approach is permitted. Plus, over time, landmarks, mile points, even road names may change. This requires that some approaches be “grandfathered” in to the Plan, if safety-related issues do not exist. Thus, a number of factors are considered for each approach in support of Plan recommendations, including: safety, existing and potential land use, existing site plan, number of approaches, future plans for

development of a parcel, and access to local streets.

The IAMP includes a detail traffic analysis supporting decisions and recommendations regarding interchange design and approach strategies. A record of agency coordination activities also is included in recognition of the multi-jurisdictional nature of the plan and its objectives. Finally, applicable plan, policies, and standards are provided for reference.

3.5.4. Oregon DOT Approach Permit Process

At the state level, access control of state highways in Oregon is maintained through a permitting process applied to all proposed new approaches (i.e., public or private roads and driveways) and changes to existing approaches that may be due to changes in land use or property functions. The responsibility and authority of the Oregon DOT is established in Oregon Administrative Rule 734, Division 51, which “...establishes procedures, standards, and approval criteria used by the department to govern highway approach permitting and access management.”¹³ The approach permit process involves ten steps, as summarized below:

13 Division 51, Highway Approaches, Access Control, Spacing Standards and Medians, Oregon State Archives at: http://arcweb.sos.state.or.us/pages/rules/oars_700/oar_734/734_051.html.

1. Obtain an *Application for State Highway Approach* to ODOT District Office;
2. Complete the *Application*;
3. Coordinate land use approval for proposed land use change or development with City or County planning agency;
4. District Office reviews *Application* within 10 calendar days of receipt;
5. District Office determines whether requested approach is legally permissible;
6. ODOT has 30 calendar days to complete review of *Application* and all required attachments;
7. Additional information is requested by ODOT, if necessary;
8. ODOT provides notification regarding review of additional information; *Application* is approved or denied;
9. If approved, *Permit to Construct Approach* is issued, the applicant is provided a *Construction Permit*, ODOT inspects the approach, and, if the approach passes inspection, issues a *Permit to Operate, Maintain and Use an Approach*;
10. District Office provides information on the appeals process when *Application* is denied.

A non-refundable administrative fee of \$50 is required by ODOT for each approach application. Requests for a temporary approach require a deposit of not less than \$100 per approach. In addition, proof of liability insurance and any required bond or deposit in lieu of bond is required prior to issuance of "Construction Permit."

3.5.5. Douglas County, Oregon

The Douglas County Land Use Development Ordinance (LUDO) recognizes that ODOT has the responsibility and authority for managing access to State highways. The LUDO identifies the role of the County regarding implementation of access control on State highways. Section 3.35.065, Access onto State Roads, specifies the County's coordination process with ODOT, when an ODOT permit for direct access to a State highway, is required.

1. Provide applicants with information related to the need for a state access permit;
2. Refer land use permits, including those which result from actions listed in Section 3.35.060,¹⁴ with direct access to state highways to ODOT; and
3. Require applicant(s) to provide either authorization of an approved State access permit, prior to a land use application or permit being considered complete.

3.6. Dispute Resolution

Due to the legal nature of property rights and the right to reasonable access to public roads, access management processes must include an appeals process and methods for dispute resolution. Examples of these elements of access management are presented in this section.

¹⁴ This section specifies Douglas County's responsibility to coordinate with certain entities regarding review of future land use decisions affecting transportation facilities, corridors, and sites.

3.6.1. ODOT Appeals and Dispute Process

Access deviation findings noted earlier in Section 3.4 provide the basis for maintaining or developing approaches to Oregon State Highways that do not meet spacing standards or other standard that has been adopted to protect the safety and efficiency of the highways. Approaches that are defined as possessing deviations may be grandfathered in to the plan for the highway or recommended for closing or modifications. The result of this process can be appealed by operators of the approach. The denial of an *Application for State Highway Approach* is also grounds for appeal. The following five conditions are considered to be appealable decisions per OAR 734-051-1070:

- (a) A decision to deny an application for an approach permit;
- (b) A decision to deny an application for a deviation from approach permitting standards;
- (c) A decision to impose mitigation measures as a condition of approval of an approach permit or for a deviation from approach permitting standards;
- (d) A decision to close or remove a permitted or grandfathered approach; or
- (e) A decision to modify a construction permit.¹⁵

These actions give the applicant the right to dispute resolution procedure to review the Department's decision. This process flows on full documentation of any collaboration activities undertaken by the Department and the applicant.

The ODOT appeals process offers three different avenues for the applicant: Region Review, Collaborative Discussion, and Contested Case Hearing. The applicant may request further collaboration on issues of non-agreement or presentation of the issues before the Dispute Review Board. As an alternative, the Department could request additional information to ensure a complete application, and then issue a final decision, which then would be subject to review. The opportunities for applicant appeal and Department review are extensive. The key passages in the Oregon Administrative Rules are attached as **Appendix TM4-9** for reference.

3.6.2. Access Management Plan: Diamond Lake Blvd/N. Umpqua Highway (OR-138E) Stephens Street to Sunshine Park

OAR 734, Division 51, § 330, outlines requirements for processing requests for deviations from established access management standards, as provided for in this same Rule. This section specifies that denial of a deviation request may be appealed. An applicant receiving an unsatisfactory decision regarding a request for deviation has 21 calendar days within which to request a Region Review (OAR 734-051-0390) or a formal hearing (OAR 734-051-0400). This same appeals process applies to any disagreement an applicant may have with the terms and conditions of the Construction Permit or the Permit to Operate, Maintain, and Use an Approach. The process also allows for the initiation of a "collaborative discussion" with the context of the Region Review process.

¹⁵ Section 734-051-1070, Oregon Administrative Rules (OAR).

The Region Review process applies to every aspect of the access permit application process. This process includes establishment of a Region Review Committee the members of which must have expertise in access management policies, roadway design standards, right-of-way, and traffic engineering. The Committee reviews all pertinent information regarding the application and makes a recommendation to the Region Manager. The Region Manager subsequently makes a determination to approve, reverse, or modify the original application, Construction Permit, or closure finding. The collaborative discussion (noted above) seeks to provide a forum for both the Regional Manager and the applicant or permittee or recognized representatives to examine issues associated with the Department's recommendation and to reach agreement for approval, reversal, or modification of the appealed action. If this process is successful, the outcome is fully documented by the Region Manager and a subsequent Construction Permit or Permit to Operate, Maintain, and Use an Approach is issued. Should agreement not be attained, the applicant/permittee may request a hearing.

OAR 734, Division 51, also incorporates Remedies for Closure of Approaches. OAR 734-051-0500 through 734-051-0560 outlines the framework for this action. The process allows a person holding an interest in real property to appeal closure of permitted access or denial of an approach for which a grant or reservation of access has been issued. In addition to Definitions, this portion of the OAR 734, Division 51:

- Identifies the Department's responsibility for offering remedies;
- Establishes a procedure for resolving claims;
- Specifies a process for conducting appraisals to determine real property value, utility, or use;
- Establishes the conditions for agreement; and
- Delegates authority to the Right-of-Way Manager of the Department or the Manager's designee to resolve the issue and achieve settlement.

4.0 Application of Access Management Principles within the Arizona and US-60/Grand Avenue Corridor

Six examples of local applications of access management principles and concepts were identified that reveal differing levels of commitment to implementation. Two of the examples offer examples of programs defined for and implemented at the county level. Three represent programs employed at the municipal level. One represents a corridor-specific study conducted for much the same purpose and with similar objectives as this US-60/Grand Avenue COMPASS.

No access management plans were found in El Mirage, Youngtown, Phoenix or Maricopa County. Additionally, no analyzed information was available for ADOT.

4.1. Pinal County, Arizona

Pinal County developed a plan for Regionally Significant Routes (RSRs) for Safety and Mobility (RSRSM) to provide a guide for preserving right-of-way for RSRs and developing these critical transportation facilities. Access management is a prominent element of the plan and six techniques are identified to guide decision making regarding access to the RSRs:

- Increase spacing of intersections and interchanges to improve movement and traffic flow;
- Reduce the number of driveways to avoid conflict points and reduce accidents;
- Use left- and right-turn lanes to separate traffic, improving traffic flow and safety;
- Apply median treatments including two-way left-turn lanes and raised medians that allow drivers to safely turn off of the highway;
- Use frontage and backage roads for safer and easier access to businesses and roadways; and
- Implement land use policies that are conducive to the highway environment.

The objective of access management is to limit access to the RSRs and, thereby, provide safe and efficient movements of people and goods at a high level of service.

4.2. Maricopa Association of Governments (MAG)

The Maricopa Association of Governments does not have a formal AMP. The metropolitan planning organization (MPO) for the Phoenix metropolitan area does provide guidance regarding access management on its Website (http://www.azmag.gov/Transportation/Access_Management/). MAG indicates “the purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system.” The Website further states that “by managing access, government agencies can increase public safety, extend the life of major roadways, reduce traffic congestion through improved traffic flow, support alternative transportation modes, and improve the appearance and quality of the built environment.” The agency lists five general guidelines for justifying implementation of an access management program:

- Allows motorists to operate vehicles with fewer delays, fewer emissions, and less fuel consumption;
- Provide reasonable access to properties;
- Maintains functional integrity and efficiency of the roadway;
- Protects investments in infrastructure; and,
- Coordinates transportation and land use decisions.

MAG ascribes to ten principles of access management outlined by the Transportation Research Board (TRB) Committee on Access Management, which published an Access Management Manual in 2003. These principles are:

- **Provide a specialized roadway system** – design and manage roadway according to primary function.
- **Limit direct access to major roadways** – regional thoroughfares need greater access control compared to local and collector roadways that area intended to provide property access.
- **Promote intersection hierarchy** – design appropriate transitions from one roadway classification to another.
- **Locate signals to favor through movements** – optimize signal coordination to achieve more continuous traffic flow at the desired speed.
- **Preserve the functional area of intersections and interchanges** – minimize access connections close to intersections or interchange ramps that can impair roadway functionality.
- **Limit the number of conflict points** – limiting the number and type of conflicts between modes (vehicles, bicycles, pedestrians) reduces the complexity of the driving environment and, therefore, potential conflicts.
- **Separate conflict areas** – simplify the driving task by increasing the distance between conflict areas (i.e., access points) as the desired traffic speed increases.
- **Remove turning vehicles from through-traffic lanes** – turning lanes remove turning vehicles from through traffic lanes and reduce the duration of potential conflicts.
- **Use non-traversable medians to manage left-turn movements** – minimize left turns and provided designated locations for left turns.
- **Provide a supporting street and circulation system** – Effective and efficient connectivity to the major roadway can be maintained by adhering to adopted spacing intervals for local streets.

4.3. City of Glendale, Arizona

The City of Glendale does not have a formal AMP and the Design Review application does not require applicants to address roadway access beyond the need to assure fire and emergency services access to the

development. Nevertheless, Grand Avenue is a major element of the Regional Freeway System adopted by the MAG Regional Council. Improvements to Grand Avenue are included in the 20-year Regional Transportation Plan (RTP), the blueprint for all transportation planning in Maricopa County. Access management is a key improvement identified in the RTP. To this end, the City has engaged in implementing access control techniques for Grand Avenue to include: extending raised medians; reducing the number of access points to the highway; adding new perimeter walls, and adding right-turn lanes. The City expects these improvements will encourage economic development and improve the image of Grand Avenue for both residents and motorists.

4.4. City of Peoria, Arizona

The City of Peoria identifies the most important concept associated with the need for access management as being "...through movement of traffic and direct access to property are in conflict." The City has published "Access Management Guidelines" (2011), which establishes the following principles:

- Limit the number of conflict points at driveway locations;
- Conflict points are indicators of the potential for collisions;
- When left turns and cross street through movements are restricted, the number of conflict points are significantly reduced;
- Adequate spacing between intersections allows drivers to react to one intersection at a time, and reduces the potential for conflicts;
- Reduce the interference with through traffic;
- Providing turning lanes, designing driveways with large turning radii, and restricting turning movements in and out of driveways reduces friction to the through movement and enhances safety;
- Provide sufficient spacing for at-grade, signalized intersections;
- Good spacing of signalized intersections reduces conflict areas and increases the potential for smooth traffic progression;
- Provide adequate on-site circulation and storage; and
- The design of good internal vehicle circulation in parking areas and on local streets reduces the number of driveways needed for access to commercial and residential developments.

4.5. City of Surprise, Arizona

The City of Surprise does not have a formal AMP. With the Transportation Element of the City's General Plan, one of the strategies for achieving a multimodal transportation system is:

Maximize the effective use of our arterial roadway capacity by adopting access management strategies which limit the quantity and location of driveways and assure a high level of cross access between adjacent developments.

Nevertheless, the City prepared an *Access Control Plan for Bell Road* in 2007, which the City may use to guide future decision making along the Bell Road corridor. It also can apply the techniques developed for Bell Road to other roadways in Surprise. Access control is an integral element of the ongoing “Build a Better Bell” initiative of the City, which includes resurfacing, renovating median landscaping, upgrading lighting, synchronizing signals, adding dynamic message boards, and installing additional right-turn lanes. In addition, the Surprise Transportation Plan (2005) indicates subsequent actions by the Surprise Transportation Commission, which prepared the plan, which will include review of regional AMPs. The plan also cites access management as an important method for increasing the carrying capacity of roadways.

4.6. Bell Road Access Control Plan, City of Surprise, Arizona

This plan notes that access management techniques should be implemented prior to development in a travel corridor. Nevertheless, projects to widen a roadway or redevelop a route offer opportunities for asserting access management principles during the design phase. In this case, one portion of Bell Road in the area affected by this plan is well developed and represented significant challenges to the objective of reducing access. On the other hand, the other portion presented fewer challenges and greater opportunity to implement more restrictive access control measures. Implementation of recommended access management guidelines for Bell Road involved application of three key actions:

- *Consolidating, closing and minimizing traffic movements at existing accesses, where no other adverse safety or operational impacts will result;*
- *Implementing the recommended Bell Road median opening and driveway access minimum spacing standards;*
- *Establishing internal, non-arterial alternative circulation routes to Bell Road either within undeveloped properties or on secondary roadway systems.¹⁶*

To further establish access control along Bell Road, additional policies were defined to guide decision making regarding median openings and driveway spacing:

- *Unless no other reasonable access is available, properties will not have direct access to Bell Road;*
- *Driveway access to Bell Road should be stratified by the length of property frontage on the arterial;*
- *Cross-access agreements should be established for sites that are candidates for access consolidation and for all new developments or redevelopment projects to share access between adjacent properties;*

¹⁶ Bell Road Access Control Plan, City of Surprise, February 1, 2007.

- *Alternative circulation routes and cross-parcel access should be defined as part of any Development Plan – the Development Plan should be coordinated with the Access Management Policy, and it should serve multiple development parcels to minimize direct arterial access;*
- *For all driveway access approved on Bell Road, appropriately designed deceleration lanes will be constructed by the applicant;*
- *No additional access rights shall accrue through property subdivision or rezoning.¹⁷*

Implementation of this plan involved identifying appropriate access control strategies and categorizing 174 separate access locations (existing and planned) into eight control strategies. The inventory and evaluation of access locations was closely coordinated with City staff, resulting in specific recommendations for each of the 174 access locations. Full implementation of the Bell Road Access Control Plan was conducted in three phases:

- Phase 1 – Develop Bell Road Access Control Plan.
- Phase 2 – Bell Road Access Control Plan Safety Review and Cost/Benefit Evaluation.
- Phase 3 – Bell Road Access Control Plan Public Involvement/Adoption Program.

¹⁷ Ibid.

5.0 Conclusions and Findings

The review of access management practices and regulations presented herein reveals that access management is a local matter. Although the examples provided show basic approaches to access management, the method or framework chosen for such action is entirely subject to local conditions and needs. The most appropriate access management practice for US-60/Grand Avenue must be determined from the conditions along the roadway and the needs of the several communities through which it passes.

With the information presented in this Technical Memorandum, a team comprised of the Arizona Department of Transportation (ADOT), Maricopa Association of Governments, Maricopa County Department of Transportation (MCDOT), and the local municipalities can begin to understand the length and breadth of access management as a regulatory tool for sustaining highway capacity and safety while assuring reasonable access to properties abutting the highway and adjacent communities areas and functions. This Technical Memorandum is intended to serve as an educational brief that provides a practical overview of access management as an instrument for guiding regional and local decisions regarding access of approaches to US-60/Grand Avenue that can be consistent with and supportive of state, regional, and local development and social goals and objectives.

5.1. General Conclusions

There are some key considerations that should be examined as part of the US-60/Grand Avenue COMPASS study that are community-specific and corridor-level strategies, including:

- Improve safety by implementing access management strategies.
- Support key activity center and economic development zones along US-60/Grand Avenue that can provide a basis for formulating focused access management strategies to foster a balance between improved safety conditions and attracting new development. These strategies could relate to:
 - Geometric improvements (spot locations);
 - Driveway consolidation (driveway density reduction – spot locations);
 - Overlay zoning districts that correlate to the desired land uses and densities (specific locations or corridor);
 - Transit stop/station accessibility (corridor level);
 - Ordinance development (municipal); and
 - Develop a Corridor Charter supported by corridor municipalities that would provide a framework for the common understanding of issues and problems, document a set of goals, objectives, and define an agreed upon direction.

During the course of this study, a comprehensive review of access management principles as well as design and operational treatments was prepared by MAG and presented at a Planning Partners Workshop, March 4th and 5th, 2014. This presentation has been included as a means of providing immediate review of the issues

and factors associated with the subject of access management (**Appendix TM4-10**) The presentation includes examples of recommendations for addressing the complexity of turning movements in the US-60/Grand Avenue corridor.

5.2. Specific Findings

Although preliminary, there are a number of findings associated with conditions in the US-60/Grand Avenue corridor that deserve mentioning.

- Maneuvering in travel lanes both prior to and downstream from each access point on a major arterial adds turbulence to the main through lanes and should be minimized to the extent possible and practicable.
- Signal spacing on Grand Avenue is irregular with many separated by very short distances. In the ten mile section from Reems/Meeker to Cotton Crossing, there are 23 signals. Eleven of the segments separating the signals are less than 2,000 feet in length. Eight segments are less than 1,400 feet in length. This makes two-way signal progression impossible over the length of the corridor and difficult even for one-mile sections.
- Many of the left-turn lanes on Grand Avenue are under designed by current standards. Many of the turn lanes are too short and do not provide sufficient distance for the deceleration or storage of turning vehicles.
- Along several sections of Grand Avenue the median area is narrow yet left-turn lanes are installed. The narrowness makes the lanes more difficult to use and decreases the mitigation of impacts a proper width median can provide.
- While frequent right-turn opportunities can provide a more convenient and direct trip to a destination, the accumulative impact on roadway operations and safety of many convenient right turn locations is not acceptable for a major arterial. The performance of the arterial will suffer to some degree each time an additional right turn is needed.

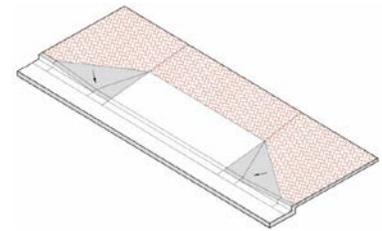


The segment of Grand Avenue shown below (Southbound at 85th Avenue) has raised medians that are too narrow for the signs, narrow turn lanes and short turn lanes with inadequate deceleration and storage lengths. The photo also shows a series of left turns that are too closely spaced.



This photo taken near West Butler Drive shows the spacing between driveways varies from 10 to 100 feet. Most occurrences of this nature are southeast from North 71st Avenue to I-10.

photo). Curb-cuts require very low speeds and focused operational control of the vehicle, due to usually narrow widths. Private driveway design can be improved to reduce impacts on the arterial. Driveway width should be based on the swept path of a typical design vehicle. As the outside travel lanes on Grand Avenue are immediately adjacent to the gutter, driveway curb-cuts should be wider with taper sides, as shown at right.



- Sight distance is a very critical design element affecting safety, not only relative to driveways as noted above, but also relative to entering a highway. Although only a few sight distance concerns are apparent along US-60/Grand Avenue, maintaining adequate sight distances, especially at intersections, based on a design speed of 50 mph, would improve operational and safety conditions in the corridor for all motorists.



The intersection sight distance for the stop location in the picture below requires the driver to look back over their left shoulder to judge vehicles that might quickly turn from Grand Avenue onto the frontage road.

- Connections between frontage road intersections and US-60/Grand Avenue are not sufficiently deep (only 50 feet) to safely accommodate vehicle movements between the two facilities. There is a lack of storage and the short turning radii results in limited capacity and operating difficulties.
- Trash pick-up should not occur with collection vehicles in the through-traffic lanes of US-60/Grand Avenue, yet it occurs in certain sections on a regular basis.

- Advanced street signing is lacking in many instances along the corridor. Signage helps drivers anticipate access point and reduces the potential of last minute maneuvers to be in the correct lane.
- Trains are frequent along Grand Avenue and complicate the operation of each four-leg intersection.

- It is typical for the queue associated with a major intersection to back up and block movements at a minor intersection. While drivers often want to and do make a left turn through a gap in the queue (see photo at right), it is not always a safe maneuver.
- Refer to **Appendix TM4-10** for specific action recommendations at various points along the US-60/Grand Avenue corridor presented for consideration the Planning Partners Workshop.



Vehicle attempting a left turn through queue created by downstream traffic signal.



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

APPENDIX TM4-1

Technical Memorandum: Existing Conditions and Findings Regarding Access Management, US-60/Grand Avenue Corridor

**US-60/Grand Avenue
Corridor Optimization, Access
Management, and System
Study (COMPASS)
Loop 303 to Interstate 10**

Technical Memorandum (Administrative Draft)

**Existing Conditions and Finding
Regarding Access Management**

Part of project task A3

Prepared For: Maricopa Association of Governments

Prepared by: Philip B Demosthenes LLC

In association with: Burgess & Niple, Inc.

April 2013 (Rev. October 2013).

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INTRODUCTION TO THE Grand Avenue PROJECT

The United States Route 60 (US-60)/Grand Avenue Corridor Optimization, Access Management, and System Study (COMPASS) – Loop 303 to Interstate 10 is being conducted by the Maricopa Association of Governments (MAG) in order to identify a long-term solution for accommodating multi-modal travel demand, access to property, local and arterial streets, establish operating principles to improve the effectiveness of traffic operations, prepare an Access Management Plan, and help establish decision criteria and procedures that will help preserve the desired performance of Grand Avenue into the future.

A partnering charter was signed on February 22, 2012, by the political leadership of the communities within the US-60/Grand Avenue COMPASS corridor (Grand Avenue). The outcomes of this technical study will address the following goals that were identified in the charter:

- Cooperatively create an overall vision for the US-60/Grand Avenue Corridor that embraces the important regional function of Grand Avenue as a significant high capacity, multimodal corridor and that can recognize the unique character of different sections of the corridor and the communities it passes through.
- Cooperatively define the operational character for the US-60/Grand Avenue Corridor that will enhance economic development, maintain accessibility to adjacent land uses, improve traffic operations, and reduce highway and rail conflicts.
- Establish an access management system that provides an efficient means to accommodate intersecting roadways and access to and from adjacent properties. After the system is recommended and agreed upon, each stakeholder will incorporate the principles and recommendations into their transportation, economic development and community development.
- Develop guidelines for signage, landscaping and aesthetic treatments along the corridor recognizing the different communities along the corridor.
- Work together to provide the affected stakeholders, including daily commuters, local residents, and adjacent property owners and users with information about the project and opportunity to contribute to the study's outcome and recommendations.

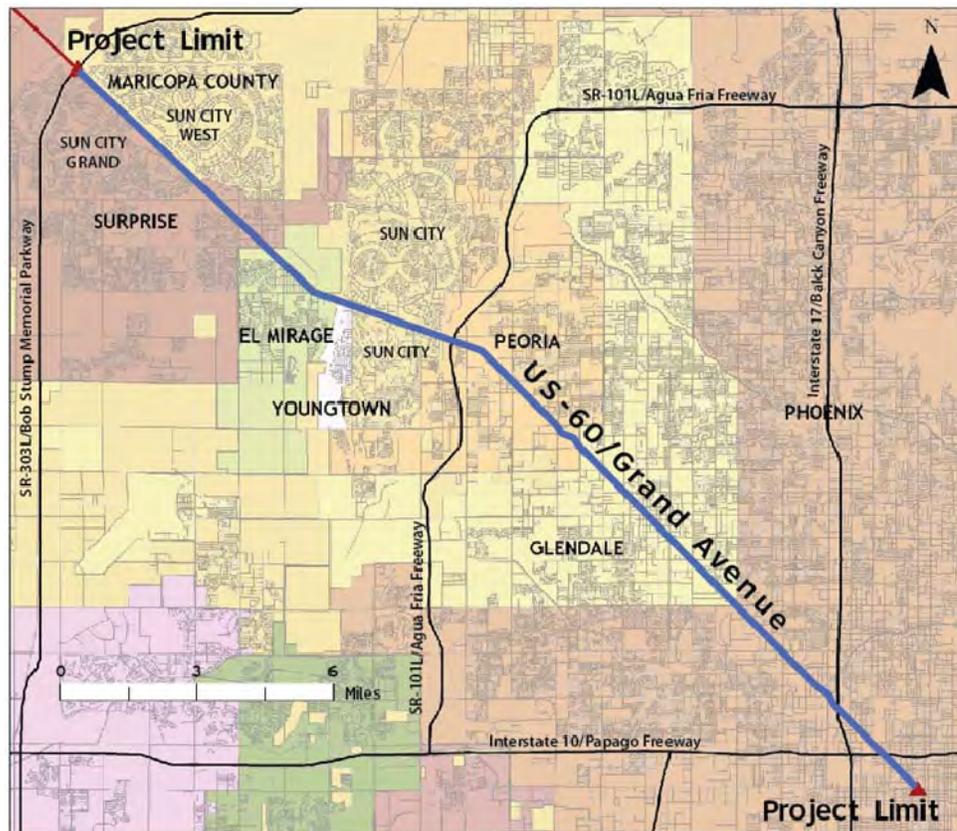
PURPOSE OF THIS MEMORANDUM

To introduce the principles, the benefits, the road design and technical concerns regarding the elements of access that exist along Grand Avenue, to report on existing access conditions and to explain how the current conditions on Grand Avenue relate to the potential strategies and techniques that might be recommended for the anticipated access management plan.

The management of access points along a corridor like Grand Avenue is the single most important roadway design element that impacts traffic safety and travel efficiency. As an illustration, three years of Grand Avenue crash records have identified that over 80 percent of all crashes are intersection related.

Study Area

The Grand Avenue study corridor begins at the traffic interchange (TI) with State Route 303 (Loop 303) in the City of Surprise and ends at the Willetta Street intersection in the City of Phoenix a distance of about 23.8 miles. The corridor is oriented northwest to southeast and passes through portions of the City of Surprise, City of El Mirage, Town of Youngtown, City of Peoria, City of Glendale, City of Phoenix, and areas of unincorporated Maricopa County such as Sun City West.



Grand Avenue is a state and regionally significant six lane arterial roadway that serves as a vital transportation corridor in the northwest quadrant of the Phoenix metropolitan area. It is designated as a part of the National Highway System which is a state requested Federal designation. US-60 extends northwest to the community of Wickenburg where it connects with and becomes US-93, which reaches Interstate 40 near Kingman in northwestern Arizona and then continues to Las Vegas, Nevada. This is the primary route connecting the large metropolitan areas of Phoenix and Las Vegas.



Photographs taken during field visits along Grand Avenue illustrating the design of Grand Avenue at various locations, truck and rail freight movement and traffic congestion.

INTRODUCTION AND CONCEPTS IN ACCESS MANAGEMENT

WHAT IS ACCESS MANAGEMENT?

Access management is the careful control of the location, spacing, design, and operation of public intersections, private driveways, medians and median openings to a roadway.

It involves roadway design applications such as median treatments, auxiliary turn lanes and the appropriate spacing of traffic signals.

The application of access control has been a useful roadway operation strategy since the latter part of the 19th century and is a key component of the Interstate Highway System. The contemporary practice of access management extends the concept of access design and location control to all roadways – not just limited access highways or freeways.

Access management is particularly important along major arterials and other principal roads whose primary function is the safe and efficient movement of traffic. As the roadways step down in functional importance towards truly a local street, more access can be allowed. But even on local streets such as minor collectors or residential streets it is still necessary to address basic access related engineering and safety considerations such as design, sight distance, safety and location.

Both research and experience have shown that careful considerations of location and design of access have significant benefits to public safety, community and economic vitality, and results in smoother traffic flow, better travel times and a less stressful drive.

Managing access involves finding a balance between the dual roles that highways serve: The safe and efficient movement of people and goods by road-based transport (car, truck, bus, motorcycle, bicycle and foot); and providing for vehicular access to abutting land - either directly or indirectly via intersecting local roads and private circulation such as parking lots.

In general, these two roles can be in conflict. Access related turning movements by motorists at intersections and driveways interfere with the free flow of traffic resulting in the less efficient and less safe movement of traffic. The degree to which this interference is problematic depends on the purpose and assigned function of the road.

As shown by the figure below, it is generally recognized that as the function of the road grows in importance from local to arterial, access must be reduced in favor of increasing movement until the highest form of arterial is reached, the freeway.

The Mobility-Land Access Relationship

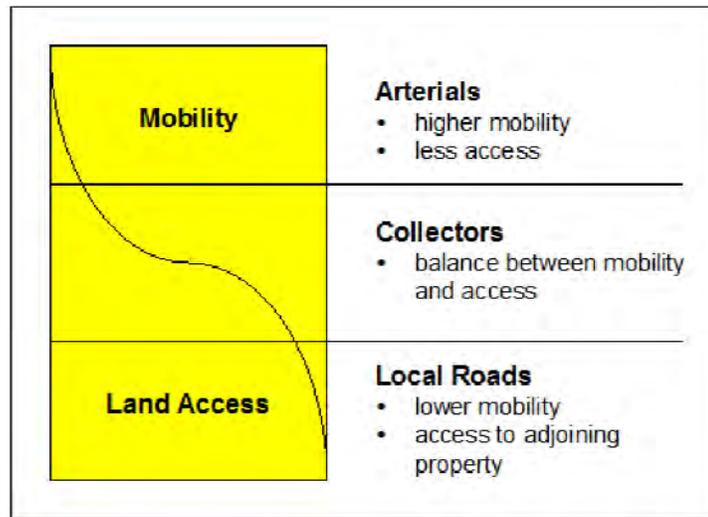


Figure 1. Concept of roadway functional hierarchy, from “Safety Effectiveness of Highway Design Features” FHWA RD-91-044 (Adopted from System Considerations for Urban Arterial Street, ITE, 1969).

WHY MANAGE ACCESS?

Roads play a vital role in economic development and it is important that each road performs correctly, efficiently and achieves its assigned purpose. Efficient mobility and a well-operating roadway network are considered to be key preconditions for local, regional and national economic growth. We invest in transportation systems at great cost so that they can be efficient and the cost of transport and communication can be reduced, thereby facilitating trade and creating wealth. Productive roads are generally seen as an engine of growth and a guarantor of mobility, both internally to the region and externally to the global economy.

Traveling is so common in our daily lives we usually take it for granted. What we notice most about traveling is the quality of our travels: How long will it take to get there? How safe will travel be? How many red lights will we encounter? Will we be delayed by stop-and-go congestion? Will there be someone slowing or stopped in the middle of the road waiting to make a left turn? Will there be a long traffic queue where we want to turn left? When we travel, the majority of delay and congestion is related to access points – mostly intersections.

For over 100 years, research has clearly shown that managing access location and design on arterials is the most important road design element determining road efficiency and public safety. Because of the role access management plays in maintaining efficiency, it must be addressed in corridor studies such as this to assure that roads can indeed play a productive role in the regional economy.

Travel efficiency is a key economic aspect for every sector of business including natural resources, manufacturing, distribution and retail. Retail business, including unique regional events and tourism activity, depend on market area,

which is generally defined by travel time. As drivers we make decisions based both on interest and the anticipated quality of transportation usually measured in terms of travel time and travel safety.

Tourism is not only dependent on attractors, like the quality of an area or town for visiting, goods and services, recreation, or special events; it is also affected by the qualities of the travel necessary to get to a destination. As the regional highways that bring visitors and commerce to an area become more difficult and less safe to navigate and as travel time is lengthened, fewer people will visit. The supply side of businesses like the delivery of goods to shops and restaurants also becomes more costly as travel time increases.

Transportation inefficiency increases the cost of doing business. Movement of freight such as goods and natural resources is a business cost that includes fuel, labor and equipment. In a 2005 study of shipping costs, the Federal Highway Administration developed a conservative value of \$26.70 per hour of traffic delay.

Improving transportation safety reduces worker risks and product loss during travel. Transportation reliability means transportation costs are more predictable over time and there is less risk of significant increases in transportation related costs and problems.

Poor transportation facilities and difficult travel conditions can also affect other aspects of the local economy. For instance, as commuting for residents becomes more difficult and unpleasant, residential real estate markets can be adversely affected as people find it necessary to live closer to their jobs or near routes with less congestion. The same is true for commercial businesses. When travel to businesses becomes more difficult, the market for those businesses shrinks as customers become less willing to endure the increasing inconvenience of travel.

Roads are also an important public investment. They are costly to build and are costly to improve or replace. With revenue-constrained agency budgets, effective management of the transportation system is not an option – it is essential. It is simply not practical or economically responsible to allow regional arterial roadways to deteriorate with the assumption that they will be replaced or reconstructed in the future.

By managing roadway access, government agencies extend or improve the life of roads and highways by preserving capacity and public safety. Not only does access management preserve the transportation functions of roadways, it also helps preserve long-term property values and the economic viability of abutting development by helping ensure long-term reliability in road performance.

From an environmental perspective, improved traffic flow translates into greater fuel efficiency, reduced vehicular emissions and lowers the need for wider or new roads. These are both economic and environmental benefits.

The overall benefits of access management include the following:

- Supports sustainability – preserves the function of the road
- Cost effective – low cost improvements have significant results
- Preserves the function of roadways reducing improvement needs
- Reduces accidents, lowering costs to motorists
- Improves capacity, reducing reconstruction needs
- Reduces travel time and delay
- Smooths traffic flow
- Preserves market area for businesses
- Improves customer safety and convenience
- Maintains more efficient freight movement

SAFETY

Since the latter part of the 19th century there has been recognition among practitioners who specialize in roadway efficiency and safety that there is a direct correlation between increasing levels of roadway access and increasing levels of congestion, reduced traffic speeds and a significant increase in traffic crashes even when horses, carriages and bicycles dominated urban roads. The first access controlled route was established in New Jersey in 1902.

Without exception, studies through history show that the number of accidents increases as the density of arterial access connections increases. Individual studies show that accident rates vary depending on several variables, including roadway width, presence of a median, roadway speeds, and overall traffic and intersection volumes. A 2005 study of the safety effects of access by Dr. J. L. Gattis (University of Arkansas) referenced 11 other studies between the 1940's and 2005 where the crash rate consistently increased as the number of median openings or the number of access points increased.

In Arizona and nationally, over 50 percent of all crashes continue to be related to access movements. As mentioned earlier, on Grand Avenue, over 80% of all crashes have occurred at intersections. National studies indicate that human error is the cause of over 90 percent of all crashes. Any road design or safety strategy that can reduce the probability of driver error, reduce the frequency of conflict experienced while driving will decrease access related crashes and have a significant effect on total crash history in the community.

Crash data indicates that on average, the addition of the each access point on an arterial increases the crash rate by four percent. National Cooperative Highway Research Project Report 420, Impacts of Access Management Techniques (1999), reviewed completed safety studies and also conducted field studies. That report also concluded that increasing the access frequency would increase the crash rate.¹

¹ Impacts of Access Management Techniques, NCHRP, Transportation Research Board, Washington, DC, 1999, and the Access Management Manual, TRB, National Research Council, Washington, DC, 2003.

As an example, in the figure below, increasing the access rate from 10 to 20 per mile on an arterial resulted in an average 30 percent increase in the crash rate. Neither the Gattis study nor NCHRP 420 found any studies to the contrary. NCHRP 420 has been the most complete report to date on the impacts of access management techniques.

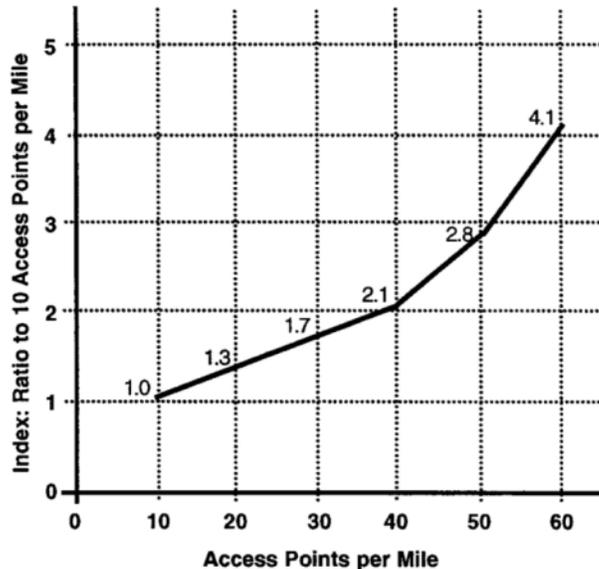


Figure 2. From TRB NCHRP Report 420, figure 15. The figure is a composite from various research studies comparing the number of access points per mile to the number of crashes per mile.

From the research it is easy to draw the conclusion that there is no safe access. Each access allowed will contribute to the crash frequency and rate to some degree. Other studies show that by managing the frequency and severity of access related conflicts along a corridor, crash reductions of 20 to 60 percent have been achieved depending on the source of access related crashes in the before condition and the access related roadway improvements selected.

In addition, crashes most often require a government response to assist including services of police, fire and other first responders which result in costs to the community and some risk to the responders. Crashes are also incidents that often reduce or block the flow of traffic and sometimes lead to secondary accidents.

SIGHT DISTANCE

The ability of the driver to see potential conflicts is sight distance – the line of sight between the driver and the conflict whether it is another vehicle or an unexpected object on the road such as an animal or rocks.

Stopping sight distance is the distance from the approaching driver to the conflict such as being able to see a stopped vehicle in the road as you come around a curve or over a hill. It includes the distance traveled while perceiving a

conflict, the reaction time (taking action), and the braking distance to slow or stop the vehicle.

Intersection sight distance is for the entering driver to be able to see left and right while waiting at an intersection for a gap in traffic. Intersection sight distance is longer than stopping sight distance. On higher speed and wide roads like Grand Avenue, judging approaching speeds and gaps in traffic is more difficult and certainly a higher risk for error.

Maintaining what is called the intersection sight triangle is often an ongoing task. Figure 3 illustrates the sight triangle concept.

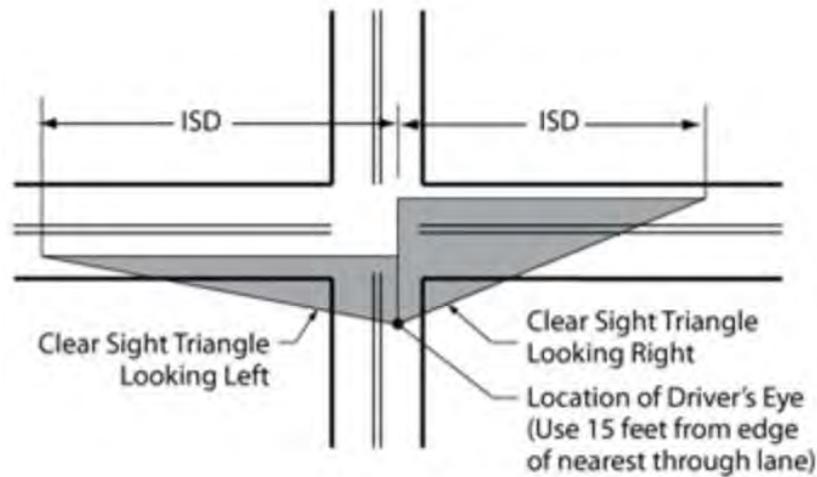
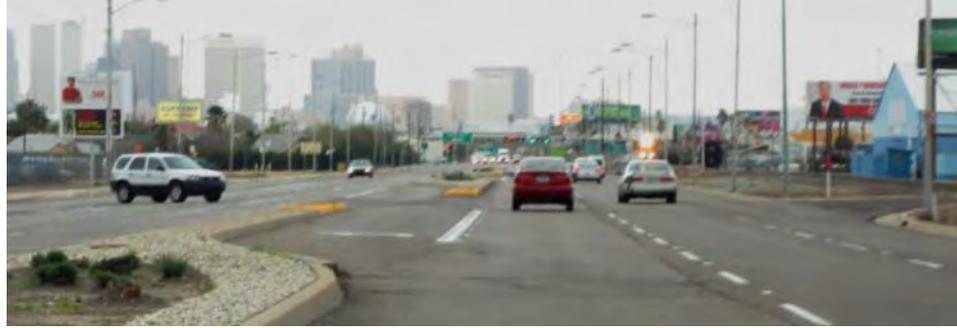


Figure 3: Sight Distance Triangle Concept, from FHWA Office of Safety

The sight triangle is usually applied to non-signalized intersections such as a minor street or driveway. Roadway design calls for the entering driver's eye to be about 15 feet from the edge of the nearest through lane. Assuming the driver wants to make a left turn on a six lane highway (Grand Avenue), the sight distance should be about 630 feet for an entering passenger car and 815 feet for a single unit truck.

The very width of Grand Avenue increases the risk of a crash for left turns and crossing vehicles. To make a left turn onto Grand Avenue the entering driver must find a gap in about 5 lanes of traffic width. A driver crossing the entire width must be able to determine a gap in three lanes of traffic approaching from the left at relatively high speed while also judging a gap in traffic approaching from the right three lanes on the far side of the median.



Decision sight distance is the distance a driver needs in order to make a considered decision such as changing lanes or other avoidance behavior not just simply putting on the brakes. Decision sight distance provides both the driver on the highway and the driver at the intersection greater sight distance and therefore more time to make a good decision.

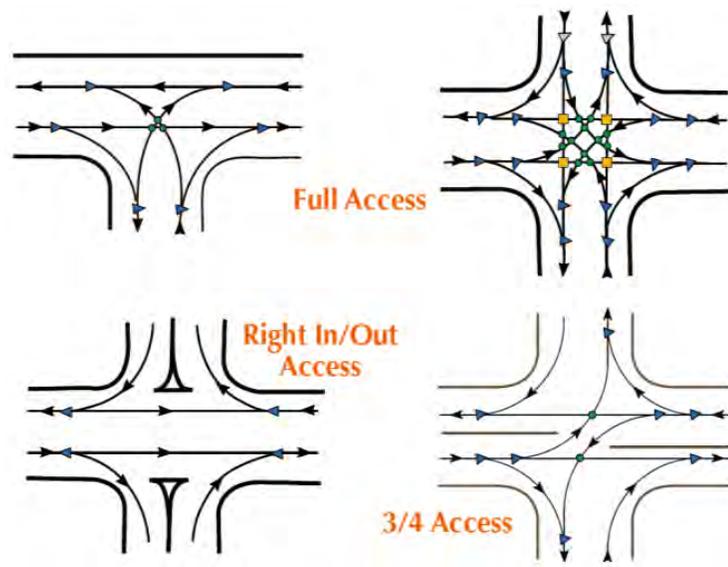
CONFLICT MANAGEMENT

The locations where the paths of vehicles will cross, merge or diverge are called conflict points. Conflicts are created along highways wherever driveways, intersections and other access points are introduced. These conflicts involve traffic traveling on the highway, crossing traffic, and traffic turning into or out of an intersecting roadway.

The number of conflict points that occur at an access location varies significantly depending on the type of access. Full movement access points have the highest number and a simple right-in-right-out access point has the least.

The number and type of conflicts at a multi-leg, multi-lane intersection such as Grand Avenue at North 35th Avenue vary depending on signal phasing and permissive movements. The purpose of the traffic signal is to manage the conflicts and allow turns in heavy traffic. However, a number of conflicts remain with each phase and drivers make errors at signals. It is rare that a traffic signal actually reduces crashes and severe crash types remain. Turning errors, red-light running and rear-end crashes make up the majority of signalized intersection crashes.

The following simple diagrams illustrate conflict points and provide a count of conflict types for four intersection configurations on a two lane road. Grand Avenue has three through lanes in each direction so the conflict numbers at a non-signalized access would be higher unless some movements were restricted with median control.



	Crossing ■	Turning ●	Merge/Diverge ▶	Total
Full Access +	4	12	16	32
Full Access T	0	3	6	9
¾ Access	0	2	8	10
Right In/Out Access	0	0	4	4

Figure 4. Adopted from Minnesota DOT Traffic Safety Fundamentals Handbook, 2008. Comparing conflict types and numbers by intersection type.

Roadway conflicts can be measured in number per mile as well as number per intersection and their expected severity as shown above. At access locations, crossing or approach turn conflicts are considered the most likely to cause severe injuries. When the speed of vehicles or the frequency of access along an arterial highway increases, the rate of conflict and the average frequency of crashes increases.

Besides the conflicts due to crossing paths within the intersection, traffic signals introduce additional conflicts usually seen as rear-end crashes beyond the actual intersection. When a traffic signal goes to red, everyone must stop or a rear-end crash, or worse, red-light running occurs. Aggressive driving and inattentive driving (i.e. texting) is increasing the likelihood of failure to stop.

In its simplest form, access management is in effect conflict management. When a motorist takes a trip, the fewer conflicts that occur during the driving experience from origin to destination, the less the delay caused by conflicts, including red lights, and the lower the probability of a traffic crash.

Studies also show that a greater percentage of crashes occur involving left turns. A left turn out takes more time than a right turn and exposes the motorist to more potential conflicts than a right turn. Left turns are a bit more dangerous in that the crash type, usually a broadside, can have more severe injuries and an

out-bound left turn onto the highway is more difficult, the motorist needing to judge gaps in traffic from two directions.

Due to the number of severe conflict types and research showing the frequency of crashes at intersections, managing the location and frequency of full movement intersections is one of the most important elements of access management. Intersections typically have higher crash rates compared to mid-block segments. Intersections with traffic signals almost always have higher crash rates than before signals were installed.

Traffic signals usually reduce the rate of severe injury crashes but most always increase the rate of minor, damage only crashes such as rear-end types.

For intersection control, only a modern roundabout reduces conflict points and eliminates severe conflict types. Roundabouts are a much safer form of intersection control compared to traffic signals. Roundabouts only allow right turns. As a result when crashes do occur they are normally sideswipe or rear-ends crashes at low speed and less severe.

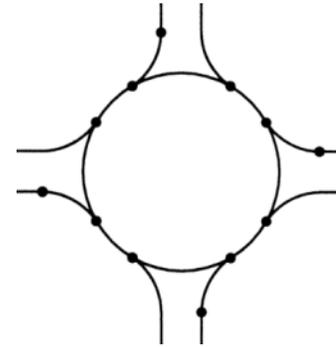


Figure 5: Conflict points at a roundabout intersection

INTERSECTIONS AND TRAFFIC SIGNALS

National crash data shows that the majority of traffic crashes occur at intersections. Below is a figure by the Federal Highway Administration comparing the percentage of crashes occurring at intersections compared to non-intersections.

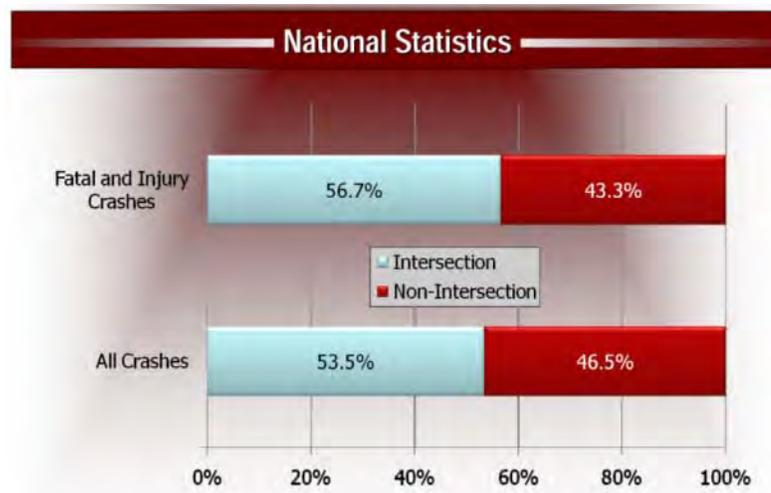


Figure 6. FHWA "Safety at Unsignalized Intersections" presentation based on national crash data, 2002 to 2006.

When full movement intersections become signalized there is a measurable reduction in intersection capacity. With the traffic signal, one or more signal

phases are devoted to the side street and turning movements and not the main arterial. Traffic on the main arterial must stop and wait. While strategies such as signal progression timing, and side street detector loops and computerized systems improve or optimize traffic signals, a capacity reduction remains and traffic on the arterial experiences additional delay with each additional traffic signal.

On two-way highways like Grand Avenue, two-way traffic progression is much more difficult when traffic signals have irregular spacing and when they are spaced close together. Computerized traffic signal systems cannot overcome problems caused by the physical location of traffic signals when trying to maintain good traffic progression in both directions.

FRONTAGE ROADS

For many decades frontage roads have been used to keep private driveways from connecting to the main lanes of major arterials such as Grand Avenue. They were seen as a reasonable accommodation to mitigate the impacts of controlled access highways. They exist in part because highway agencies have not had the authority to plan or create local street systems to improve local circulation and secondary access. By acquiring a wider right-of-way, state agencies were able to build a secondary road immediately parallel to a main highway. Decades ago when traffic volumes on frontage roads were low and the area was low density almost rural in nature the problems created by side-by-side roads were not seen as significant.

With modern traffic volumes created by urbanization and commercial growth parallel frontage roads began to have operational and safety problems. The frontage road and main intersections are close together making it difficult for large vehicles and large volumes of traffic as well as complicating traffic signal timing and adding delay to the main road traffic due to design complexities. Frontage roads become part of the local network and are rarely closed but sometimes their connections to the main highway are restricted or closed due to necessity as operational and safety problems become acute as traffic volumes continue to grow. Another alternative is to make the frontage-roads one-way on each side. This improves traffic operations but they do not function very well as local secondary streets and other circulation improvements are necessary to improve local connectivity and circulation.

The contemporary strategy is for the highway agency and the local governments to work cooperatively in transportation planning of streets, roads and developments with internal circulation to achieve an effective network, a hierarchy, of roads and reduce the need for frontage roads. Rather than frontage roads, access solutions are provided by internal circulation, backage roads and non-fronting service roads. The result is better circulation, better spaced intersections, safer and more effective local circulation and more effective use of land. Access management plans are one method to achieve a cooperative transportation and access location plan.

SPEED DIFFERENTIAL

Speed differential created by access activities is often a source of access related congestion, delay and crashes. An example of speed differential is when a driver slows to about 10 mph on Grand Avenue to make a right or left turn and the prevailing speed on Grand Avenue is 45 mph. This represents a speed differential of 35 mph.



For the less observant and less careful driver, unanticipated speed differential in a through lane can result in a crash.

Entering onto Grand Avenue also creates speed differential. When traffic enters onto the highway, drivers on Grand Avenue may need to slow down which reduces the smooth flow of traffic, increases travel time and can cause congestion if traffic volumes are high and the cause of the speed differential is frequent or long lasting.

The figure below is an illustration of how the likelihood of a crash increases exponentially as speed differential between a slowing vehicle and a following vehicle increases.

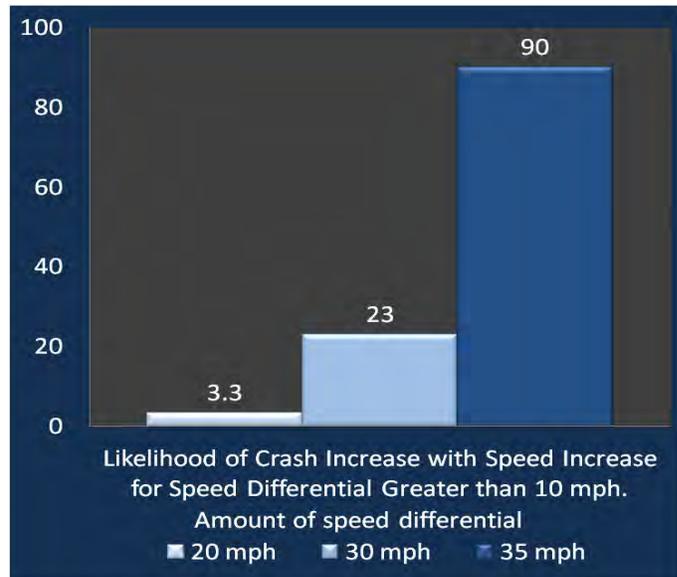


Figure 7. Relative Crash Involvement Rate Ratios [adopted from Stover and Koepke, 1987 Transportation and Land Development, Institute of Transportation Engineers]

Speed is a factor for both vehicle crashes and vehicle to pedestrian crashes. As vehicle speed increases above 20 mph, the likelihood of injuries increases rapidly. This is because kinetic energy (the energy of a car in motion), increases with the square of the speed. For example, a car traveling at 40 mph has four times the energy but only twice the speed as the same car traveling at only 20 mph.

The figure below shows how rapidly the potential for serious injury or death increases as the speed of the vehicle increases in a vehicle/pedestrian crash. A pedestrian hit by a vehicle is 9 times more likely to be killed at 30 mph than a vehicle at 20 mph. This is one of the reasons pedestrian and school zones are posted at 20 to 25 mph and why crossing Grand Avenue must be done carefully. In the three year crash study period for Grand Avenue there were 8 pedestrian crashes including two fatalities.

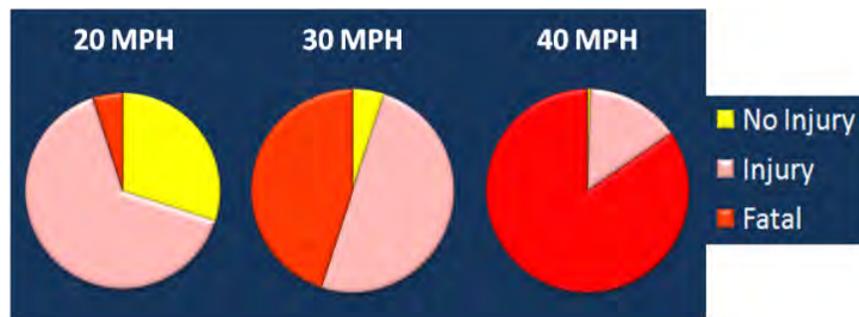


Figure 8. How the probability of a pedestrian fatality rapidly increases as vehicle speed increases. Adopted from "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries". U. S. DOT, National Highway Traffic Safety Administration, DOT HS 809 021 October 1999. (Graphic produced by P. Demosthenes)

GOALS OF ACCESS MANAGEMENT

The known effect of access activity on roadways leads to the following goals and objectives of an access management on Grand Avenue.

- Reduce the total number of conflict points on the road
- Reduce the type of conflict points that can result in severe crashes
- Greater separation between access points
- When access is allowed, mitigate its impact by improved access design
- Maximize the available intersection sight distance
- When access is allowed, do not allow left turns unless necessary
- Using frontage and backage roads and local streets, reduce the need for new direct access to Grand Avenue
- Reduce the occurrences of speed differential caused by motorists slowing and turning or stopped in traffic caused by access movements
- Reduce occurrences of stopping due to traffic signals
- Increase the smooth flow of traffic by improving signal spacing
- Switch to roundabout intersection control
- Set a range of access standards for location, design and type commensurate with the functional importance and speed of Grand Avenue.
- Incorporate access management location and design principles and criteria into land-use and site development requirements.

These items will accomplish a reduction of roadway conflict points and where conflict will occur; create a roadway design that minimizes the severity of the conflicts.

EXISTING CONDITIONS

The project team collected traffic data, maps, plans, publications, crash data, photographs and video and conducted a thorough reconnaissance of the corridor to determine access related issues.

US-60/GRAND AVENUE CORRIDOR

This 24 mile corridor is a major six-lane urban arterial with a normal speed limit of 45 mph. While it is consistently a six-lane highway, the design of the six lanes varies over its length. The oldest roadway design is found at the southeast end in Phoenix and Glendale and then the road becomes progressively more modern proceeding to the northwest with the sections in Surprise approaching Loop 303 being the most modern and improved.

The entire length has a center median lane that varies in its design and width. At the most southeasterly end there is about 1,500 feet of painted median beginning north of McDowell and extending south past the I-10 structure. The remaining 23 miles has a raised median with openings at all signalized and some non-signalized intersections and private entrances. Where the median is open left-turn lanes are provided but the left turn lane design varies. Left turn lanes vary in length and width. They tend to be very short and narrow in the older sections and somewhat longer in the newer sections.

Right turn-lanes are rare in the 10 miles between Interstate 10 and North 71st Avenue. With over 310 access points, about 277 being driveways, there are only six right turn lanes. At Cotton Crossing and north-westerly to Dysart there are only nine right turn lanes in eight miles, three private and six at public intersections. North of Dysart right turns are more frequent for both public and private access points.

Over the length of the project there is a mix of non-signalized and signalized full movement intersections. There are three-leg, four-leg, five-leg and six-leg intersections. Some major junctions have been improved to include grade separations to separate high traffic volume cross arterials.

In some sections private driveways are frequent, may be very close together and sometimes have median openings opposite allowing left turns. Most driveways use a curb-cut design with a very small actual radius. Driveways into larger newer centers at the northwest end are usually built with curb-returns similar to a local street intersection.

The Burlington Northern Santa Fe railroad corridor is on the easterly side from Loop 303 to about West Olive Avenue, the north end of Glendale, where it switches to the west side and continues to the railroad yards along North 19th Avenue. Because of the railroad right of way abutting Grand Avenue there are no abutting businesses along the railroad property northwest of West Olive and only a few abutting railroad related business activities south of West Camelback Road. The presence of the railroad on one side or another greatly reduces the

potential for private driveways and is one of the reasons Grand Avenue operates as well as it does. But trains do impact the performance of Grand Avenue several times a day by cutting off side streets temporarily during train crossings.

ALLOWING ACCESS TO A MAJOR ARTERIAL

Every access point on a major arterial with higher speeds creates a number of problems for the arterial. National crash research studies consistently indicate that each additional access location increases the potential for crashes. An access point results in vehicles slowing and turning from the through travel lanes. An access point is where vehicles enter the through lanes. Maneuvering in travel lanes both prior and downstream from each access point adds turbulence to the main through lanes.

To some extent access is certainly a necessity. The purpose of access management is to manage the location and design of each access opportunity to decrease its impact on the efficiency of Grand Avenue and to minimize the safety impacts. The foremost strategy of access management is to reduce the frequency and to increase the spacing between access points.

TRAFFIC SIGNALS

In the 13.5 miles between Loop 303 current on-ramp and W Olive/ N 75th, there are a total of 39 full movement* intersections. Twenty-six have signals and 13 do not. All but one of the non-signalized intersections is a “T” intersection because there is no fourth leg across the railroad tracks. Of the 26 signals, 16 have four legs with one approach across the railroad tracks and 10 are three-leg “T” intersections that do not have a fourth leg across the tracks. [*full movement means left turns to and from Grand Avenue]

Between North 71st Ave (south end of railroad overpass) and West Willetta Street near Interstate 10 there are 42 full movement intersections in about 9.5 miles. There are eleven traffic signal public intersections and 31 non-signalized full movement intersections. Of these there are thirteen non-signalized public intersections and eighteen private full movement intersections.

Full Movement Intersections	Signalized	Non-signalized
Loop 303 to W Olive/N 75 th 13.5 mi	26	13
N 71 st Ave to W Willetta St, 9.5 mi	11	31

Traffic signal spacing is a very important factor in achieving progressed traffic flow for both directions of traffic at 45 mph. Even spacing at about one-half mile intervals works best to achieve two direction traffic flow on a major arterial. However, the signal spacing on Grand Avenue is irregular with many short spacing’s. In the ten mile section from Reems/Meeker to Cotton Crossing there are 23 signals. Eleven of the spacing segments are less than 2,000 feet. Eight spacing segments are less than 1,400 feet. This makes two-way signal

progression impossible over the length of the project and difficult even for one-mile sections.

While system level computerized controls and traffic detection systems will help improve traffic, it is difficult to overcome the physical locations of the signals. Computer controlled systems can also assist by using hourly adjustments to handle variations in morning, midday and afternoon traffic directional flows and optimize the operation of each traffic signal.

When signals are too close together the queue from one can backup and impact the operation of the other as shown below. This more likely occurs during peak hours when all phases of the signal cycle are operating over capacity. Closely spaced traffic signals reduce the capacity of the highway at the intersection when it needs it the most. In the image below, while the close signals are green, the signals in the distance are still red and the queue from the far intersection backs up through the closer intersection.



More complicated roadway design makes intersections more difficult. At the intersection below (Grand at SR 101 overpass), the road is curving to the right into the intersection and then immediately curves to the left in the intersection. A driver must be maneuvering the vehicle through the reverse curve while in the intersection taking care to stay within the lane while also being observant of two sets of traffic signals and turning vehicles. These roadway design complications add to driver work load and increases the potential for crashes.



Sometimes the queue from one major signal backs up to block a minor intersection. While drivers will often attempt make a left through a gap in the queue – this is not a very safe maneuver.



LEFT TURNS

Providing some opportunities to make a left turn from Grand Avenue is a given necessity. The purpose of access management is to manage the location and design of each left turn opportunity to decrease its impact on the efficiency of Grand Avenue and to minimize the safety risks of left turns for both the person making the turn and the traffic on Grand Avenue.

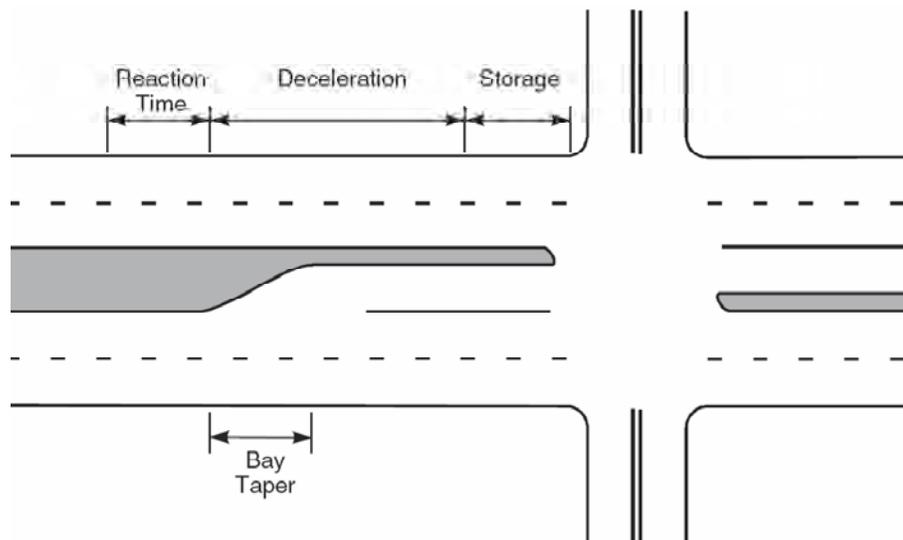
There are six major elements to consider in the location and design of left turns from the highway to access points.

- Every additional left turn location increases crossing conflicts with through traffic and will increase the crash rate to some degree. Every effort should be made to minimize the frequency of left turn locations.
- Each left turn location necessitates a turn lane.

- The left turn lane must be long enough to store turning vehicles without spilling back with waiting vehicles blocking the through traffic lanes. Storage calculation must include trucks if present.
- In addition to storage, there needs to be additional length to allow motorists to shift from the through lanes into the left turn lane and decelerate with a minimum of slowing occurring in the through lane.
- When the left turning volume is sufficiently large, there will not be enough gaps in oncoming traffic to allow enough turns and a traffic signal will be needed to stop oncoming traffic to allow the left turns. Stopping through traffic to allow the left turns has the greatest impact on the capacity of through traffic.
- The median area at the turn lane including the lane width, the gutters and the width of the raised portion must be wide enough to safely store waiting vehicles, provide for drainage, and enough raised width to hold signs including the width of the sign itself with clearance between the sign and any vehicle, a minimum of about 17 feet. If in a pedestrian area the median must comply with ADA median refuge dimensions.

While frequent left turn opportunities do provide a more convenient and direct trip to a destination, the accumulative impact on roadway operations and safety of many convenient left turn locations is not acceptable for a major arterial. The performance of the arterial will suffer each time an additional left turn is added. So each left turn location should be a necessity with a thorough consideration of alternative routes that might eliminate the need for the left turn.

Many of the left turn lanes on Grand Avenue are under designed by current standards. Many of the turn lanes are too short and do not provide sufficient distance for the deceleration or storage of turning vehicles. This means there is more than 10 mph speed differential in the through lanes. The standard factors to determine left turn lane length consist of a bay taper, deceleration length based on 45 mph and a queue length based on a calculation that looks at turning traffic volumes.



The distances for the design elements noted in the figure above at 45 mph calls for about 96 to 180 feet of taper, a deceleration length between 230 and 340 feet and sufficient storage length for the queue of waiting vehicles. The minimum storage length is 50 feet. If the turn lane design is based on a higher design speed, using 50 mph, the deceleration length should be between 290 to 410 feet and the taper closer to 180 feet. This means, as a very rough calculation, every left turn lane should be no less than about 375 feet. A length of 500 feet plus additional storage queue length would be better.

Northwest of SR 101 most all the turn lanes are longer with total lengths ranging from 300 to 500 feet. Southeast of SR 101 many of the left turns are short, some with total distance less than 90 feet when the minimum should be about 280 feet for a very low volume left turn.

Along several sections of Grand Avenue the median area is narrow yet left turn lanes are installed. The narrowness makes the lane more difficult to use and decreases the mitigation of impacts a proper width median can provide.

In the photo below the raised median is very narrow. Each sign is very close to the travel lane and close to the turning lane. There is a strong risk that the sign will be hit by turning vehicles. In addition, the turn lanes are very short.



The left turn lane below is very short and narrow in the older section of Grand Avenue. However, the top of the raised median is sufficient for signs and offers more protection for the occasional pedestrian than a narrower raised median.



The segment of Grand Avenue shown below (SB at 85th) has raised medians that are too narrow for the signs, narrow turn lanes and short turn lanes with inadequate deceleration and storage lengths. This also shows a series of left turns that are too closely spaced. In the photo there are three left turns in $\frac{1}{4}$ mile. In this area there are seven left turns southbound in $\frac{3}{4}$ mile. This creates a high frequency of left turn maneuvers in a short distance and increases the turbulence in the main stream of traffic both upstream and downstream as drivers maneuver to make a left or adjust their position after the changes in traffic conditions.



When left turn lanes are required to be longer using distances of 375 to 500 feet, a series of closely spaced left turn lanes cannot occur.

These two U-turn lanes only provide about 100 feet for deceleration and storage creating a significant speed differential for any vehicle following.



When left turn lanes are too short they overflow, backing into the inside travel lane creating higher speed conflicts and temporarily blocking one lane of the three through lanes.



The photo below shows a left turn lane about 430 feet long. The proper length can be determined by a traffic analysis. Sometimes the original constructed length works in the near term but fails as traffic increases due to growth, a change in traffic circulation or a change in a local development that generates a much higher traffic activity.



Another consideration for left turn lane length is providing extra storage for the additional delay when a train temporarily blocks the cross street and more vehicles wait until the train clears the intersection.



Along the corridor there are also left turns out of certain properties where there is an opening in the median. The motorist in the silver pickup is making a left turn from a driveway across three lanes of 45 mph traffic and must enter a gap on the other side of the median. The narrow median does not allow the truck to wait in the center. A left turn out at an un-controlled access point is one of the least safe access maneuvers.



RIGHT TURNS

There are many locations where right turns to and from Grand Avenue occur. The purpose of access management is to manage the location and design of each right turn opportunity to decrease its impact on the efficiency of Grand Avenue and to minimize the safety impacts of for both the person making the turn and the through traffic on Grand Avenue.

There are five major elements to consider in the location and design of right turn access points.

- Every additional right turn location increases slowing and delay of through traffic to some degree and can increase the crash rate. Every effort should be made to minimize the frequency of right turn locations.
- Each right turn location should have a right turn lane, full shoulder or taper to minimize the slowing and rear end crash possibility in the through traffic lane.
- The right turn lane must be long enough to store turning vehicles without spilling back with waiting vehicles blocking the through traffic lanes. Delay in turning right is caused by backage from a parking lot, pedestrians on the crosswalk, and other turning traffic.
- If the access approach crossing the railroad then the right turn lane storage must be long enough to hold the queue that forms while a train is present.
- When making a right turn onto Grand Avenue, the motorist must look the left for a gap in traffic. Care should be taken to ensure that the sight triangle at each access point is maintained.

While frequent right turn opportunities can provide a more convenient and direct trip to a destination, the accumulative impact on roadway operations and safety of many convenient right turn locations is not acceptable for a major arterial. The performance of the arterial will suffer to some degree each time an additional right turn is needed. Each right turn location should be a necessity with a thorough consideration of alternative routes that might eliminate the need for the right turn.

Every right turn location on a major arterial should have at least a minimum right turn lane unless the right turn volume is very low. Right turn lanes usually do not require much storage length as compared to left turns as right turns usually have fewer conflicts to cause delays. A railroad track would be an exception. Right turns on red are permitted in Arizona which also helps to empty the right turn lane. However, this is not always true. Some intersections are sufficiently busy that right turns are delayed due to cross traffic and left turn arrows and the capacity of right turns is diminished.

Every right turn adds to the width of the highway. This makes the walk for a pedestrian longer at traffic signals and requires more right of way width. While this may be a reason not to install right turn lanes, the lack of a right turn lane can create more significant problems. The solution is to limit access points to

the minimum necessary to provide access service and to improve access service from secondary roads and internal site circulation.

The image below shows how right turns cause braking in the outside travel lane.



The right turn lane shown below is only 75 feet long and immediately follows a traffic signal. While the turn lane does mitigate some of the impacts caused by a driveway very close to an intersection, a greater distance would be an improvement.



At an access close to a signal, the intersection queue backs up and blocks the motorist at the access from making a right turn. This location, opposite the left turn lane, also allows drivers at the driveway to cross over three lanes to enter the intersection left turn lane. If the access point is too close the movement to the left turn lane can leave the vehicle at an angle and block a through lane. If the access point is further back, upstream from the signal queue and the left turn lane, this problem is avoided.



DRIVEWAY LOCATION

Driveways are basically unsignalized minor intersections. Unlike public intersections, they can have low traffic volume which does allow more flexibility in location and design. But busier driveways can have the same operational and safety issues that any public intersection might have.

Beginning back in the mid 1950's, AASHTO has recommended that private driveways not be connected to arterial highways. In part this follows the principles of design transition as well as the desire to minimize the effects of driveways on arterial operation and safety. The principle of design transition recommends that driveway traffic should transition to a local street, from the local street to the collector street and the collector street to the arterial. Each of these connections should be built at a higher level of design to better provide the transition from lower speeds to higher speeds. Driveway curb cuts do not provide the design quality for the traffic speeds and volume of an arterial.

The preferred solution when improving arterial operation and safety is to reduce the number of driveways on by closing and removing driveway connections when the property served has a safer and reasonable alternative route to access a lower functional public street. If a driveway cannot be removed the design of the driveway should be improved to lessen the impacts on the arterial.

All driveway locations should be well spaced which helps spread out the access related maneuvers and conflict points. This reduces the conflict rate for all motorists and allows driving decisions to avoid conflicts to be more sequential rather than overlapping.

An example of poor spacing (aka corner clearance) is when a driveway is immediately downstream from an intersection. Drivers turning left from the cross street into the intersection may decide to make an immediate turn into the driveway. Drivers turning right into the intersection from the cross street might decide to turn immediately into the driveway. Drivers in the outside (right) through lane, after accelerating into the intersection when the signal

turns green, might then decide to immediately slow and turn right into the close driveway.

While the maneuvers may not be difficult the maneuver does impact drivers following that must, perhaps unexpectedly, slow or stop to allow the maneuver into the driveway. Turn signals are at best confusing if even possible. When the driveway is further down the road, perhaps 300 feet or so, the intersection turning movements are completed and driveway turning movements usually do not interfere with intersection operation. Braking and turn signals for the driveway make more sense to the vehicle following.



When driveways are well spaced, the driver or the drivers following need only deal with one access activity at a time. On arterials, the use of stopping sight distance as driveway spacing criteria has been a practice nationally. At 45 mph design speed, stopping sight distance is about 360 feet.

There are several sections along Grand Avenue where driveways are very frequent and closely spaced. Most of these sections are southeast from North 71st Avenue to Interstate 10. In the photo below, near West Butler Drive, the spacing between driveways varies from 10 to 100 feet.



In the northwest portion of Grand Avenue, the raised median is more continuous and all minor driveways are restricted to right turns due to the raised median. Limiting driveways to right turns only and restricting left turns greatly reduces the impacts of driveway activity.

The one-way sign and arrow sign in the photo below can be very helpful in preventing left turns the wrong way on Grand Avenue. Due to the roadway width and at night new or forgetful drivers may not realize they need to make a right turn. These one-way signs are not at all similar situations.



DRIVEWAY DESIGN

The traditional private driveway design on Grand Avenue is a curb-cut as shown below. These types of driveways require very low speeds to use and have very small radii and usually narrow widths. Private driveway design can be improved to reduce impacts on the arterial.

The minimum turning radius of a passenger car is about 15 feet. The curb cut design on Grand Avenue has only about one-foot of radius. The actual available radii at each location will depend on how far away from the curb the travel lane is and how much the inbound vehicle encroaches on the outbound side of the driveway.

Turning in and out of these driveways often impacts more than one highway lane as well as the entire width of the driveway. This impacts the safety and operation of Grand Avenue. When this type of driveway design is used when the travel lane is immediately adjacent to the curb and gutter, the negative impacts are even greater. For the majority of Grand Avenue the through travel lanes are immediately adjacent to the curb and gutter.

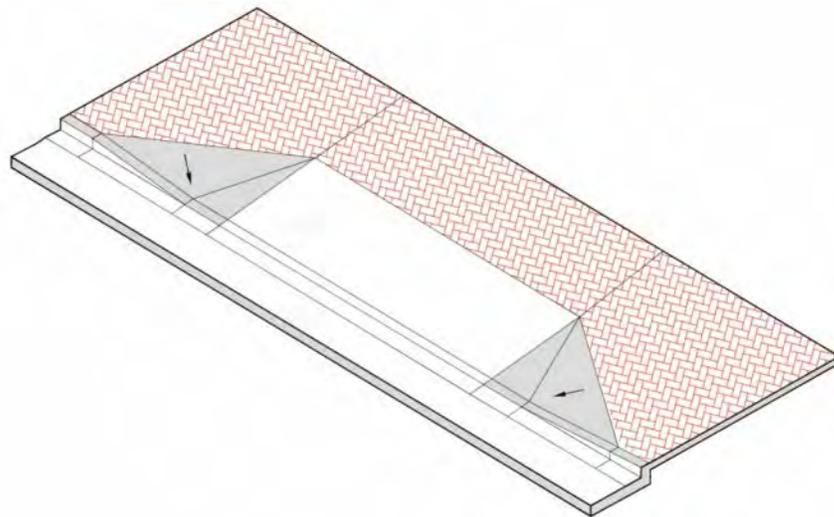
The photos below show how little effective turning radius exists at a curb cut and by the blackened curb how often the right wheels hit the curb causing curb damage and tracking over the dirt. A more substantial flair would improve the situation by increasing the effective radius.



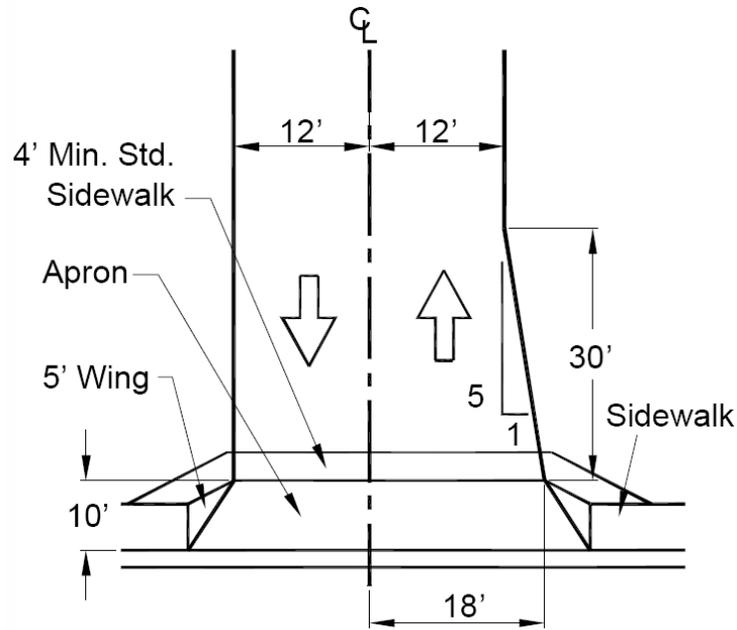


If the driveway is low volume and a curb-cut design is necessary, the effective radius of the curb-cut can be increased by using a flared design and by making the six-inch curb transition longer. In the Figure below the combination of curb transition and flare is about 11 feet. This makes it easier to use the driveway without hitting the vertical curb and allows for a smoother transition between the roadway and the driveway especially when the roadway lanes are close to the face of curb.

Driveway width should be based on the swept path of the design vehicle. With the travel lane of Grand Avenue adjacent to the gutter, the driveway width should be wider.



An alternative design from the City of Scottsdale shows how to flair the driveway width. In this illustration the inbound side is flared an additional five feet which helps with turning radius and reduces encroachment on the outbound lane.



These access design improvements will help reduce the impacts of private driveways on Grand Avenue safety and operations.

If the driveway is busy the curb-cut design can be converted into a minor street intersection design with curb radius returns to accommodate the selected design. This increases the radius of the turn and the speed of the exit to about 10-15 mph. In the photo below the access has curb returns and a right turn lane.



In the photo below, the driveway grade results in dirt and rocks to runoff onto the main lanes of Grand Avenue and the driveway is in poor repair. The stop sign requires an immediate stop before crossing the rail road tracks. There is barely enough room to fit a vehicle – which also means each access maneuver needs to be very slow.



Due to the lack of a raised median on Grand Avenue, these two driveways have full movement access immediately adjacent to the intersection.



This commercial property has more driveways than necessary to serve the property and the driveway area is not paved creating entry and exit difficulties and adding dirt and gravel to the main lanes.



SIGHT DISTANCE

Sight distance is a very critical design element effecting safety as discussed in the earlier section. Only a few sight distance concerns were observed on Grand Avenue.

With Grand Avenue being very wide and the outside lane usually close to the curb and gutter, it is important to control the sight triangle and often the sight triangle will be across private property.

With the posted speed at 45 mph and the actual speeds often in the range of 46 to 55 mph, maintaining good sight distance based on a design speed of 55 mph is very helpful to all motorists. This means sight distance over 700 feet in both directions is necessary just for a passenger car or light truck. Heavier vehicles require more sight distance.

There are several common obstacles that occur in sight triangles and most common is overgrown landscaping. Other obstacles can be on-premise property signs, temporary parking, and fences.

In the image below landscaping on private property is limiting both stopping and intersection sight distance within the sight distance triangle at a public intersection. It is recommended that the required sight distance be available at about 15 feet back from the edge of the nearest travel lane. Most drivers, faced with the situation in the picture, nose out to within a few feet of the travel lane in order to see to the right.



This is a full movement public street connection. (N 20th and Grand). While minimums might be met, the entering motorist must be quick to make a right turn once a gap in approaching traffic is seen. Making a left turn requiring the driver to look for gaps to the right and quickly to the left, will be difficult and the chance for error higher.

In the photo below, the driveway has a minimum of sight distance to the right within the sight triangle due to the concrete barrier and posts in combination with the vertical curve of the road. While the driver's solution is to nose out towards traffic until the driver can see a greater distance, this is not desirable and should be avoided when possible.



FRONTAGE ROADS

For decades frontage roads have been used nationally to provide local access and to keep driveways off the main highway. Along Grand Avenue there are parallel frontage road segments between Dysart and West Thompson Ranch Road and a few other short segments like the one between N 91 and N 92 Avenues.

Where the frontage road and Grand Avenue are connected the intersections are very closely spaced. In the photo below there is only 50 feet between the two roadways. The corners have only about 25 feet of radius. Intersections should be separated by a minimum of about 300 feet under low volume conditions.

The close spacing creates several constraints. All the connections between the frontage road and Grand Avenue have limited capacity and operating difficulties. There is insufficient turning radius for larger trucks resulting in opposing lane encroachments. The intersection sight distance for the stop location in the picture below requires the driver to look back over their left shoulder to judge vehicles that might quickly turn from Grand Avenue onto the frontage road.



As growth continues to occur, both residential and commercial, some of the frontage road intersections are becoming more congested reducing both capacity and safety.

When a traffic signal is added, there is better traffic control but using the intersection is still difficult and capacity is limited by the spacing of the two intersections, the lack of storage and the short radii. In the photo below (Primrose) the motorist is faced with what is basically a six-leg intersection. As traffic volumes on Primrose grow this intersection will operate more poorly and safety will suffer.

The City of El Mirage is currently studying a combination of improvements along this frontage road including making parts of it one-way and adding a new traffic signal to Grand Avenue at Acoma Drive. There is also a proposal to reconfigure the West Thunderbird Road and West Thompson Ranch Road intersection area which would improve capacity, ease congestion and improve safety on the local streets.



At the frontage road intersection below a back to back queue has formed due to an offset local street (Acoma) that temporarily locks up the short block and interferes with traffic to and from Grand Avenue and the frontage road intersection. The reason for this problem is short spacing, about 120 feet, and increasing traffic volume.



MISCELLANEOUS OBSERVATIONS

Trash pick-up should not occur from the through traffic lanes of Grand Avenue, yet it occurs in certain sections on a regular basis. The solution is to be sure a trash truck can enter the property as any freight delivery vehicle would and not service the property from the public right of way.



Certain accesses on Grand Avenue have unique traffic activity. Here is the early morning platoon of UPS trucks leaving their distribution center.



Advanced street signing helps drivers anticipate their access point and reduce the potential of last moment maneuvers to be in the correct lane.



Sometimes the queue from one intersection backs up to block a minor intersection. While drivers will often make a left through a gap in the queue it is not always a safe maneuver.



Trains are frequent along Grand Avenue and complicate the operation of each four-leg intersection.



At this time there is only one intersection, Primrose, equipped with red-light running cameras.



Conclusions from Observations

The goals of the multi-city partnership and the Maricopa Association of Governments would be well served by improving the access conditions along Grand Avenue. Many access related improvements can be made and still maintain the unique character of different sections of the corridor and the communities Grand Avenue passes through.

Absent access improvements and a plan to keep new access demands from further diminishing the transportation capacity of Grand Avenue, the goals of enhancing economic development, improving traffic operations and reducing transportation conflicts will not be met.

As the most significant regional at-grade highway in the northwest metropolitan area, Grand Avenue has significant economic opportunities. But if the Avenue becomes more congested, slower and less desirable to use for travel the economic opportunities, especially those requiring regional transportation efficiency, will be less attractive. Traffic delay, slow speeds and safety issues will increase the travel costs to businesses and discourage customers.

There are certainly competing interests in the corridor that have differing opinions as to the best method to manage access. The proven method to find a cooperative set of solutions is to establish an access management plan, a future vision, for the location and design of access along Grand Avenue. The emphasis on access management exists because it is the most critical element in determining the capacity, travel time and crash rates for the Grand Avenue corridor. After an access management plan is agreed upon, each agency stakeholder should incorporate the principles and recommendations into their transportation, economic and community development plans and standards.

The next tasks of the project will analyze alternatives and develop corridor optimization recommendations. In cooperation with the Project Planning Partners, an access management plan will be drafted. This plan will include a description of the disposition of every access point in the corridor and will include a detailed matrix summarizing the current and future status of each access point.

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US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

APPENDIX TM4-2

Minnesota Access Management Overlay Ordinance

Draft Model Access Management Overlay Ordinance

This model was developed using the City of Hutchinson and the Trunk Highway 7 corridor. The basic provisions of this model may be adopted by any jurisdiction as an overlay ordinance for any state or local highway, however, the specific access standards of Section 7 will vary with the highway.

Mn/DOT is seeking further input and would appreciate feedback on the ordinance and its application.

This model ordinance should be adopted only after appropriate legal advice has been obtained.

For additional information or to provide comments, please contact:

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Draft Trunk Highway Access Management Overlay Ordinance

Section 1. Title.

This Ordinance, included as Section _____ of the _____ Code of the City/County/Town of _____, Minnesota, will be known and referred to as the _____ *Access Management Overlay Ordinance*. When referred to hereafter, it will be known as "this Ordinance"

Section 2. Purpose and Relationship to Other Ordinances.

Section 2.1 Purpose.

The purpose of this Ordinance is to regulate the location and general design of public and private access to Trunk Highway _____ in order to:

- 1) Promote the safety and mobility of the traveling public;
- 2) Provide safe and convenient access between Trunk Highway _____ and the surrounding area, consistent with the highway's functional classification as a(n) _____ and state Trunk Highway access category assignment as a _____ ;
- 3) Ensure that all property is provided reasonably convenient and suitable access;
- 4) Support orderly economic development/redevelopment of the surrounding area; and
- 5) Support the development of a coordinated state and local road network.

Section 2.2 Conformance with Comprehensive Plan and State Transportation Guidelines.

This ordinance implements the goals and policies of the City/County/Town of _____ *Comprehensive Plan* and the *Trunk Highway ___ Access Management Plan*. In addition, this Ordinance conforms with the policies and guidelines of the Minnesota Department of Transportation.

Section 2.3 Access Management Overlay Zone Established.

This ordinance establishes an Access Management Overlay Zone. The requirements of this Ordinance apply within the Overlay Zone and supplement the requirements of the City/County/Town of _____ zoning, subdivision, and other regulations that govern the use and development of property within the City/County/Town. Therefore, all standards and requirements of this Ordinance are in addition to the requirements of the _____ Zoning and Subdivision ordinances.

- 1) Any parcel of land located within the Overlay Zone is subject to all requirements of the underlying zoning district.
- 2) If there is a conflict between any provision of this Ordinance and any provision of the City/County/Town of _____ zoning, subdivision, or other regulation, the more restrictive provision will apply.

Section 3 Definitions.

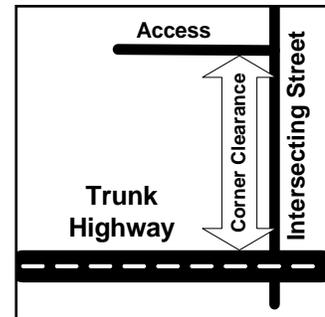
For the purpose of this Ordinance, certain phrases, terms and words are defined as follows:

Access An entrance, driveway, street, road, or other way or means of approach that provides a vehicular entrance or exit to a property from an abutting property or public road.

Access, commercial: A private access serving more than three residential units; one or more commercial, industrial, institutional or multiple family uses; or an agricultural feedlot.

Access, field:	An access to an agricultural field used for the movement of farm vehicles and equipment. However, an access to a farmstead, feedlot, or farm-related structures is not a field access.
Access, residential:	A private access serving three or fewer residential units, which may be either individual detached units or attached units within a single structure, a farmstead, or farm-related structures, but not including an agricultural feedlot.
Access connection:	Any entrance, driveway, street, road, turnout, or other means of providing for the movement of vehicles to or from the public road system.
Access Management Administrator:	An administrative officer, such as the planning/zoning director or city engineer, as designated by the _____ City/County/Town Council/Board to administer this Ordinance.
Build-out plan:	A plan or concept that depicts full development of property in accordance with the requirements of the existing underlying zoning district, the Subdivision Ordinance, and/or the Comprehensive Plan.
Corner clearance:	The distance from an intersection to the nearest access connection. It is measured along the edge of the traveled way, from the nearest pavement edge of the primary roadway to the nearest pavement edge of the access on the connecting street. Figure 1 illustrates corner clearance.
Driveway, shared:	A single driveway or other entrance that is shared by two or more uses on one or more properties.
Intersection, Minor:	An intersection that does not meet the spacing standards for a Primary or Secondary Intersection with Trunk Highway __, but is necessary to provide reasonable connectivity to an area otherwise isolated from the local street network due to historic development patterns or topography. Minor Intersections are not intended for signalization and turning movements may be restricted.
Intersection, Primary:	An intersection planned and designed to serve as a major connection between Trunk Highway ___ and the local road network. Primary Intersections generally allow turning movements in all directions and may be signalized if warranted.
Intersection, Secondary:	An intersection planned and designed to supplement Primary Intersections as needed to provide adequate connectivity between the local road system and Trunk Highway ____. Secondary Intersections are generally located midway between Primary Intersections and not intended for signalization. To maintain safe traffic flow on the trunk highway and signal progression through Primary Intersections, turning movements may be restricted.
Modification of Access Standards:	A procedure used to consider approval of an Access Plan that would not otherwise meet the standards of this Ordinance when deemed necessary to allow reasonable economic use of the property as permitted by the underlying zoning and to ensure reasonably convenient and suitable access to a legal lot or parcel of record.
Mn/DOT:	The Minnesota Department of Transportation.
Related application:	An application for a zoning permit or subdivision approval that also requires approval of an access management plan under the provisions of this Ordinance.

Figure 1



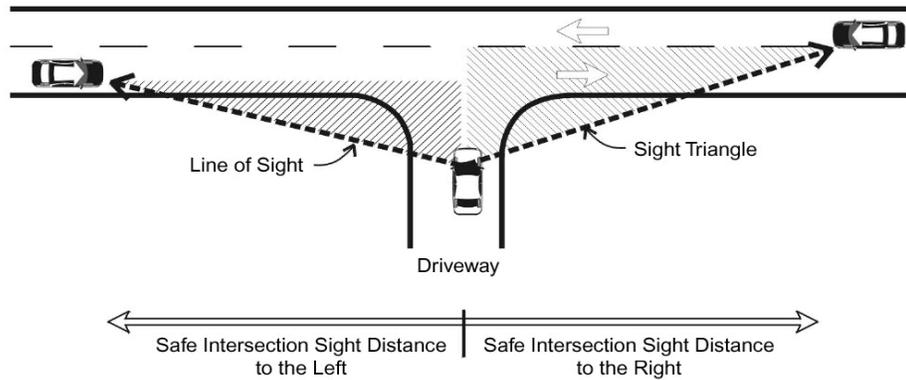
Restricted turning movement:

A restricted turning movement occurs when a physical barrier (such as a median), signage, or pavement markings prevent a vehicle from making a specific maneuver when entering or exiting an access. This may include restrictions on right turns, left turns, or through movement across a street.

Sight distance, intersection:

The distance visible to the driver of a stopped vehicle, as measured along the normal path of the roadway. This ensures that a driver can see far enough down the roadway to safely cross or pull out into traffic. In some cases, there may be another access within intersection sight distance. Intersection sight distance is illustrated in **Figure 2**.

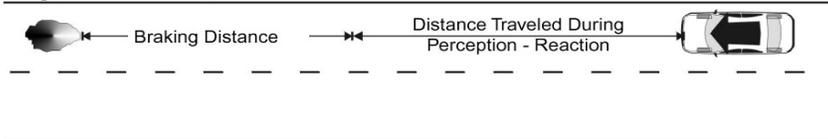
Figure 2



Sight distance, stopping:

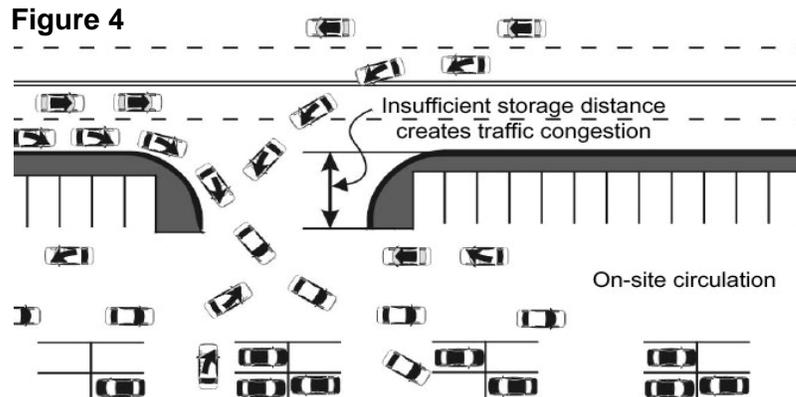
The distance required by the driver of a vehicle, traveling at a given speed, to bring their vehicle to a stop once an object on the roadway becomes visible. Stopping sight distance is measured from the nearest edges of two adjacent entrances, which may be on opposite sides of a two-lane roadway. Stopping Sight Distance is illustrated in **Figure 3**.

Figure 3



Subdivision Regulations: _____, as may be amended from time to time.

Throat length: The distance from the shoulder of the roadway to the first on-site location where a driver can make a right or left turn. Throat length is illustrated in **Figure 4**.



Zoning Ordinance: _____, as may be amended from time to time.

Section 4 Applicability.

Section 4.1 Location.

All land within _____ mile (_____ feet) of the centerline of Trunk Highway _____ in the City/County/Town of _____ is located within the Access Management Overlay Zone and subject to this Ordinance.

Section 4.2 Scope.

From the effective date of this Ordinance, the provisions of this Ordinance apply to the general location and design of the public street network and access to property within the Access Management Overlay Zone. Any access that was legally established, but is not in conformance with the standards of this Ordinance, is considered a non-conforming access and may continue under the conditions established in Section 4.4 below.

Section 4.3 Exemption.

The provisions of this Ordinance do not apply to any field access.

Section 4.4 Non-conforming Access.

4.4.1 Purpose.

The purpose of this subdivision is to recognize the existence of access connections to Trunk Highway _____ which were lawful when established, but do not meet the requirements of this Ordinance; discourage the expansion and/or intensification in the use of such access; and encourage the elimination of non-conforming accesses or reduce their negative impacts on Trunk Highway _____ and the surrounding area.

4.4.2 Continuation of Non-conforming Access.

Any access connection in place as of the date of adoption of this Ordinance that does not conform with the standards herein is a non-conforming feature that will be allowed to continue as long as the access or the land use it serves is not expanded or discontinued.

4.4.3 Expansion of Non-conforming Access or Use.

If there is an expansion of a non-conforming access or the land use served by a non-conforming access, the non-conforming access must either be eliminated or brought into conformance with the standards of this Ordinance.

4.4.4 Discontinuation of Non-conforming Access or Use.

If a non-conforming access or the use or structures of the property served by a non-conforming access is discontinued for more than one year, use of the access must not be re-established unless approved under the provisions of Section 5 of this Ordinance.

4.4.5 Destruction of a Non-conforming Use.

If the use or structures of the property served by a non-conforming access is a legal non-conformity according to the Zoning Ordinance and is destroyed, subsequent access to the property may be required to conform to the provisions of this Ordinance as allowed by law.

Section 4.5 Conditional Uses.

In addition to the findings and review criteria established in _____ of the Zoning Ordinance, approval of a conditional use requires full compliance with the standards of this Ordinance. A Modification of Access Standards will not be approved for a conditional use.

Section 5 Administration.

Section 5.1 Access Plan Approval Required.

Approval of an Access Plan is required prior to any one of the following events:

- 1) The approval of any land subdivision, conditional use permit, interim use permit, site plan, or zoning-related permit for any property located within the Access Management Overlay Zone;
- 2) The construction of any new public or private access to Trunk Highway ___ or to a public street that intersects directly with Trunk Highway ___;
- 3) The reconstruction or relocation of any existing public or private access to Trunk Highway ___ or to a public street that intersects directly with Trunk Highway ___;
- 4) A change in the primary use of land (which may include, but is not limited to, a change from agricultural to industrial, residential to commercial, or office to retail) that may change the amount of traffic using any existing private access to Trunk Highway ___; or
- 5) A change in the intensity of the land use served by a commercial access to Trunk Highway __, defined as either a.) an increase in the gross floor area of a primary or accessory structure by _____% or _____ square feet, whichever is greater, or b.) an increase in the number of parking stalls by _____% or ___ stalls, whichever is greater.

Section 5.2 Access Plan Application Requirements.

An Access Plan consisting of a sketch plan of the property and the surrounding area, drawn to scale, must be submitted to the Access Management Administrator. The Access Plan must provide the following information:

- 1) The dimensions of the property and the location of public rights-of-way and property lines;
- 2) The existing and proposed land use. For residential uses, indicate the number of units. For all other uses, indicate the specific type of use, square footage of existing and proposed structures, number of employees, and number of parking spaces;
- 3) The location and dimensions of existing and proposed structures, accesses, parking, drive aisles, and internal circulation;

- 4) The location of local streets and roads serving the surrounding area, the land use on adjacent parcels, and the location of and distance to public or private access serving adjacent parcels;
- 5) If the property is planned to be developed in phases or could be further subdivided in conformance with the underlying zoning, a build-out plan specifying location, size, and timing of additional parcels and/or structures and parking;
- 6) A traffic impact study if requested by Mn/DOT, any other affected road authority, or the Access Management Administrator;
- 7) A signal justification report, if a traffic signal is proposed as part of the plan; and
- 8) Any other information reasonably required by the City/County/Town.

Section 5.3 Access Plan Review and Approval.

5.3.1 Approving Authority.

If the proposed development requires any additional approval according to the underlying Zoning or Subdivision Ordinance, the Access Plan must be reviewed and acted upon as a supplement to those requirements and according to the procedures established for the related application.

If the proposed development does not require additional review and approval, the Access Management Administrator must review and approve or deny the Access Plan.

5.3.2 Coordination With Affected Road Authorities.

The Access Management Administrator must notify and consult with Mn/DOT and any other affected road authority regarding the proposed access plan and must consider their comments and recommendations in the review of the Access Plan. Review and approval of an Access Plan required under this Ordinance does not substitute for compliance with the access permit regulations of Mn/DOT or any other affected road authority.

5.3.3 General Considerations.

To determine whether the proposed Access Plan meets the standards of this Ordinance, the Approving Authority must consider all of the following factors:

- 1) The relationship to the existing and proposed land use for the City/County/Town; the transportation and road network plans of the City, County, and State; and the *Trunk Highway 7 Access Management Plan*;
- 2) The potential for future subdivision and development of the property and other properties in the vicinity of the proposed access;
- 3) The adequacy of existing or planned roadways to accommodate the proposed development in a safe and cost effective manner;
- 4) Environmental conditions affecting the area such as wetlands, floodplains, shorelands, slopes, and cultural resources;
- 5) Existing, planned, and potential future access to and circulation on adjacent properties;
- 6) Comments from Mn/DOT or any other affected road authority;
- 7) If a signal is proposed, review and comments from the affected road authority pertaining to a signal justification report; and
- 8) The findings and conclusions of any related studies such as an environmental assessment, traffic impact analysis, or signal justification report.

5.3.4 Measurements.

The spacing between accesses will be measured as follows:

- 1) Public intersections must be measured from the centerline of the intersection under review to the centerline of the next intersection or the nearest edge of the next driveway.
- 2) Private driveways must be measured from the nearest edge of the driveway under review to the nearest edge of the next driveway or the centerline of the next intersection.
- 3) An access will be considered in compliance with spacing requirements if it does not deviate more than 5% from the spacing standards established in this Ordinance.

5.3.5 Findings of Approval.

An Access Plan must be approved by the designated authority as provided in Section 5.3.1 if the plan:

- 1) Complies with the standards and conditions set forth in Sections 7 and 8 of this Ordinance for the applicable Access Management District; or
- 2) Satisfies the findings of approval for a Modification of Access Standards as set forth in Section 9 of this Ordinance.

5.3.6 Conditions of Approval.

The Access Management Administrator or other designated authority may add conditions to the approval of the Access Plan to ensure compliance with the spirit and intent of this Ordinance.

Section 5.4 Construction Responsibilities and Security Deposit.

5.4.1 Responsibilities.

The applicant is responsible for all costs associated with implementation of the Access Plan, including the construction of improvements required to meet any conditions of approval. Improvements may include the construction of the access or intersection, turn lanes, medians, connecting roadways or driveways, drainage devices and structures, associated grading and site restoration, and the acquisition and/or dedication of necessary right-of-way as permitted by law.

5.4.2 Security deposit.

The applicant must provide a security deposit of _____ to guarantee provision of any required improvements associated with the approved Access Plan.

5.4.3 Compliance.

The intersection or access must be constructed in complete compliance with the approved Access Plan. If the Access Management Administrator finds that the construction has not been completed as approved, the security deposit provided in Section 5.4.2 may be used by the City/County/Town to complete or repair the access and/or any required improvements in compliance with the approved Access Plan.

Section 5.5 Duration of Approval.

If the access has not been constructed or utilized within one year after approval of the Access Plan, the approval expires unless a time extension is granted by the original Approving Authority. To request an extension, a written request explaining the need for the extension must be submitted to the Access Management Administrator at least _____ days before the expiration of the original approval. The original Approving Authority must determine whether to grant the extension or require a new application.

Section 6 Access Management Overlay Districts Established and Assigned.

Section 6.1 Districts Established.

Three separate Access Management Overlay Districts are established within the Overlay Zone to recognize variations in the existing and planned land use of the surrounding area.

6.1.1 Urban Core Access Management District.

The Urban Core District extends through the fully developed center of the City where the road network is characterized by short blocks and a grid system of intersecting streets. Individual lots are typically small and buildings may be located close to streets. Sidewalks, pedestrian traffic, and on-street parking are common. Trunk Highway ____ is planned to operate at lower speeds, typically 30-35 mph, compared to the speeds for the overall corridor.

6.1.2 Urbanizing Access Management District.

The Urbanizing District is established to guide the location and design of access in areas beyond the Urban Core that are currently urbanized or planned for future urbanization with a full range of urban services, including a local supporting road network. Trunk Highway ___ is planned to operate at a somewhat reduced speed, typically 40-50 mph, through this district, compared to the speed of the overall corridor.

6.1.3 Rural Access Management District.

The Rural District is established to guide access location and rural subdivision design decisions within the portion of the Trunk Highway __ Corridor extending through long-term agricultural areas with limited residential and commercial development, as provided in the Comprehensive Plan. The highway is planned to operate at higher speeds through this district, typically 50 mph or more.

Section 6.2 Assignment of Districts within the Overlay Zone.

All property within the Access Management Overlay Zone is assigned to an Access Management District as defined in Section 6.1 and designated in Table 1 of this Ordinance.

**Table 1.
Access Management District Assignment**

Highway Segment	Access Management District

Section 7 District Standards.

All access to Trunk Highway __ must conform to the spacing and design standards provided in Table 2 and as follows.

**Table 2.
District Access Spacing and Allowance Standards
For a _____**

Access Type	Urban Core	Urbanizing	Rural
<i>Public Street Connection Spacing</i>			
Primary Intersections			
Secondary Intersections			
Minor Intersections			
<i>Private Access Allowance</i>			
Residential driveways			
Commercial driveways			

Section 7.1 Public Street Connections

All streets proposed to connect to Trunk Highway __ must meet the spacing standards of the applicable district as provided in Table 2 and below.

7.1.1 Standards For Primary Intersections

- 1) A Primary Intersection is permitted according to the spacing standards of the applicable Access Management District, as provided in Table 2 above and Figure(s) _____ of the *Trunk Highway __ Access Management Plan*.
- 2) Any street connecting to trunk highway __ at a Primary Intersection must be functionally planned and designed as an arterial or collector street, unless otherwise approved by the City/County Engineer.
- 3) A Primary Intersection may be designed as a full movement intersection.
- 4) A Primary Intersection may be signalized if determined necessary to facilitate the safe flow of traffic between the highway and the supporting street network. Signalization is subject to approval of a Signal Justification Report by Mn/DOT and any other affected road authority.

7.1.2 Standards for Secondary Street Intersections

- 1) A Secondary Intersection is permitted midway between and one-half the spacing of Primary Intersections, as provided in Table 2 above.
- 2) Any street connecting to Trunk Highway __ at a Secondary Intersection must be functionally planned and designed as a collector or arterial street, unless otherwise approved by the City/County Engineer;
- 3) Based on recommendations from Mn/DOT, turning movements at a Secondary Intersection may be restricted to ensure the safety and mobility of Trunk Highway __; and

- 4) Secondary Intersections are not intended to be signalized.

7.1.3 Standards for Minor Street Intersections.

The Approving Authority may approve a Minor Intersection in an Urbanizing or Rural District only as a Modification of Access Standards as set forth in Section 9 of this Ordinance.

7.1.4 Standards for All Street Intersections.

- 1) A street intersection must not be located within a turn lane to another public street or a private driveway;
- 2) The intersection must be located to provide adequate intersection sight distance, as provided in Table 3 below:

**Table 3
Stopping and Intersection Sight Distances**

Posted Speed (mph)	Stopping Sight Distance (ft) *	Intersection Sight Distance (ft) **	
		Right-turning vehicles	Left-turning vehicles
25	155	240	280
30	200	290	335
35	250	335	390
40	305	385	445
45	360	430	500
50	425	480	555
55	495	530	610

Source: AASHTO *Green Book* 2001

* Stopping sight distance is based on a level roadway without horizontal curvature. It is measured from the nearest edges of two adjacent entrances. On two-lane undivided roadways, adjacent entrances may be on opposite sides of the road.

** The intersection sight distance shown is for a stopped passenger car to cross or turn onto a two-lane highway with no median and a grade of 3% or less.

- 3) The minimum spacing between a street intersection and the next street intersection or commercial access to Trunk Highway ___ must conform to the stopping sight distance associated with the posted speed limit, as provided in Table 3 above;
- 4) Turn lanes must be provided in accordance with Mn/DOT guidelines or as recommended by the affected road authority;
- 5) On undivided roadways, street connections on opposing sides of Trunk Highway ___ must be aligned with one another to the greatest extent practicable; and
- 6) To ensure adequate corner clearance, any public or private access to a street that intersects with Trunk Highway ___ must be located away from the edge of the travel lane of Trunk Highway ___ by the minimum distance indicated in **Table 4** or greater if required by the City/County Engineer.

**Table 4
Spacing for Streets Connecting to Trunk Highway**

Intersecting Street Type	Connecting Street Type	
	Two-Lane	Four-Lane
Primary	500'	660'
Secondary	125'	125'
Minor	75'	75'

Section 7.2 Private Access.

7.2.1 Access Allowance in Urban Core and Rural Districts.

- 1) A parcel will be permitted one private access to Trunk Highway __ only if reasonably convenient and suitable alternative access is not available or attainable from the local road network or by a shared driveway with an adjacent parcel.
- 2) A private access designed to serve four or more residential lots or a single parcel with the potential for future subdivision into four or more lots must be considered under the requirements for a public street connection.

7.2.2 Access Allowance in Urbanizing Districts.

Private Access to Trunk Highway __ is permitted only upon approval of a Modification of Access Standards as set forth in Section 9 of this Ordinance.

7.2.3 Access Standards for all Private Access.

In addition to the requirements of Sections 7.2.1 and 7.2.2 above, private access to Trunk Highway ___ is subject to the standards below. If any of these standards cannot be met, the access may only be approved as a Modification of Access Standards as set forth in Section 9 of this Ordinance.

- 1) A private access connection must not be located within a turn lane to a public street or another private driveway;
- 2) A private access must be located on the property to provide adequate intersection sight distance as provided in Table 3;
- 3) The minimum spacing between commercial access connections or between a commercial access and a public street connection must conform to the stopping sight distance requirements in Table 3 above:
 - a. If lot frontage is inadequate to provide the required minimum spacing, access must be provided via a shared entrance or cross access easement with an adjacent property, unless a Modification of Access Standards is granted under Section 9;
 - b. To maintain minimum safe spacing between commercial accesses as future development occurs, a commercial access may be required to serve adjacent property via a shared entrance located on the common property line or a cross access easement; and
 - c. When required to provide a shared entrance or cross access easement, the property owners must record an easement allowing cross access to and from the properties served by the shared driveway or cross access. The easement must include a joint maintenance agreement defining the responsibilities of the property owners;
- 4) On undivided roadways, access connections on opposing sides of streets must be aligned with one another to the extent practicable;
- 5) Turn lanes must be provided as recommended by Mn/DOT or the affected road authority; and
- 6) Turning movements to and from a private access may be restricted at the time of construction or at a future date based upon existing or anticipated roadway conditions.

Section 8 Design Standards For All Districts.

Section 8.1 Subdivision Standards.

All subdivisions in the Overlay Zone must meet all of the following design standards:

- 1) The street system of a proposed subdivision shall be designed to meet the public street spacing provided in Section 7 of this Ordinance and to coordinate with existing, proposed, and planned streets serving the surrounding area.
- 2) All access to individual lots shall be provided from the internal street system. A prohibition of access to Trunk Highway ___ shall be recorded in the chain of title of each lot within the subdivision.
- 3) Where a proposed development abuts undeveloped land or a future phase of the same development, street stubs shall be provided as deemed necessary by the Approval Authority to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with a temporary turn-around or cul-de-sac and shall be signed to indicate that future extension is planned.

Section 8.2 Commercial Site Design Standards.

To ensure safe vehicular movement, property with commercial access must meet all of the following design standards:

- 1) Sites must be designed to promote safe internal access between parking areas, buildings, and future development areas on the property and on adjacent properties;
- 2) Backing, loading, unloading, or other maneuvers must be accommodated on the site;
- 3) The design of any access to Trunk Highway ___, including the width, grade, and radii shall conform with Mn/DOT guidelines and standards; and
- 4) The driveway's throat length must be sufficient to prevent vehicles using the access from interfering with traffic movement on Trunk Highway __.

Section 8.3 Residential Access.

Residential access must be designed to provide adequate space on the property for vehicles to turn around without backing on to Trunk Highway ___.

Section 9 Modification of Access Standards.

Section 9.1 Purpose.

The City/County/Town recognizes that the complete and interconnected supporting local street network necessary for full compliance with this Ordinance may not be available due to conditions beyond the control of the individual property owner. The following procedure has been established to consider modifications of the access standards when necessary to allow reasonable economic use of property as permitted by the underlying zoning and to provide reasonably convenient and suitable access to every legal lot or parcel of record.

Section 9.2 Application Requirements.

An application for a Modification of Access Standards shall include:

- 1) A complete Access Plan as required in Section 5 of this Ordinance;
- 2) Additional information as may be required by the Access Management Administrator or recommended by Mn/DOT or another affected road authority, such as a traffic impact study or a signal justification report.

Section 9.3 Procedures for Review and Approval.

The procedures for the review and approval of a Modification of Access Standards shall be the same as for an Access Plan as specified in Section 5 of this Ordinance.

Section 9.4 Findings for Approval of Modification of Access Standards.

9.4.1 Public Street Connections.

The approving authority may approve a public street connection as a Modification of Access Standards when the proposed street connection meets all of the following findings:

- 1) The proposed street connection is necessary to provide reasonable connectivity to the supporting road network or to provide access to an area that is otherwise isolated due to topography, unique natural features, or existing land use and street patterns;
- 2) The proposed street connection is necessary for the property to be put to reasonable economic use as permitted by the underlying zoning; and
- 3) The proposed street connection conforms to the greatest extent practicable with the access spacing, location, and design standards in Sections 7 and 8 of this Ordinance.

9.4.2 Private Access.

The Approving Authority may approve a private access as a Modification of Access Standards when the proposed access meets **all** of the following findings:

- 1) The property retains access rights;
- 2) Reasonably convenient and suitable alternative access is not available or attainable from the local road network or by shared access and/or cross access to adjacent properties due to one or more of the following circumstances:
 - a. Use of the alternative access would disrupt a protected wetland under the Wetland Conservation Act, a protected shoreland under the Shoreline Zoning Act, or a steep slope (greater than 12%);
 - b. The affected road authority will not authorize the necessary extension of the connecting road system;
 - c. The adjacent property owner will not authorize the necessary shared access or cross-access agreement; or
 - d. The affected road authority will not authorize use of the local connecting road system due to the projected impacts of anticipated traffic on the structural or geometric capacity of the roadway or the safety and livability of the surrounding area;
- 3) The proposed private access connection is necessary for the property to be put to reasonable economic use as permitted by the underlying zoning; and
- 4) The proposed private access conforms to the greatest extent practicable with the access spacing, location and design standards in Sections 7 and 8 of this Ordinance.

Section 9.5 Conditions of Approval.

The Approving Authority may attach conditions to the approval of a Modification of Access Standards as deemed necessary to promote the spirit and intent of this ordinance.

- 1) The access may be approved as an interim access to be phased out at a future time or condition;
- 2) Turning movement to and from the access may be restricted at the time of construction or at a future date, based upon existing or anticipated traffic volumes;
- 3) The access may be required to serve existing or future adjacent property by a shared entrance or cross access easement as provided in Section 7.2.3 of this Ordinance; or
- 4) Other conditions may be required based on the conclusions and recommendations of a traffic impact study and/or the review by Mn/DOT or another affected road authority.

Section 10 Appeals.

Section 10.1 Applicant may Appeal Decision.

An applicant whose Access Plan is not approved, or is approved with conditions not agreed to by the applicant, shall have ___ days to appeal the decision in writing, stating the reasons for which an appeal should be approved. Appeals of decisions approved by the Access Management Administrator must be considered according to the procedures set forth for variances under the City/County/Town Zoning Ordinance. Appeals of decisions on Access Plans incorporated in related applications must be considered according to the procedures for appeals set forth in the Zoning and Subdivision ordinances.

Section 10.2 Notice to Road Authorities.

The Access Management Administrator must notify any affected road authority, including Mn/DOT, a minimum of 10 days prior to the scheduled public hearing for the appeal.

Section 10.3 Conditions.

The City/County/Town may impose conditions on the approval of any appeal as necessary to effect compliance with the spirit and intent of this ordinance.



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

APPENDIX TM4-3

**Sample Access Management Ordinance Options, The Access Management Guidebook,
Michigan Department of Transportation**

Chapter 8

SAMPLE ACCESS MANAGEMENT ORDINANCES

This chapter focuses on one of the access management principles.

- Many access management techniques are best implemented through zoning and others through local lot split, subdivision, condominium and private road regulations.

ACCESS MANAGEMENT ORDINANCE OPTIONS

This chapter presents sample access management ordinances to fit three common local situations in Michigan.

- Option 1: best suited for a slowly growing rural community with one or two state highways or major county roads
- Option 2: best suited for a rural community in the path of growth or a growing suburb with significant undeveloped land along major arterials
- Option 3: best suited for an urban community with little undeveloped land and many retrofit or redevelopment opportunities.

Not all communities will neatly fit into one of the three situations described above. As a result, it may be necessary to pull elements from two or three of the options to fit the unique situation of an individual community. The commentary (in *italics* and [BRACKETED TEXT]) is designed to help a community decide which parts of which sample ordinance to use and how to adapt it. It is imperative that a community obtain qualified professional planning and legal assistance and coordinate closely with MDOT and county road commission staff when adapting any of these sample regulations to fit a local situation. As the administration of access management regulations has some strong technical dimensions, it may also be necessary for a community to hire a qualified professional traffic engineer or transportation

planner to assist them with this task, if it does not have this expertise already.

Sample ordinance language to enable the collection of escrow fees for a professional review of a proposed site plan is provided at the front of this Chapter under "Supplementary Ordinance Language". This language should be adopted along with one of the three access management regulatory options in this Chapter. This language ensures that communities without professional planning and/or engineering staff still have access to qualified professionals when reviewing site plans. Even if a community has such staff, a particular project may require unique skills or the staff may be overloaded with work and outside assistance is needed. The costs of such professional reviews should be charged to the applicant. This can be achieved by collecting and holding a fee from the applicant in escrow to pay for this cost. Any unused fee must be returned to the applicant.

Also, in "Supplementary Ordinance Language" are definitions of terms used in the sample ordinances that may be unique. These definitions should also be added to the zoning ordinance. They will need to be adapted to fit each community. Note the term "access point" is very broad but the term "driveway" is narrow.

These three sample access management ordinance options are substantially adapted from the following Michigan Zoning Ordinances: Acme Township, Alpine Township, Delta Township, Dewitt Township, Genoa Township, Grand Blanc Township, City of Hudsonville, Oshtemo Township, Shiawassee County, and Tittabawassee Township. It was also influenced by the Martin

County, Florida code and model ordinances prepared for New York state and Iowa communities. Many other Michigan communities already have access management provisions based on one or more of the above listed ordinances, so any similarity of the sample language to another ordinance is entirely possible. Most of these communities have administered access management regulations for at least 10 years. None of the above listed local ordinances is as comprehensive in regulating the full range of access management situations as Option 2 in this Chapter. However, each of the above listed ordinances is carefully adapted to the specific community in which it has been used. It is important that the sample language which follows be properly adapted to fit the needs of your community. Each of the above listed local ordinances and the sample ordinance options presented in this Chapter are included on a single CD for those interested in examining any of these ordinances in digital format. To order a copy, please send in the postcard on the last page of this guidebook.

Site Plan Review Required

All of the following ordinance options (except Option 1a) assume the community using them already has separate zoning permit and site plan review and approval processes incorporated in the zoning ordinance. It also assumes that proposed plats and land divisions go through the same or a very similar review. Similar standards and processes need to be added to these ordinances if not covered by the zoning ordinance site plan review process. If not, it is necessary to include them. A sample site plan review procedure is included in the Appendix to Site Plan Review: A Guidebook for Planning & Zoning Commissions published by the Michigan Society of Planning Officials in 1988. It is available from the Michigan Society of Planning, 27300 Haggerty Road, Suite F-30, Farmington Hills, Michigan 48331; 248-553-7526. All of the above listed local units of government with access management ordinances also use site plan review and those ordinances could be consulted as well.

The following ordinance options also assume that decisions on plot plans (reviews of uses allowed by right without any special review process or without site plan review) are made by the Zoning Administrator and that decisions on site plans are made by the Planning Commission. If that is not the case in your community, the sample language will need to be adapted to fit your situation.

For Additional Information

For additional information on access management regulations or for other sample access management ordinances consult the following publications which are cited more completely in the Bibliography:

- Model Land Development & Subdivision Regulations that Support Access Management, CUTR, 1994
- Best Practices in Arterial Management and Sample Access Management Ordinance, New York Department of Transportation, 1998.
- Access Management Handbook, Iowa DOT, 1999.
- National Access Management Manual, TRB, 2002.
- National Cooperative Highway Research Program (NCHRP), “Access Management Guidelines to Activity Centers” Report 348 and “Impacts of Access Management Techniques” Report 420.
- AASHTO “Green Book”, A Policy on Geometric Design of Highways and Streets.

Note: Text in the following sample ordinances in *italics* are directions (such as what to insert in a blank space) or limited commentary and are NOT to be included as part of the adopted ordinance. Text in regular type is proposed ordinance language. Text in [BRACKETS AND SMALL CAPS] are explanatory notes and are NOT to be included as part of the adopted ordinance.

SUPPLEMENTARY ORDINANCE LANGUAGE

The following language is intended to accompany each of the sample Options in this Chapter. It is usually inserted in the "General Provisions" or "Supplementary Provisions" section of the Ordinance. The first section on fees in escrow for professional reviews is an increasingly common approach that was upheld by the Michigan Supreme Court in Cornerstone Investments v. Cannon Township, 459 Mich 908 (1998); after remand 239 Mich App 98 (1999).

Fees in Escrow for Professional Reviews

Section ____: Fees in Escrow for Professional Reviews

Any application for rezoning, site plan approval, a Special Use Permit, Planned Unit Development, variance, or other use or activity requiring a permit under this Ordinance above the following threshold, may also require the deposit of fees to be held in escrow in the name of the applicant. An escrow fee shall be required by either the Zoning Administrator or the Planning Commission for any project which requires a traffic impact study under Section _____, or which has more than _____ (e.g. twenty (20)) dwelling units, or more than _____ (e.g. twenty thousand (20,000)) square feet of enclosed space, or which requires more than _____ (e.g. twenty (20)) parking spaces. [THRESHOLD COULD ALSO BE ANY PROPERTY ALONG THE CORRIDOR IN THE OVERLAY DISTRICT, OR ANY USE REQUIRING SITE PLAN REVIEW.] An escrow fee may be required to obtain a professional review of any other project which may, in the discretion of the Zoning Administrator or Planning Commission create an identifiable and potentially negative impact on public roads, other infrastructure or services, or on adjacent properties and because of which, professional input is desired before a decision to approve, deny or approve with conditions is made.

- 1) The escrow shall be used to pay professional review expenses of engineers, community planners, and any other professionals whose expertise the _____

(name of community) values to review the proposed application and/or site plan of an applicant. Professional review will result in a report to the _____ (name of community) indicating the extent of conformance or nonconformance with this Ordinance and to identify any problems which may create a threat to public health, safety or the general welfare. Mitigation measures or alterations to a proposed design may be identified where they would serve to lessen or eliminate identified impacts. The applicant will receive a copy of any professional review hired by the _____ (name of community) and a copy of the statement of expenses for the professional services rendered, if requested.

- 2) No application for which an escrow fee is required will be processed until the escrow fee is deposited with the _____ (name of community) Treasurer. The amount of the escrow fee shall be established based on an estimate of the cost of the services to be rendered by the professionals contacted by the Zoning Administrator. The applicant is entitled to a refund of any unused escrow fees at the time a permit is either issued or denied in response to the applicant's request.
- 3) If actual professional review costs exceed the amount of an escrow, the applicant shall pay the balance due prior to receipt of any land use or other permit issued by the _____ (name of community) in response to the applicant's request. Any unused fee collected in escrow shall be promptly returned to the applicant once a final determination on an application has been made or the applicant withdraws the request and expenses have not yet been incurred.
- 4) Disputes on the costs of professional reviews may be resolved by an arbitrator mutually satisfactory to both parties.

Definitions

The definitions that follow do not include those that are generally already included in local zoning ordinances. Therefore they must be compared with the definitions within local zoning ordinances and any differences need to be reconciled. Not all of these definitions will be needed with every adaptation of the sample ordinance. For example, very few of the definitions apply to Options 1a or 1b. Please select only definitions for terms that are actually used. Note: many of the defined terms that follow are used in other definitions, but not in the sample ordinance language itself.

Access -- A way or means of approach to provide vehicular or pedestrian entrance or exit to a property from an abutting property or a public roadway.

Access Connection -- Any driveway, street, road turnout or other means of providing for the movement of vehicles to or from the public road system or between abutting sites.

Access Management -- The process of providing and managing reasonable access to land development while preserving the flow of traffic in terms of safety, capacity, and speed on the abutting roadway system.

Access Management Plan -- A plan establishing the preferred location and design of access for properties along a roadway or the roadways in a community. It may be a freestanding document, or a part of a community master or comprehensive plan, or a part of a corridor management plan.

Access Point -- a) The connection of a driveway at the right-of-way line to a road. b) A new road, driveway, shared access or service drive.

Acceleration Lane -- A speed-changing lane, including taper, for the purpose of enabling a vehicle entering the roadway to increase its speed to a rate at which it can safely merge with through traffic.

ADT -- The annual average two-way daily traffic volume. It represents the total annual traffic for the

year, divided by 365. (Where annual data is not available, data from a shorter period may sometimes be used).

Alternative Means of Access -- A shared driveway, frontage road, rear service drive or connected parking lot.

Arterial -- See Road Classification.

AASHTO -- Abbreviation of the American Association of State Highway and Transportation Officials, which conducts research and publishes many national road and non-motorized standards.

Boulevard -- See Divided Driveway.

Channelized or Channelizing Island -- An area within the roadway or a driveway not for vehicular movement; designed to control and direct specific movements of traffic to definite channels. The island may be defined by paint, raised bars, curbs, or other devices.

Classification of Roads -- See Road Classification.

Collector -- See Road Classification.

Conflict -- A traffic event that causes evasive action by a driver to avoid collision with another vehicle, bicycle or pedestrian.

Conflict Point -- An area where intersecting traffic either merges, diverges, or crosses.

Connected Parking Lot -- Two or more parking lots that are connected by cross access.

Corner Clearance -- The distance from an intersection of a public or private road or street to the nearest access connection, measured from the closest edge of the driveway pavement to the closest edge of the road pavement. [SOME COMMUNITIES MEASURE FROM THE CENTER OF DRIVEWAY.]

Corridor Overlay Zone -- A zoning district that provides special requirements that apply to property in addition to those of the underlying district regulations along portions of a public roadway.

Cross Access -- A service road or driveway providing vehicular access between two or more contiguous sites so the driver need not enter the public road system.

Cross Street -- The adjacent intersecting street or road.

Deceleration Lane -- A speed-change lane, including taper, for the purpose of enabling a vehicle to leave the through traffic lane at a speed equal to or slightly less than the speed of traffic in the through lane and to decelerate to a stop or to execute a slow speed turn.

Divided Driveway -- A driveway with a raised median between ingress and egress lanes.

Driveway -- Any entrance or exit used by vehicular traffic to or from land or buildings abutting a road.

Driveway Flare -- A triangular pavement surface at the intersection of a driveway with a public street or road that facilitates turning movements and is used to replicate the turning radius in areas with curb and gutter construction.

Driveway Offset -- The distance between the inside edges of two driveways [OR COULD BE MEASURED FROM THE CENTERLINE] on opposite sides of an undivided roadway.

Driveway Return Radius -- A circular pavement transition at the intersection of a driveway with a street or road that facilitates turning movements to and from the driveway.

Driveway, Shared -- A driveway connecting two or more contiguous properties to the public road system.

Driveway Spacing -- The distance between driveways as measured from the centerline of one driveway to the centerline of the second driveway along the same side of the street or road. [SOME COMMUNITIES MEASURE FROM THE EDGE OF DRIVEWAY PAVEMENT TO EDGE OF THE PAVEMENT OF THE SECOND DRIVEWAY.]

Driveway Width -- Narrowest width of driveway measured perpendicular to the centerline of the driveway.

Egress -- The exit of vehicular traffic from abutting properties to a street or road.

Frontage Road or Front Service Drive -- A local street/road or private road typically located in front of principal buildings and parallel to an arterial for service to abutting properties for the purpose of controlling access to the arterial.

Functional Classification -- A system used to group public roads into classes according to their purpose in moving vehicles and providing access to abutting properties. See Road Classification.

Grade -- The rate or percent of change in slope, in either ascending or descending, from or along the roadway. It is to be measured along the centerline of the roadway or access.

Ingress -- The entrance of vehicular traffic to abutting properties from a roadway.

Interchange -- A facility that grade separates intersecting roadways and provides directional ramps for access movements between the roadways. The structure, ramps and right-of-way are considered part of the interchange.

Intersection -- The location where two or more roadways cross at grade without a bridge.

Intersection Sight Distance -- The sight distance provided at intersections to allow the drivers of stopped vehicles a sufficient view of the intersecting roadways to decide when to enter the intersecting roadway or to cross it. The time required is the sum of the perception reaction time plus the time to accelerate and cross or enter the major roadway traffic stream.

ITE -- Abbreviation of the Institute of Transportation Engineers, which conducts research and publishes many national road standards.

Lane -- The portion of a roadway for the movement of a single line of vehicles which does not include the gutter or shoulder of the roadway.

Local Road or Street -- See Road Classification.

Median -- The portion of a divided roadway or divided entrance separating the traveled ways from opposing traffic. Medians may be depressed, painted or raised with a physical barrier or may be landscaped.

Median Opening -- A gap in a median provided for crossing and turning traffic.

Nonconforming Access -- Features of the access system of a property that existed prior to the effective date of Article ___ and that do not conform with the requirements of this Ordinance; or in some cases, elements of approved access that are allowed by means of a temporary permit or on a conditional basis, until alternative access meeting the terms of this ordinance becomes available.

Passing Sight Distance -- The length of roadway ahead necessary for one vehicle to pass another before meeting an opposing vehicle which might appear after the passing maneuver began. (This type of sight distance is not an issue in access management.

Peak Hour Trips (PHT) -- A weighted average vehicle trip generation rate during the hour of highest volume of traffic entering and exiting the site in the morning (a.m.) or the afternoon (p.m.). OR The highest number of vehicles found to be passing over a section of a lane or roadway during any 60 consecutive minutes. [CHOOSE ONE.]

Reasonable Access: The minimum number of access connections, direct or indirect, necessary to provide safe access to and from a public road consistent with the purpose and intent of this Ordinance, with any other applicable plans of the _____ (*insert name of jurisdiction*), with Act 200 of 1969, or with other applicable law of the State of Michigan. Reasonable access does not necessarily mean direct access.

Rear Service Drive -- A local street/road or private road typically located behind principal buildings and parallel to an arterial for service to abutting properties for the purpose of controlling access to the arterial.

Regional Arterial -- A major arterial. See Road Classification.

Right-of-Way -- A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Road -- A way for vehicular traffic, whether designated as a "street", "highway", "thoroughfare", "parkway", "through-way", "avenue", "boulevard", "lane", "cul-de-sac", "place", or otherwise designated, and includes the entire area within the right-of-way.

Roadway -- That portion of a street, road or highway improved, designed or ordinarily used for vehicular travel exclusive of the berm or shoulder. In the event a highway includes two or more separate roadways, "roadway" refers to any such roadway separately, but not to all such roadways collectively.

Road Classification -- Roadways are classified by the following categories and are indicated on Map ___ by their functional classification. [NOTE: NOT EVERY COMMUNITY USES ALL SIX CLASSIFICATIONS (FOR EXAMPLE IT IS COMMON TO ONLY HAVE ONE TYPE OF COLLECTOR), AND SOME COMMUNITIES USE A SLIGHTLY DIFFERENT FUNCTIONAL CLASSIFICATION. BE SURE TO ADAPT TO FIT THE LOCAL SITUATION.]

1. Limited Access Highway -- Major highways providing no direct property access that are designed primarily for through traffic.
2. Major Arterial -- Arterials are roadways of regional importance intended to serve moderate to high volumes of traffic traveling relatively long distances. A major arterial is intended primarily to serve through traffic where access is carefully controlled. Some major arterials are referred to as "regional arterials". [SOME COMMUNITIES REFER

Figure 8-1a
SCHEMATIC OF A PORTION OF
A RURAL HIGHWAY NETWORK

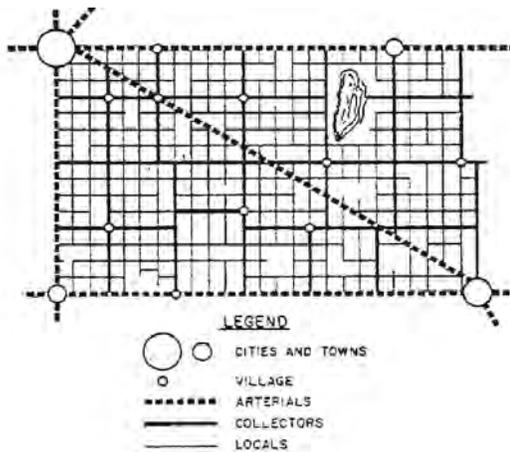
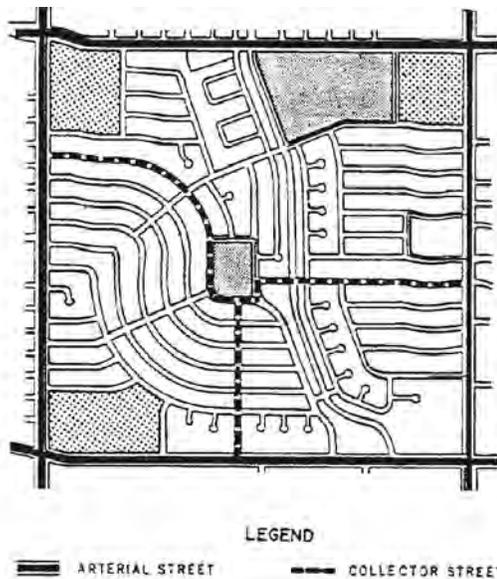


Figure 8-1b
SCHEMATIC OF A PORTION OF
AN URBAN STREET NETWORK



Source: Federal Highway Administration, *Highway Functional Classification*, Volume 20, Appendix 12, July 74, p. II-3 and II-5.

REFER TO THESE AS MINOR THOROUGHFARES.]

4. Major Collector -- A roadway that provides for traffic movement between arterials and local streets and carries moderate traffic volumes over moderate distances. Collectors may also provide direct access to abutting properties.
5. Minor Collector -- A roadway similar in function to a major collector but which carries lower traffic volumes over shorter distances and provides a higher degree of property access than a major collector.
6. Local Street -- A street or road intended to provide access to abutting properties, which tends to accommodate lower traffic volumes and serves to provide mobility within that neighborhood.

[DO NOT INSERT THE FOLLOWING SAMPLE MAPS (FIGURES 8-1A AND 8-1B) IN THE ZONING ORDINANCE, USE ACTUAL LOCAL THOROUGHFARE MAP INSTEAD.]

Secondary Street or Side Street -- A street or road with a lower functional classification than the intersecting street or road (e.g. a local street is a side or secondary street when intersecting with a collector or arterial).

Service Drive -- See Frontage Road or Rear Service Drive.

Shared Driveway or Common Driveway -- See Driveway, Shared.

Shoulder -- The portion of a public road contiguous to the traveled way for the accommodation of disabled vehicles and for emergency use.

Sight Distance -- The distance of unobstructed view for the driver of a vehicle, as measured along the

TO MAJOR ARTERIALS AS "MAJOR THOROUGHFARES".]

3. Minor Arterial -- A roadway that is similar in function to major arterials, but operates under lower traffic volumes, over shorter distances, and provides a higher degree of property access than major arterials. [SOME COMMUNITIES

normal travel path of a roadway to a specified height above the roadway.

Standard – A definite rule or measure establishing a minimum level of quantity or quality that must be complied with or satisfied in order to obtain development approval, such as (but not limited to) a height, setback, bulk, lot area, location or spacing requirement.

Stopping Sight Distance -- The available sight distance should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of brake reaction distance and braking distance.

Street – See Road.

Taper -- A triangular pavement surface that transitions the roadway pavement to accommodate an auxiliary lane.

Temporary Access -- Provision of direct access to a road until that time when adjacent properties develop in accordance with a joint access agreement, service road, or other shared access arrangement.

Thoroughfare -- A public roadway, the principal use or function of which is to provide an arterial route for through traffic, with its secondary function the provision of access to abutting property and which is classified as a “limited access highway” or a “major or minor arterial” on the Street and Highway Classification Map (see Map _____).

Throat Length -- The distance parallel to the centerline of a driveway to the first on-site location at which a driver can make a right-turn or a left-turn. On roadways with curb and gutter, the throat length shall be measured from the face of the curb. On roadways without a curb and gutter, the throat length shall be measured from the edge of the paved shoulder.

Throat Width -- The distance edge-to-edge of a driveway measured at the right-of-way line.

Traveled Way -- The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

TRB -- Abbreviation of the Transportation Research Board, which conducts research and publishes transportation research, findings and policy.

Trip Generation – The estimated total number of vehicle trip ends produced by a specific land use or activity. A trip end is the total number of trips entering or leaving a specific land use or site over a designated period of time. Trip generation is estimated through the use of trip rates that are based upon the type and intensity of development.

Undivided Roadway – A roadway having access on both sides of the direction of travel, including roadways having center two-way left-turn lanes.

OPTION 1 -- BEST SUITED FOR A SLOWLY GROWING RURAL COMMUNITY WITH ONE OR TWO STATE HIGHWAYS OR MAJOR COUNTY ROADS

Two options are presented to meet the needs of a rural community with little land use change, and/or little professional staff or consultant assistance. Option 1a merely "locks in" existing access so that as land is divided, additional access points are not created (see Chapter 4, page 4-2). This approach leaves all driveway permits to the Michigan Department of Transportation on state highways and to County Road Commissions on county roads. It also establishes a simple coordination mechanism for review of development proposals before the appropriate road authority makes a driveway permit decision. The community may not even have a site plan review process in the zoning ordinance and it would not be needed unless they choose to regulate service drives.

Option 1b also leaves all the access management decisions to the Michigan Department of Transportation on state highways and to the County Road Commission on county roads, but instead of "locking in access" it targets one or two

arterials (as identified in a "corridor overlay zone") for coordinated review and approval of a proposed site plan with the driveway permit requirements of these two road authorities. This approach would need substantial modification in Section 0.3 to adapt its use in a city or village that controlled all the streets within the community. Coordination would then be between the city or village road authority and the planning commission.

Options 1a and 1b can be most effective if the community has site plan review, because the zoning enabling acts permit a community to condition approval of a site plan on the requirements of other county and state agencies. (See Chapter 5 for more discussion of this coordination function). However, even without site plan review, coordination alone will prevent a community from approving a site plan with access that doesn't meet a road authority's standards and vice versa.

Option 1a and 1b will work best with professional planning assistance in review of proposed site plans for large development proposals. It is important that the companion sample ordinance language found at the beginning of this Chapter under "Supplementary Ordinance Language" also be adopted. This language permits a community to charge an applicant for the cost of a professional review of a site plan by collecting an escrow fee along with the application.

Option 1a or 1b could be inserted as a separate Section in the General Provisions, or Supplementary Provisions Article (or Chapter) of the Ordinance, or they could be a separate Article (or Chapter).

Section 0.3 in Option 1a and Section 1.3 in Option 1b sets forth information to be submitted by an applicant and a coordination process for review of a site plan. Most local site plan review procedures already address these issues, however, the coordination function may not be as clear. Be sure to adapt this language to fit the local circumstances. Section 0.4 in Option 1a and Section 1.4 in Option 1b addresses service drives. Since these are usually outside the right-of-way of a road authority, there must be standards in the

Ordinance if this technique is used. Standards should be derived from Section 2.3 in Option 2 and adapted to fit the local situation.

Option 1a - "Lock-In Access" Approach

This approach could be

- adopted alone and applied to a single corridor expected to experience pressure for land splitting, or
- it could be used with Option 1b, or
- it could be adapted to apply to all roads in the community except those subject to the corridor overlay zone language in Option 1b.

Option 1a should be adapted to fit the local ordinance. In particular, if the community does not permit private roads, or if it does not wish to allow front or rear service drives, the references to them would need to be deleted.

Section 0.1 -- Intent

The provisions of this Article (or Chapter) are intended to promote safe and efficient travel within the _____ (name of jurisdiction); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ Master Plan (insert name of Plan) and the _____ Corridor (or Access) Management Plan (insert name of Plan if there is one) recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Michigan Department of Transportation and/or the _____ County Road Commission, as applicable.

Section 0.2 -- One Access Per Parcel

A. All land in a parcel or lot having a single tax code number, as of the effective date of the amendment adding this provision to the Ordinance (hereafter referred to as "the parent parcel"), that shares a lot line for less than _____ feet [AT LEAST 330 FEET, BETTER IS 660 FEET; SEE TECHNIQUE #1 IN CHAPTER 3.] with right-of-way on a public road or highway (*or specifically define the beginning and ending points of one or two corridors if the community doesn't want this provision to apply to all public roads in the community*) shall be entitled to one (1) driveway or road access per parcel from said public road or highway.

1. All subsequent land divisions of a parent parcel, shall not increase the number of driveways or road accesses beyond those entitled to the parent parcel on the effective date of this amendment.
2. Parcels subsequently divided from the parent parcel, either by metes and bounds descriptions, or as a plat under the applicable provisions of the Land Division Act, Public Act 288 of 1967, as amended, or as a condominium project in accord with the Condominium Act, Public Act 59 of 1978, as amended, shall have access by a platted subdivision road, by another public road, by a private road that meets the requirements of Section ____, or by a service drive meeting the requirements of Section 0.40.

B. Parent parcels with more than _____ feet [AT LEAST 330 FEET, BETTER IS 660 FEET; SEE TECHNIQUE #1 IN CHAPTER 3.] of frontage on a public road or highway shall also meet the requirements of A.1 and A.2 above, except that whether subsequently divided or not, they are entitled to not more than one driveway for each _____ feet [AT LEAST 330 FEET, BETTER IS 660 FEET; SEE TECHNIQUE #1 IN CHAPTER 3.] of public road frontage thereafter, unless a registered traffic engineer determines that topographic conditions on the site, curvature on the road, or sight distance limitations demonstrate a second driveway within a lesser distance is safer or the nature of the land use to be served requires a second driveway for safety. If the parcel is a corner lot and a second driveway

is warranted, the second driveway shall have access from the abutting street unless that street is of a higher functional classification.

Section 0.3 Application Review, Approval and Coordination Process

A. Standards of Road Authorities Apply
All standards of the applicable road authority (either the Michigan Department of Transportation or the _____ County Road Commission, or both) shall be met prior to approval of an access application under this Article.

B. Application, Review and Approval Process
Applications for driveway or access approval shall be made on a form prescribed by and available at _____ (*insert name of jurisdiction*) and/or the _____ County Road Commission and Michigan Department of Transportation as applicable. [IF THE COMMUNITY ALREADY HAS A SITE PLAN REVIEW PROCESS, THE FOLLOWING ITEMS CAN BE ADDED TO THE EXISTING LIST OF SUBMITTAL REQUIREMENTS, IF THEY AREN'T ALREADY INCLUDED.]

1. Applications shall be accompanied by clear, scaled drawings (minimum of 1"=20') in triplicate showing the following items:
 - a. Location and size of all structures proposed on the site.
 - b. Size and arrangement of parking stalls on aisles.
 - c. Proposed plan of routing vehicles entering and leaving the site (if passenger vehicles are to be separated from delivery trucks indicate such on drawing).
 - d. Driveway placement.
 - e. Property lines.
 - f. Right-of-way lines.
 - g. Intersecting roads, streets and driveways within 300' either side of the property on both sides of the street.
 - h. Width of right-of-way.
 - i. Width of road surface.
 - j. Type of surface and dimensions of driveways.
 - k. Proposed inside and outside turning radii.

- l. Show all existing and proposed landscaping, signs, and other structures or treatments within and adjacent to the right-of-way.
 - m. Traffic analysis and trip generation survey results, obtained from a licensed traffic engineer for all developments with over 100 directional vehicle trips per peak hour.
 - n. Design dimensions and justification for any alternative or innovative access design.
 - o. Dumpsters or other garbage containers.
2. Applications are strongly encouraged to rely on the following sources for access designs, the National Access Management Manual, TRB, 2002; National Cooperative Highway Research Program (NCHRP), "Access Management Guidelines to Activity Centers" Report 348 and "Impacts of Access Management Techniques" Report 420; and the AASHTO "Green Book" A Policy on Geometric Design of Highways and Streets. The following techniques are addressed in these guidebooks and are strongly encouraged to be used when designing access:
 - a. Not more than one driveway access per abutting road
 - b. Shared driveways
 - c. Service drives: front, rear and perpendicular
 - d. Parking lot connections with adjacent property
 - e. Other appropriate designs to limit access points on an arterial or collector.
 3. Applications shall be accompanied by an escrow fee for professional review per the requirements of Section _____. [BE SURE TO INCLUDE THIS SECTION IN THE ZONING ORDINANCE. SAMPLE LANGUAGE IS FOUND AT THE BEGINNING OF THIS CHAPTER UNDER "SUPPLEMENTARY REGULATIONS".]

C. Review and Approval Process

The following process shall be completed to obtain access approval: [THE FOLLOWING PROCESS COULD BE INCORPORATED INTO THE SITE PLAN REVIEW

PROCESS OF THE ZONING ORDINANCE IF THERE IS ONE, INSTEAD OF BEING LISTED SEPARATELY HERE.]

1. An Access Application meeting the requirements of Section 0.3.B.1 shall be submitted to the Zoning Administrator and on the same day to the _____ County Road Commission and/or the Michigan Department of Transportation, as applicable. [THE COMMUNITY COULD AGREE TO USE THE MDOT FORM FOR A STATE HIGHWAY OR THE COUNTY ROAD COMMISSION FORM FOR A COUNTY ROAD INSTEAD. SEE APPENDIX D FOR SAMPLE.]
2. The completed application must be received by the _____ Zoning Administrator at least _____ days (*insert number, typically 14-30*) prior to the Planning Commission meeting where the application will be reviewed.
3. The applicant, the Zoning Administrator and representatives of the _____ County Road Commission, the Michigan Department of Transportation and the Planning Commission may meet prior to the Planning Commission meeting to review the application and proposed access design. [SOME COMMUNITIES AND/OR ROAD AUTHORITIES MAY WANT THESE MEETINGS EVERY TIME, IF SO, CHANGE "MAY" TO "SHALL".]
4. The Planning Commission shall review and recommend approval, or denial, or request additional information. They shall also forward the Access Application (*and other relevant project information*) to the _____ County Road Commission and/or Michigan Department of Transportation for their review as applicable.
5. The _____ County Road Commission and/or the Michigan Department of Transportation, as applicable, shall review the access application and conclusions of the Planning Commission. One of three actions may result;
 - a) If the Planning Commission and the Road Commission, and/or the Michigan

Department of Transportation, as applicable, approve the application as submitted, the access application shall be approved.

- b. If both the Planning Commission and the Road Commission, and/or the Michigan Department of Transportation, as applicable, deny the application, the application shall not be approved.
- c. If either the Planning Commission, Road Commission, and/or Michigan Department of Transportation, as applicable, requests additional information, approval with conditions, or does not concur in approval or denial, there shall be a joint meeting of the Zoning Administrator, a representative of the Planning Commission and staff of the _____ County Road Commission, and/or the Michigan Department of Transportation, as applicable, and the applicants. The purpose of this meeting will be to review the application to obtain concurrence between the Planning Commission and the applicable road authorities regarding approval or denial and the terms and conditions of any permit approval.

No application will be considered approved, nor will any permit be considered valid unless all the above-mentioned agencies have indicated approval unless approval by any of the above-mentioned agencies would clearly violate adopted regulations of the agency. In this case the application shall be denied by that agency and the requested driveway(s) shall not be constructed. Conditions may be imposed by the Planning Commission to ensure conformance with the terms of any driveway permit approved by a road authority.

- 6. The Zoning Administrator shall keep a record of each application that has been submitted, including the disposition of each one. This record shall be a public record.

- 7. Approval of an application remains valid for a period of one year from the date it was authorized. If authorized construction is not initiated by the end of one (1) year, the authorization is automatically null and void. Any additional approvals that have been granted by the Planning Commission or the Zoning Board of Appeals, such as Special Use Permits, or variances, also expire at the end of one year.
- 8. An approval may be extended for a period not to exceed _____ [TYPICALLY 6 MONTHS TO ONE YEAR]. The extension must be requested, in writing by the applicant before the expiration of the initial approval. The Zoning Administrator may approve extension of an authorization provided there are no deviations from the original approval present on the site or planned, and there are no violations of applicable ordinances and no development on abutting property has occurred with a driveway location that creates an unsafe condition. If there is any deviation or cause for question, the Zoning Administrator shall consult a representative of the _____ County Road Commission and/or the Michigan Department of Transportation, as applicable, for input.
- 9. Re-issuance of an authorization that has expired requires a new Access Application form to be filled out and processed independently of previous action.
- 10. The applicant shall assume all responsibility for all maintenance of such driveway approaches from the right-of-way line to the edge of the traveled roadway.
- 11. Where authorization has been granted for entrances to a parking facility, said facility shall not be altered or the plan of operation changed until a revised Access Application has been submitted and approved as specified in this Section.
- 12. Application to construct or reconstruct any driveway entrance and approach to a site shall also cover the reconstruction or

closing of all nonconforming or unused entrances and approaches to the same site at the expense of the property owner.

13. When a building permit is sought for the reconstruction, rehabilitation or expansion of an existing site or a zoning or occupancy certificate is sought for use or change of use for any land, buildings, or structures, all of the existing, as well as proposed driveway approaches and parking facilities shall comply, or be brought into compliance, with all design standards as set forth in this Ordinance prior to the issuance of a zoning or occupancy certificate, and pursuant to the procedures of this section.
14. _____ (insert name of jurisdiction) and the _____ County Road Commission and/or the Michigan Department of Transportation, as applicable, may require a performance bond or cash deposit in any sum not to exceed \$5,000 for each such approach or entrance to insure compliance with an approved application. Such bond shall terminate and deposit be returned to the applicant when the terms of the approval have been met or when the authorization is cancelled or terminated.

Section 0.4 Service Drives

[ADAPT FROM SECTION 2.3 IN OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO PERMIT SERVICE DRIVES.]

Option 1b - Rural Corridor Overlay Zone

Option 1b is intended for use in a rural area without planning staff or a sophisticated planning commission. It is essentially the same as Option 1a without the "lock in access" provisions and it targets one or two corridors. If the community is in the path of development, or anticipates significant development along a particular corridor in the next few years, it would be better to adopt the more robust approach presented in Option 2. However, if a community was unprepared to adopt all of the provisions in Option 2, but wanted more than this option offers, it could add another Section 1.5 that

was a "slimmed down" version of the standards in Section 2.2 in Option 2.

Section 1.1 Intent

The provisions of this Article (*or Chapter*) are intended to promote safe and efficient travel within the _____ (*name of jurisdiction*); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ Master Plan (*insert name of Plan*) and the _____ Corridor (*or Access*) Management Plan (*insert name of Plan if there is one*) recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Michigan Department of Transportation and/or the _____ County Road Commission, as applicable.

Section 1.2 Identification of the Corridor Overlay Zone

The _____ (*insert name of road here*) corridor is defined as those properties that abut the highway right-of-way either side of _____ (*insert name of road here*) in _____ (*insert name of community here*) between _____ (*location A – usually an intersection*) and _____ (*location B – usually an intersection*). The following regulations apply in addition to the applicable regulations of the specific districts beneath the overlay zone. [AS AN ALTERNATIVE, A MAP COULD BE ATTACHED AND SPECIFICALLY REFERRED TO. THIS IS A PREFERRED APPROACH IF PROPERTY DEEPER THAN THE ONE LOT ABUTTING THE ROAD IS PROPOSED FOR INCLUSION IN THE OVERLAY ZONE.]

Section 1.3 Application Review, Approval and Coordination Process

[ADAPT FROM SECTION 0.3 IN OPTION 1A TO FIT LOCAL CIRCUMSTANCES.]

Section 1.4 Standards for Service Drives

[ADAPT FROM SECTION 2.3 IN OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO PERMIT SERVICE DRIVES.]

Section 1.5 Driveway and Related Access Standards

[ADAPT FROM SECTION 2.2 IN OPTION 2 TO FIT LOCAL CIRCUMSTANCES, IF THE COMMUNITY WISHES TO REGULATE DRIVEWAY SPACING, LOCATION AND CONSTRUCTION.]

OPTION 2 -- BEST SUITED FOR A RURAL COMMUNITY IN THE PATH OF GROWTH OR A GROWING SUBURB WITH SIGNIFICANT UNDEVELOPED LAND ALONG MAJOR ARTERIALS

Option 2 is a comprehensive access management regulation. It is divided into major topic categories with many specific regulations within each category. The pertinent provisions from every major topic category should be reviewed and adapted to fit local circumstances in cooperation with appropriate county road commission and MDOT staff. Alternative language is offered to apply Option 2 to all collectors and arterials in a community (not merely to state highways and key city or county roads). Be sure to insert the proper name of the community and the pertinent road authority names in the places indicated. Many tasks are assigned to the zoning administrator. If it is more appropriate to assign these tasks to someone else, like the planning director, be sure to change the text accordingly. Option 2 assumes a complete local site plan review process and that review is carefully completed in cooperation with the appropriate road authority (see Chapter 5). A memorandum of understanding (MOU) is the best way to proceed. Appendix B presents a sample MOU. Some communities may want to add the key

parts of the MOU review process in the site plan review section of the zoning ordinance. If so, language in Option 1a, Section 0.3 could be used as a starting point. The rest would come from the MOU itself. If this language is proposed for use in a city or village which controls all the streets within the community, then coordination between the city or village road authority and the planning commission (rather than with MDOT or the county road commission) would be the focus.

CHAPTER ___ ACCESS MANAGEMENT REGULATIONS

Section 2.0 Purpose, Intent and Application

A. The purpose of this Article (*or Chapter*) is to establish minimum regulations for access to property. Standards are established for new roads, driveways, shared access, parking lot cross access, and service roads. The standards of this Article (*or Chapter*) are intended to promote safe and efficient travel within the _____ (*name of jurisdiction*); minimize disruptive and potentially hazardous traffic conflicts; ensure safe access by emergency vehicles; protect the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction which disrupts business and traffic flow; separate traffic conflict areas by reducing the number of driveways; provide safe spacing standards between driveways, and between driveways and intersections; provide for shared access between abutting properties; implement the _____ Master Plan (*insert name of Plan*) and the _____ Corridor (*or Access*) Management Plan (*insert name of Plan*) recommendations; ensure reasonable access to properties, though not always by the most direct access; and to coordinate access decisions with the Michigan Department of Transportation and/or the _____ County Road Commission, as applicable.

B. The standards in this Article (*or Chapter*) are based on extensive traffic analysis of this corridor by the _____ (*name of jurisdiction*), the _____ Road Commission and the Michigan Department of Transportation (MDOT) as applicable. This analysis demonstrates that the

combination of roadway design, traffic speeds, traffic volumes, traffic crashes and other characteristics necessitate special access standards. [INSERT THESE TWO SENTENCES IF TRUE AND MODIFY TO FIT SITUATION--OTHERWISE DELETE THEM]. The standards in this Article (*or Chapter*) apply to private and public land along road rights-of-way which are under the jurisdiction of the _____ (*city or village street department*), the _____ County Road Commission or the Michigan Department of Transportation (MDOT). [SELECT APPLICABLE ENTITIES.] The requirements and standards of this Article (*or Chapter*) shall be applied in addition to, and where permissible shall supercede, the requirements of the Michigan Department of Transportation, _____ County Road Commission, or other Articles (*or Chapters*) of this Zoning Ordinance. [ADAPT PARAGRAPH TO FIT LOCAL CIRCUMSTANCES. IT IS A GOOD IDEA TO LIST SPECIFIC FINDINGS OF AN ACCESS MANAGEMENT PLAN OR CORRIDOR MANAGEMENT PLAN HERE WHERE THEY SUPPORT THE PURPOSE OF THE REGULATIONS]

C. The standards of this Article (*or Chapter*) shall be applied by the Zoning Administrator during plot plan review and by the Planning Commission during site plan review, as is appropriate to the application. The Planning Commission shall make written findings of nonconformance, conformance, or conformance if certain conditions are met with the standards of this Article (*or Chapter*) prior to disapproving or approving a site plan per the requirements of Section _____ (*the site plan review section of the Ordinance*). The _____ (*name of jurisdiction*) shall coordinate its review of the access elements of a plot plan or site plan with the appropriate road authority prior to making a decision on an application (see D. below). The approval of a plot plan or site plan does not negate the responsibility of an applicant to subsequently secure driveway permits from the appropriate road authority, either the _____ (*city or village road authority*), the _____ County Road Commission, or the Michigan Department of Transportation (*depending on the roadway*). Any driveway permit obtained by an applicant prior to review and approval of a plot plan or site plan that is required under this Ordinance will be ignored. [THIS REVIEW PROCESS WILL BE EXPEDITED BY A

FORMAL MEMORANDUM OF UNDERSTANDING BETWEEN THE COMMUNITY AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION, AND/OR THE _____ COUNTY ROAD COMMISSION. A SAMPLE MOU IS PROVIDED IN APPENDIX B].

D. Neither the Zoning Administrator nor the Planning Commission shall take action on a request for a new road, driveway, shared access, or a service drive that connects to a public road without first consulting the _____ (*name of city or village street department, when on a city or village street*), the _____ County Road Commission (*when on a county road*) or the Michigan Department of Transportation (*when on a state highway*). To ensure coordination, applicants are required to submit a plot plan, site plan or a tentative preliminary plat concurrently to both the _____ (*name of jurisdiction*), the _____ County Road Commission, and the Michigan Department of Transportation [BASED ON THE JURISDICTION RESPONSIBLE FOR REVIEW OF DEVELOPMENT ALONG SHARED PROPERTY LINES] as applicable. Complete applications shall be received at least _____ days (*insert number -- typically 14-30 days as established in the site plan review section of the ordinance or by a staff procedure manual*) before the Planning Commission meeting at which action is to be taken. If the initial review of the application by the Zoning Administrator reveals noncompliance with the standards of this Article (*or Chapter*), or if the proposed land use exceeds the traffic generation thresholds in Section _____, then the Zoning Administrator shall require submittal of a traffic impact study as described below prior to consideration of the application by either the Zoning Administrator or the Planning Commission.

1. At a minimum the traffic study shall contain the following: [FOR A SAMPLE TRAFFIC IMPACT ORDINANCE, SEE EVALUATING TRAFFIC IMPACT STUDIES, AVAILABLE FROM THE PROJECT PLANNING DIVISION OF THE MICHIGAN DEPT. OF TRANSPORTATION BY USING THE POSTCARD AT THE END OF THIS REPORT OR THE TRI-COUNTY REGIONAL PLANNING COMMISSION AT 913 W. HOLMES ROAD, SUITE 201, LANSING, MI 48910; 517/393-0342.]
 - a. Analysis of existing traffic conditions and/or site restrictions using current data.

- b. Projected trip generation at the subject site or along the subject service drive based on the most recent edition of the Institute of Transportation Engineers Trip Generation manual. The _____ (*name of jurisdiction*) may approve use of other trip generation data if based on recent studies of at least three (3) similar uses within similar locations in Michigan.
- c. Illustrations of current and projected turning movements at access points. Include identification of the impact of the development and its proposed access on the operation of the abutting streets. Capacity analysis shall be completed based on the most recent version of the Highway Capacity Manual published by Transportation Research Board, and shall be provided in an appendix to the traffic impact study.
- d. Description of the internal vehicular circulation and parking system for passenger vehicles and delivery trucks, as well as the circulation system for pedestrians, bicycles and transit users.
- e. Justification of need, including statements describing how the additional access will meet the intent of this Section, will be consistent with the _____ Corridor or Access Management Plan (*insert name of Plan*) and the _____ Master Plan (*insert name of Plan*), will not compromise public safety and will not reduce capacity or traffic operations along the roadway.
- f. Qualifications and documented experience of the author, describing experience in preparing traffic impact studies in Michigan. The preparer shall be either a registered traffic engineer (P.E.) or transportation planner with at least three (3) years of experience preparing traffic impact studies in Michigan [OR OTHER QUALIFIED INDIVIDUAL -- SEE DISCUSSION ON PAGE 24-25 IN EVALUATING TRAFFIC IMPACT STUDIES]. If the traffic impact study involves geometric design, the study shall be prepared or supervised by a registered engineer with a strong background in traffic engineering.

2. The _____ (*name of jurisdiction*) may utilize its own traffic consultant to review the applicant's traffic impact study, with the cost of the review being borne by the applicant per Section _____. [ADD SUPPLEMENTARY ORDINANCE LANGUAGE PRESENTED AT THE START OF THE CHAPTER IN THE APPROPRIATE PLACE OF THE ORDINANCE.]

E. Failure by the applicant to begin construction of an approved road, driveway, shared access, service drive or other access arrangement within twelve (12) months from the date of approval, shall void the approval and a new application is required. [THIS SUBSECTION MAY ALREADY BE ADEQUATELY COVERED ELSEWHERE IN THE ORDINANCE, IF SO, DELETE HERE.]

F. The Zoning Administrator (*or municipal engineer or other authorized person*) shall inspect the driveway as constructed for conformance with the standards of this Ordinance and any approval granted under it, prior to issuing an occupancy permit. (*Insert proper name of permit if different than "occupancy permit". This subsection "F." may already be adequately covered elsewhere in the Ordinance. Also, the community may want to explore a formal agreement process to coordinate inspection with MDOT or the County Road Commission so that dual inspections are avoided.*)

Section 2.1 Identification of Corridor Overlay Zone

The _____ (*insert name of road here*) corridor is defined as those properties that abut the highway right-of-way either side of _____ (*insert name of road here*) in _____ (*insert name of community here*) between _____ (*location A – usually an intersection*) and _____ (*location B--usually an intersection*). The following regulations supercede otherwise applicable regulations of the specific districts beneath the overlay zone.

OR

[OR INSERT THE FOLLOWING ALTERNATIVE LANGUAGE WHICH WOULD MAKE THIS ARTICLE APPLY TO ALL STREETS AND ROADS IN THE COMMUNITY, NOT TO JUST A FEW MAJOR ARTERIALS. USE ONE OR THE OTHER BUT NOT BOTH]

Section 2.1 Roadways Subject to Access Management Regulations

The access management regulations of this Article (or Chapter) apply to all property according to the roadway classification of the abutting public streets and roads within _____ (name of community) as described below and as illustrated on Map ____.

[THE COMMUNITY MAY OR MAY NOT ALSO WISH TO USE THE TEXT IN A. AND B. WHICH FOLLOWS THE MAP FOR GREATER CLARITY.]

A. Application of the access location and design standards of this Article (or Chapter) requires identification of the functional classification of the street on which access is requested and then applying the appropriate spacing requirements. The streets and roads of _____ (insert name of community) are classified as follows and are as defined in Section _____:

1. Local Street or Road;
2. Minor Collector;
3. Major Collector;
4. Minor Arterial;
5. Major Arterial; and
6. Limited Access Highway.

B. Major arterial, minor arterial, and collector streets are indicated on the Thoroughfare Map (Map ____). [A SAMPLE THOROUGHFARE MAP IS ILLUSTRATED IN FIGURE 8-2.] All unclassified public streets are local streets principally providing access to single family residences. (Add this next sentence only if local streets are not classified on the Map or use the following language: The functional classification of any street in _____ (insert name of jurisdiction) not indicated as an arterial or collector on this Map

shall be determined using the functional street classification defined by the AASHTO "Green Book", A Policy on Geometric Design of Highways and Streets.)

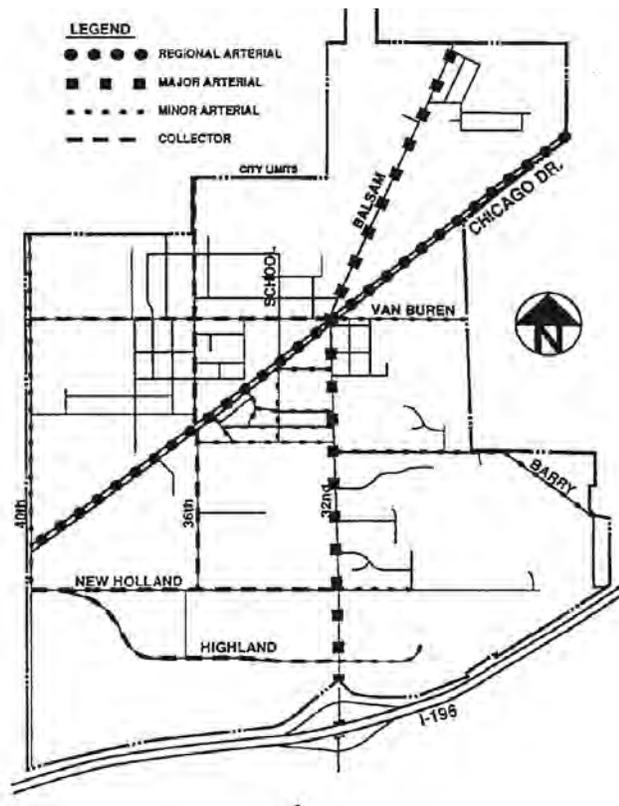
Section 2.2 Driveway and Related Access Standards

All lots hereafter created and all structures hereafter created, altered or moved on property with frontage on or access to a public road or street that is subject to regulation per Section 2.1, shall conform with the following requirements:

A. General Standards [GREAT CARE SHOULD BE TAKEN TO CAREFULLY INTEGRATE THIS SECTION WITH EXISTING DISTRICT REGULATIONS AND PROVISIONS IN THE SCHEDULE OF REGULATIONS.]

1. Access Approval Required - No road, driveway, shared access, parking lot cross access, service road, or other access

Figure 8-2
Sample Roadway Classification Map



Source: City of Hudsonville, Michigan: Driveway Location Standards, 1999.

arrangement shall be established, reconstructed or removed without first meeting the requirements of this Section.

2. Frontage on a Public Road or Street - Any lot created after the effective date of this Ordinance shall have frontage upon a public street right-of-way or private road or access easement recorded with the County Register of Deeds that meets the requirements of this Article (or Chapter). Contiguous properties under one ownership or consolidated for unified development will be considered one parcel for purposes of this Article.
3. Minimum Lot Width - Except for existing lots of record, all lots fronting on a major arterial, arterial or collector subject to this Article, shall not be less than _____ feet in

width (at least 300 feet with 400 feet better), unless served by shared access or a service drive that meets the requirements of Section 2.3, in which case minimum lot width may be reduced per the requirements of Section 2.6. [THIS CAN BE AN IMPORTANT INCENTIVE TO MOVE TO SHARED ACCESS.]

4. Structure Setback - No structure other than signs, as allowed in Section ____, telephone poles and other utility structures that are not buildings, transfer stations or substations, shall be permitted within _____ feet of the roadway right-of-way. [THIS SHOULD BE DEEP ENOUGH (USUALLY 75-100 FEET) TO PERMIT EXPANSION OF THE RIGHT-OF-WAY AT A FUTURE TIME WITHOUT PREVENTING EFFECTIVE USE OF THE STRUCTURE AT THAT

TIME, IF CAPACITY IMPROVEMENTS LIKE THE ADDITION OF LANES OR A MEDIAN ON THE ROADWAY ARE LIKELY].

5. Parking Setback and Landscaped Area - No parking or display of vehicles, goods or other materials for sale, shall be located within _____ (often 50) feet of the roadway right-of-way. This setback shall be planted in grass and landscaped with small clusters of salt tolerant trees and shrubs suitable to the underlying soils unless another design is approved under the landscape provisions of Section _____. [THIS PROVISION IMPROVES THE AESTHETIC APPEARANCE ALONG A ROADWAY, AND IMPROVES THE CONTRAST BETWEEN A VEHICLE AND THE PAVEMENT, IMPROVING EASE OF VISIBILITY. IT ALSO SERVES AS A SNOW STORAGE ZONE. SEE MDOT RULE 32(2) IN ADMINISTRATIVE RULES IN APPENDIX D.]

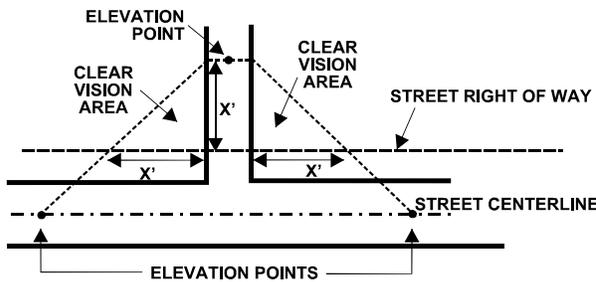
6. Clear Vision – All access points shall maintain clear vision as illustrated in Figure _____. [SEE EXAMPLE IN FIGURE 8-3.]

6. Clear Vision – All access points shall maintain clear vision as illustrated in Figure _____. [SEE EXAMPLE IN FIGURE 8-3.]

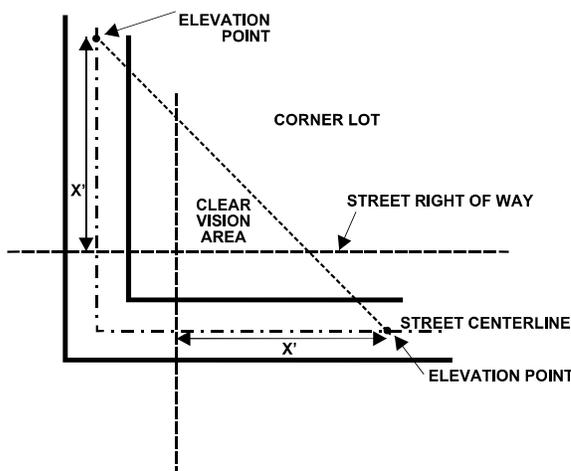
7. Street Structures - No driveway shall interfere with municipal facilities such as street light or traffic signal poles, signs, fire hydrants, cross walks, bus loading zones, utility poles, fire alarm supports, drainage structures, or other necessary street structures. The Zoning Administrator is authorized to order and

Figure 8-3

CLEAR VISION AT DRIVEWAYS



CLEAR VISION ON CORNER



Note: The dimension of X' is variable depending on local conditions and must be specified in the local zoning ordinance.

Graphic by John Warbach, Planning & Zoning Center, Inc.

effect the removal or reconstruction of any driveway which is constructed in conflict with street structures. The cost of reconstructing or relocating such driveways shall be at the expense of the abutting property owner.

B. Access Location Standards

1. Access Point Approval - No access point shall connect to a public street or road, without first receiving approval of the location and cross-section specifications from the _____ (*name of city or village street department, when on a city or village street*), _____ County Road Commission (*when on a county road*) or the Michigan Department of Transportation (*when on a state highway*). No access point shall connect to a private road unless approved by the Planning Commission and by the parties with an ownership interest in the private road. [INSERT THIS SENTENCE ONLY IF PRIVATE ROADS ARE ALLOWED].
2. Factors on Location of Driveway Access - At a minimum, the following factors shall be considered prior to making a decision on the location of a driveway or other access point: [IF THE COMMUNITY PREPARES A PROPERTY SPECIFIC ACCESS MANAGEMENT PLAN, THESE FACTORS MAY BE ABLE TO BE REPLACED WITH A SPECIFIC REFERENCE TO THE APPLICABLE PART OF THE ACCESS MANAGEMENT PLAN. SEE ALSO TRAFFIC AND SAFETY DIVISION NOTE "SPACING FOR COMMERCIAL DRIVES AND STREETS," 7.9 IN APPENDIX D.]
 - a. The characteristics of the proposed land use;
 - b. The existing traffic flow conditions and the future traffic demand anticipated by the proposed development on the adjacent street system;
 - c. The location of the property;
 - d. The size of the property;
 - e. The orientation of structures on the site;
 - f. The minimum number of driveways or other access points needed to accommodate anticipated traffic based on a traffic analysis, as determined by the community and road agency. Such

finding shall demonstrate traffic operations and safety along the public street would be improved (or at least not negatively affected), and not merely that another access point is desired for convenience;

- g. The number and location of driveways on existing adjacent and opposite properties;
- h. The location and functional classification of abutting streets or roads and the carrying capacity of nearby intersections;
- i. The proper geometric design of driveways;
- j. The spacing between opposite and adjacent driveways and from any nearby intersection;
- k. The internal circulation between driveways and through parking areas;
 - l. The size, location and configuration of parking areas relative to the driveways; and
 - m. The speed of the adjacent roadway.
3. Access Point Location - Each access point location shall conform with access management plans or corridor improvement plans that have been adopted by the _____ (*name of community*), the _____ County Road Commission, and/or the Michigan Department of Transportation.
4. Access Points within Right-of-Way - Driveways including the radii but not including right-turn lanes, passing lanes and tapers, shall be located entirely within the right-of-way frontage, unless otherwise approved by the road agency and upon written certification from the adjacent land owner agreeing to such encroachment.
5. Backing-up from Parking or Loading Area Onto a Public Street or Service Drive - Driveway access to arterials shall not be permitted for any parking or loading areas that require backing maneuvers in a public street or road right-of-way. Driveway access to collector streets, local streets, or service drives for commercial, office, industrial, or multifamily developments shall not be permitted for parking or loading areas that require backing maneuvers in a public street

right-of-way or onto a public or private service drive.

6. Relationship to Lot Line - No part of a driveway shall be located closer than _____ feet (*typical range 4-15 feet*) from a lot line unless it is a common or shared driveway as provided in Section 2.2 F. This separation is intended to help control stormwater runoff, permit snow storage on site, and provide adequate area for any necessary on-site landscaping.
7. Existing Driveways – Except for shared driveways, existing driveways that do not comply with the requirements of this Article (*or Chapter*) shall be closed when an application for a change of use requiring a zoning permit or a site plan requiring approval under Section ____ is submitted and once approval of a new means of access under this Article (*or Chapter*) is granted. A closed driveway shall be graded and landscaped to conform with adjacent land and any curb cut shall be filled in with curb and gutter per the standards of the applicable road authority. See also Section 2.5.
8. Intersection Sight Distance – Driveways shall be located so as not to interfere with safe intersection sight distance as determined by the appropriate road authority.
9. Adequate Corner Clearance – Driveways shall be located so as not to interfere with safe traffic operations at an intersection as determined by Table 2.2-3 as long as that distance is beyond any clear vision area owned by a road authority. [SEE MDOT TRAFFIC AND SAFETY DIVISION NOTE 7.9, “MDOT GUIDELINES FOR ACCESS SPACING ON STATE HIGHWAYS” IN APPENDIX D.]
10. Traffic Signals – Access points on arterial and collector streets may be required to be signalized in order to provide safe and efficient traffic flow. Any signal shall meet the spacing requirements of the applicable road authority. A development may be responsible for all or part of any right-of-way, design, hardware, and construction costs of a traffic signal if it is determined that the signal is warranted by the traffic generated from the development. The

procedures for signal installation and the percent of financial participation required of the development in the installation of the signal shall be in accordance with criteria of the road authority with jurisdiction.

[MAKING THE “LAST GUY IN” PAY THE TOTAL COST OF A TRAFFIC SIGNAL COULD BE UNREASONABLE IF HIS DEVELOPMENT ONLY GENERATED A SMALL PORTION OF THE TRAFFIC. FINANCIAL PARTICIPATION IN THE COST NEEDS TO CONSIDER THE SHARE OF TRAFFIC GENERATED.]

C. Number of Driveways Permitted

1. Access for an individual parcel, lot, or building site or for contiguous parcels, lots or building sites under the same ownership shall consist of either a single two-way driveway or a paired system wherein one driveway is designed, and appropriately marked, to accommodate ingress traffic and the other egress traffic.
2. One driveway shall be permitted for each single and two-family residential lot or parcel. [SEE ALTERNATIVE IN RULE 47 OF MDOT ADMINISTRATIVE RULES UNDER ACT 200 IN APPENDIX D.]
3. A temporary access permit may be issued for field entrances per Section 2.4, for cultivated land, timber land, or undeveloped land, as well as for uses at which no one resides or works such as cellular towers, water wells, pumping stations, utility transformers, billboards, and similar uses. Field-entrance and utility-structure driveways will be reviewed on a case-by-case basis. The review shall take into account the proximity of the adjacent driveways and intersecting streets, as well as traffic volumes along the roadway. [SEE RULE 49 OF MDOT ADMINISTRATIVE RULES UNDER ACT 200 IN APPENDIX D.]
4. For a parcel, lot, or building site with frontage exceeding _____ feet (*typically over 600 feet*), or where a parcel, lot, or building site has frontage on at least two streets, an additional driveway may be allowed, provided that a traffic impact study is submitted by the applicant showing that conditions warrant an additional driveway

and that all driveways meet the spacing requirements.

5. Certain developments generate enough traffic to warrant consideration of an additional driveway to reduce delays for exiting motorists. Where possible, these second access points should be located on a side street or service drive, or shared with adjacent uses, or designed for right-turn-in, right-turn-out only movements and shall meet the spacing requirements of this ordinance. In order to be considered for a second driveway on an arterial or collector street combined approach volumes (entering and exiting) of a proposed development shall exceed 100 directional trips during the peak hour of traffic and a traffic impact study shall be performed. [MDOT TRAFFIC AND SAFETY DIVISION NOTE # 7.9C LISTS LAND USES WHICH COMMONLY EXCEED 100 DIRECTIONAL PEAK HOUR TRIPS.] Uses where a second driveway could be considered are influenced by the trip generation characteristics of the uses and the volumes of the adjacent roadway. [SEE THE ITE TRIP GENERATION MANUAL FOR PEAK HOUR TRIP GENERATION COUNTS FOR DRIVEWAYS BY TYPE OF LAND USE.] Table 2.2-1 lists land uses which may warrant consideration of an additional driveway. [A COMMUNITY MAY NOT WISH TO PUBLISH A LIST AND INSTEAD LEAVE THE DETERMINATION UP TO TRAFFIC ENGINEERS FOLLOWING A TRAFFIC IMPACT STUDY. IF SO, DELETE THIS TABLE AND RENUMBER THE REST OF THE TABLES ACCORDINGLY.] (Note: Where the development has access to a signalized arterial or collector, the approach volume of driveway traffic should be double that of unsignalized locations to warrant consideration of a second access. See Section 2.2D.1.a.)

[NOTE: IF RESIDENTIAL USES PREDOMINATE ON THE SIDE STREET, THERE MAY BE OPPOSITION TO A COMMERCIAL DRIVEWAY. THE POTENTIAL NEGATIVE IMPACTS AND HENCE OPPOSITION, MAY BE MITIGATED BY USE OF A DIRECTIONAL DRIVEWAY.]

Table 2.2-1

Development that may Warrant Consideration of an Additional Driveway
<ul style="list-style-type: none"> multiple family development with over 250 units
<ul style="list-style-type: none"> a grocery store of over 30,000 square feet (GFA)
<ul style="list-style-type: none"> a shopping center with over 40,000 square feet (GFA)
<ul style="list-style-type: none"> a hotel or motel with over 400 rooms
<ul style="list-style-type: none"> industrial developments with over 300,000 square feet (GFA) or 350 employees (although a secondary entrance for trucks should be allowed)
<ul style="list-style-type: none"> warehouses of over 750,000 square feet (GFA) or 350 employees
<ul style="list-style-type: none"> a mobile home park with over 300 units
<ul style="list-style-type: none"> general office building of 150,000 square feet (GFA) or 500 employees
<ul style="list-style-type: none"> medical office building of 60,000 square feet (GFA) or 200 employees
<ul style="list-style-type: none"> fast food restaurant of over 6,000 square feet (GFA)
<ul style="list-style-type: none"> sit down restaurant of over 20,000 square feet (GFA).

Source: *Oshtemo Township Zoning Ordinance*

6. When alternatives to a single, two-way driveway are necessary to provide reasonable driveway access to property fronting on an arterial street, and shared access or a service drive are not a viable option, the following progression of alternatives should be used:
- a. One (1) standard, two-way driveway;
 - b. Additional ingress/egress lanes on one (1) standard, two-way driveway;
 - c. Two (2), one-way driveways;
 - d. Additional ingress/egress lanes on two (2), one-way driveways;
 - e. Additional driveway(s) on an abutting street with a lower functional classification;
 - f. Additional driveway on arterial street. Note: Restricted turns and roadway modifications will be considered in conjunction with alternative driveway designs.

D. Access Point Spacing Standards

1. Separation from Other Driveways -

- a. The minimum spacing between unsignalized driveways and other access points shall be determined based upon posted speed limits along the parcel frontage unless the appropriate road authority approves less based on the land use and restricted turns in the driveway design. The minimum spacings indicated below are measured from the centerline of one driveway to the centerline of another driveway. For sites with insufficient road frontage to meet the table below, the Planning Commission shall require one of the following: construction of the driveway along a side street, a shared driveway with an adjacent property, construction of a driveway along the property line farthest from the intersection, or a service drive as described in Section 2.3. The Planning Commission may grant temporary access approval (see Section 2.4) until such time that minimum spacing requirements can be met, or alternative access meeting the requirements of this ordinance is approved. [SOME COMMUNITIES MEASURE FROM NEAREST EDGE OF PAVEMENT TO NEAREST EDGE OF PAVEMENT.]

Table 2.2-2

Posted Speed Limit (MPH)	Min. Access Spacing (in feet) between Adjacent Access Points
25	130
30	185
35	245
40	300
45	350
50	455

Note: The values in Table 2.2-2 (*above*) are considered minimums based on the distances required to avoid conflicts between vehicles turning right or left from adjacent driveways. [SEE MDOT TRAFFIC AND SAFETY DIVISION NOTE 7.9 IN APPENDIX D. THIS COULD BE STRUCTURED TO PERMIT

A REDUCTION IN SPACING BETWEEN DRIVEWAYS BASED ON RESTRICTED TURNS AS IN THE NEXT TABLE.] [NOTE: THESE STANDARDS ARE SIGNIFICANTLY LESS THAN IN VARIOUS NATIONAL PUBLICATIONS, GREATER SPACING MAY BE ESPECIALLY APPROPRIATE IN RURAL AREAS. LESSER SPACING MAY BE APPROPRIATE ON NON-ARTERIAL ROADS THAT ARE ALREADY LARGELY DEVELOPED.]

- b. In the case of expansion, alteration or redesign of an existing development where it can be demonstrated that pre-existing conditions prohibit adherence to the minimum driveway spacing standards, the Planning Commission shall have the authority to modify the driveway spacing requirements or grant temporary access approval until such time that minimum spacing requirements can be met, or alternative access meeting the requirements of this ordinance is approved. Such modifications shall be of the minimum amount necessary, but in no case shall driveway spacing of less than ___ feet (*typically 60-75 feet, depending on the common lot size in the area*) be permitted by the Planning Commission. [THIS SUBSECTION COULD BE REMOVED AND THE COMMUNITY COULD RELY ON SECTION 2.7 WAIVERS. IF THE WAIVERS SECTION IS NOT INCLUDED IN THE ORDINANCE THEN THIS SECTION NEEDS TO STAY HERE.]

- 2. Access Point Separation from Intersections - All one and two-family driveways shall be separated from the nearest right-of-way of an intersecting street by at least _____ feet (*usually at least 50 feet, more if lot sizes are large*). Driveways for all other land uses shall be separated from the nearest right-of-way of an intersecting street according to Table 2.2-3 below:

- a. Access point spacing from intersections shall be measured from the centerline of the driveway to the extended edge of the travel lane on the intersecting street, as shown in Figure 2-1 unless otherwise noted.

[SOME COMMUNITIES CHOOSE TO MEASURE FROM THE EDGE OF THE DRIVEWAY INSTEAD OF FROM THE CENTER. SEPARATION DISTANCES NEED TO BE ADJUSTED ACCORDINGLY.]

- b. The minimum distance between an access point and an intersecting street shall be based on Figure 2-1 and the following: [ADAPT FIGURE 2-1 TO FIT TABLE DIMENSIONS DECIDED UPON IN A PARTICULAR UNIT OF LOCAL GOVERNMENT. ALSO SEE MDOT TRAFFIC AND SAFETY DIVISION NOTE 7.9.D IN APPENDIX D.]

Table 2.2-3
Minimum Access Point Spacing from Street and Other Intersections*

Location of Access Point	Min. Spacing for a Full Movement Driveway or other Access Point	Min. Spacing for a Driveway Restricting Left-turns (channelized for right-turn-in and right-turn-out only)
Along Arterial or from <ul style="list-style-type: none"> • Expressway Ramps • Railroad crossings • Bridges • Median openings 	300 feet [600 FEET IS BETTER] Contact MDOT for a site specific determination 100 feet 75 feet	300 feet [600 FEET IS BETTER] Contact MDOT for a site specific determination 100 feet 75 feet
Along Arterial or from another Intersecting Arterial	300 feet	125 feet
Along Arterial Intersecting a Collector or Local Street	200 feet	125 feet
Along a Collector	125 feet	75 feet
Along a Local Street or Private Road	75 feet	50 feet

*Regional Arterials, Arterials and Collectors are as classified in the _____ Master Plan (or on Map _____ in this Ordinance).

[SOME COMMUNITIES MAY REQUIRE LESS RESTRICTIVE STANDARDS WHEN LOCATING A DRIVEWAY AWAY FROM A NON-SIGNALIZED INTERSECTION THAN A SIGNALIZED ONE. IF SO, ADAPT THESE STANDARDS TO FIT THE LOCAL SITUATION. ALSO, THE APPROACH MDOT USES IS MORE DIRECTLY TIED TO THE SPEED OF THE TRUNKLINE, RATHER THAN THE FUNCTIONAL CLASS OF THE ROAD, SEE FIGURE 3-16. IT MAY BE A MORE USEFUL APPROACH IN SOME JURISDICTIONS.]

- c. If the amount of lot frontage is not sufficient to meet the above criterion, the driveway shall be constructed along the property line farthest from the

intersection to encourage future shared use, and/or a frontage road or rear service drive shall be developed as described in Section 2.3.

- d. For parcels on which an alternative means of access (shared driveway, frontage road, service drive or connected parking lots) is not feasible due to parcel size or existing adjacent development, the Planning Commission may allow a non-channelized, full movement driveway provided that:
1. the driveway is spaced no closer to the intersection than the minimum spacing allowed for a right-turn-in, right-turn-out driveway; and
 2. a traffic study conducted by a registered traffic engineer shows a right-turn-in, right-turn-out driveway does not provide reasonable access or desired safety; and
 3. a traffic study, conducted by a registered traffic engineer, provides substantial justification that the driveway operation will not create safety problems at the adjacent intersection.

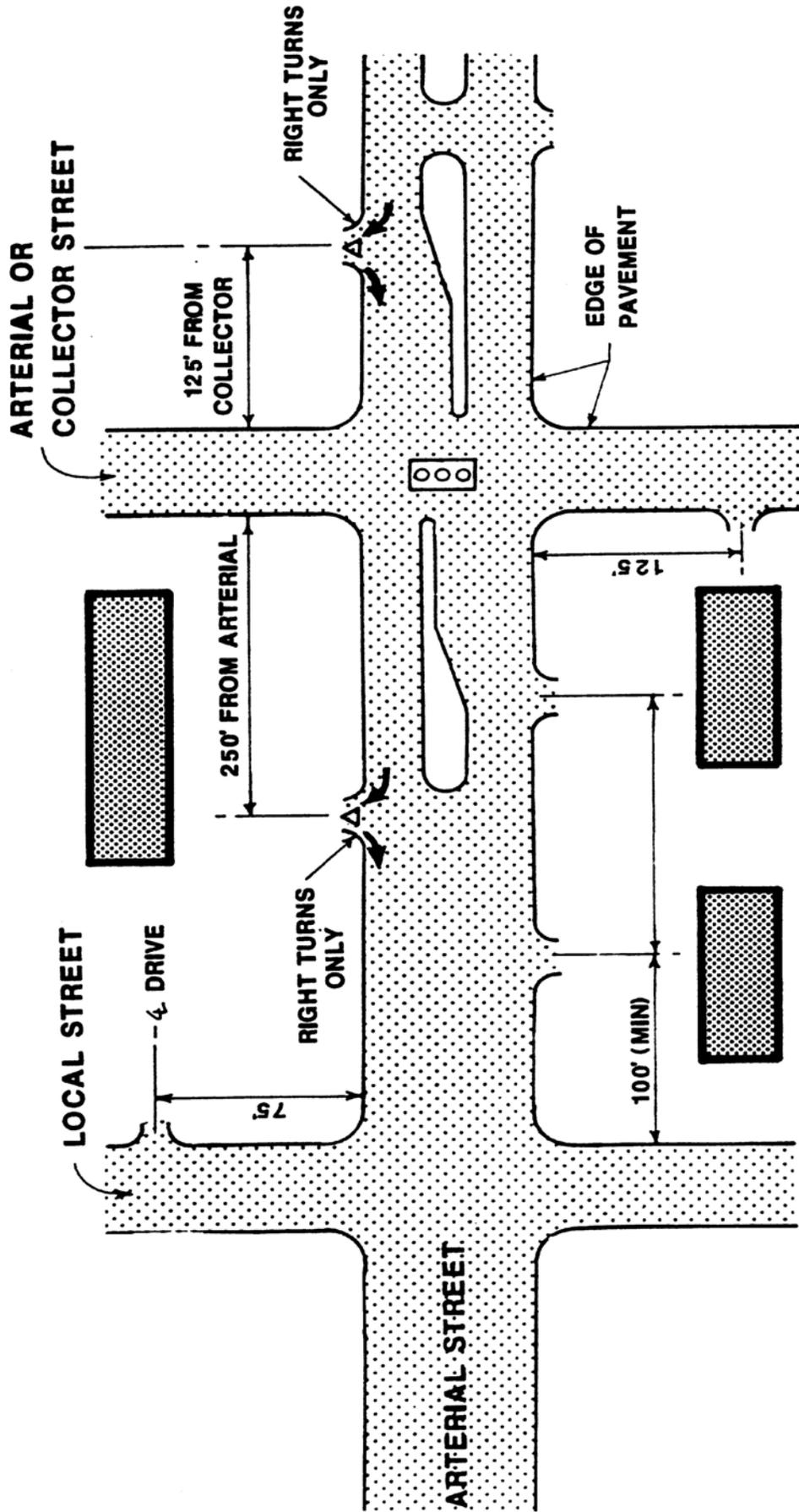
3. Access Alignment -

In order to prevent left-turn conflicts, two-way driveways shall not be across from an expressway ramp and shall be either:

- a. offset in accordance with the minimum spacing standards in Table 2.2-3 or
- b. perpendicular to the existing public street or an approved private road and shall line up with existing or planned driveways on the opposite side of the road wherever facing lots are not separated by a median, unless doing so in a particular case is substantially demonstrated by a registered traffic engineer to be unsafe.

FIGURE 2 -1 [EXAMPLE FROM DELTA TOWNSHIP, MICHIGAN]

TYPICAL DRIVEWAY SPACINGS



Note: The spacing on this example is tailored to fit local conditions and is different from the spacing in Table 2.2-3 or MDOT's guidelines on Figure 3-16. Local driveway spacing standards need to be established to fit local conditions.

E. Driveway Design and Construction Standards

1. Driveway or Throat Width –

- a. No single or two-family driveway shall have a width less than nine (9) feet nor more than sixteen (16) feet at the public road right-of-way. The driveway opening, including flares, shall not be more than 1.5 times the width of the driveway at the right-of-way line. [SEE RULE 48 OF MDOT ADMINISTRATIVE RULES UNDER ACT 200 IN APPENDIX D.]
- b. The typical commercial driveway design shall include one ingress lane and one egress lane with a combined maximum throat width of thirty (30) feet, measured from face to face of curb (see Figure 2-2a).
- c. Where exit traffic volumes are expected to exceed 100 directional trips per peak hour, or in areas where congestion along the arterial may create significant delays, as determined by the Planning Commission, two exit lanes shall be required. The total width of such a driveway shall be between 37 and 39 feet, with one 15 foot wide ingress lane and two 11-12 foot wide egress lanes (See Figure 2-2b).
- d. For access systems which include a pair of one-way driveways, each driveway shall be a minimum of sixteen (16) feet wide, measured perpendicularly (See Figure 2-2c).
- e. As an alternative to (d) above, the driveway may be designed with a fully curbed median dividing the ingress and egress driveways, with a maximum median width of ten feet. The radii forming the edges on the median shall be designed to accommodate the largest vehicle that will normally use the driveway. Where median or boulevard driveways are located across the street from each other, the left-turn egress lanes shall be aligned directly across from one another to minimize left-turn conflicts (see Figure 2-2d). Boulevard driveways should not be constructed at existing or future traffic signal locations unless there is a left-turn lane where the

boulevard meets the road right-of-way. Ground or monument signs shall not be permitted in boulevards if they would block motorist vision or otherwise create an unsafe condition. The Planning Commission may require landscaping on the portion of the boulevard outside the public right-of-way. Such landscaping shall use salt tolerant species.

2. Restricted Access Driveways -

Left and right-turn movements on and off roadways typically have the greatest impact on traffic flow and crash frequency. Therefore, where driveways are to be located in a segment defined in adopted corridor studies as having a high crash rate or significant traffic congestion/delays, or where left-turn access is available through alternative means of access, the Planning Commission may require driveway design and signing which discourages certain turning movements. Where driveways are intended to control specific left and/or right-turn ingress and egress, the designs shown in Figure 2-3 shall apply. Similar designs shall be accepted, provided that they are approved by the Michigan Department of Transportation and/or the _____ County Road Commission, if applicable.

3. Throat Length or Vehicle Stacking/Storage Space- There shall be a minimum of twenty (20) feet of throat length for entering and exiting vehicles at the intersection of a driveway and pavement of the public road or service drive as measured from the pavement edge. For driveways serving between one-hundred (100) and four-hundred (400) vehicles in the peak hour (two-way traffic volumes) the driveways shall provide at least sixty (60) feet of throat length. For driveways serving over four-hundred (400) vehicles per peak hour (two-way traffic volume) and for all driveways controlled by a traffic signal, adequate throat length shall be determined by a traffic impact study. In areas where significant pedestrian/bicycle travel is expected, the ingress and egress lanes should be separated by a 4-10 feet wide median with pedestrian

refuge area. In the absence of adequate traffic volume data, application of the commonly used values in Table 2.2-4 is appropriate.

4. Construction Standards -

a. Curb radii:

1. Driveways shall be designed with minimum 25 foot radii where primarily passenger vehicle traffic is expected.
2. For sites where truck traffic is expected, the driveways shall be designed with a minimum 30 foot radii unless a traffic analysis by a qualified traffic engineer reveals another radii is more appropriate for the vehicles expected to use the driveway.

b. Deceleration lanes and tapers:

1. Where it can be demonstrated that driveway volumes are expected to exceed 100 peak hour directional trips per hour, a right-turn taper, deceleration lane and/or left-turn bypass lane may be required. [SEE MDOT TRAFFIC AND SAFETY DIVISION NOTES #7.3 AND #7.5 AND DESIGN GUIDE VII-650C IN APPENDIX D.]
2. Where site frontage allows and a right-turn lane is warranted, a taper between 50 and 225 feet may be required. See example in Figure 2-4a. [SEE MDOT DESIGN GUIDE VII-650C IN APPENDIX D.]
3. Where the amount of frontage precludes the construction of a deceleration lane and taper combination entirely within the property lines of a parcel, a request shall be made to the owner of the parcel to allow the installation of a right-turn bay and taper which extends beyond the property line. If permission cannot be obtained from the adjacent property owner for an extension onto that parcel, a taper of at least 75 feet shall be

constructed as shown in Figure 2-4b.

4. A continuous right-turn lane, as shown in Figure 2-4c may be required where driveway spacing requirements restrict the use of consecutive turn bays and tapers, and a traffic engineer concludes it can be constructed without being used as a through lane.
5. For driveways located along streets without an exclusive left-turn lane, a bypass lane may be required. Such a lane shall be designed to the standards in the Michigan Department of Transportation, Traffic and Safety Notes # 7.7 and as shown in Figure 2-4d.

c. Acceleration lanes

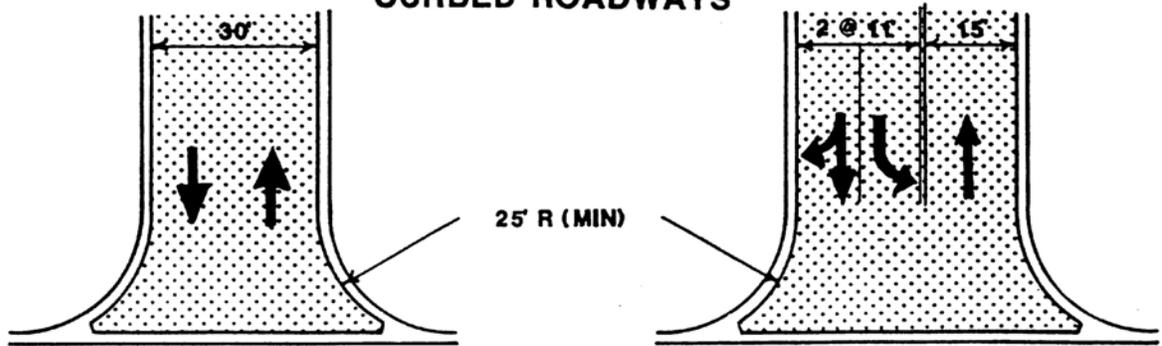
1. Generally, acceleration lanes are not permitted. However, where site frontage allows and large semi-trucks and other slow moving vehicles routinely access an arterial, an acceleration lane may be required in consultation with the applicable road authority.
2. The acceleration lane shall be designed by a traffic engineer to meet the needs of vehicles using it, topography, sight distance and other relevant factors.
3. Driveways shall not be permitted within an acceleration lane.

d. Grades and drainage

1. Driveways shall be constructed such that the grade for the 25 feet nearest the pavement edge or shoulder does not exceed 1.5% (one and one-half foot vertical rise in one-hundred feet of horizontal distance) wherever feasible. Where not feasible, grades shall conform with Figure 2-5. [MDOT DESIGN GUIDE, VII-680A, SHEET 3 IN APPENDIX D.]:

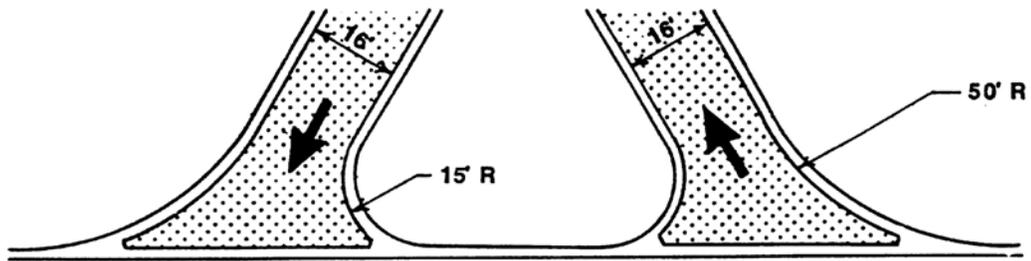
FIGURE 2 -2 [EXAMPLE FROM DELTA TOWNSHIP, MICHIGAN]

**TYPICAL CONFIGURATIONS FOR DRIVEWAYS
CURBED ROADWAYS**

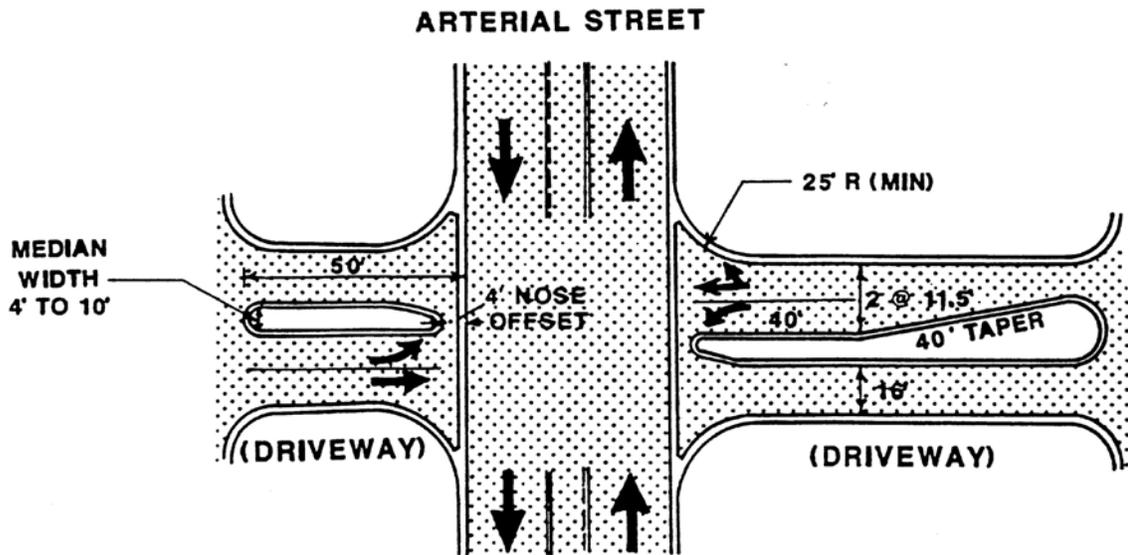


a. TYPICAL 2-WAY DRIVEWAY

b. HIGH-USE DRIVEWAY



c. ONE-WAY DRIVEWAYS

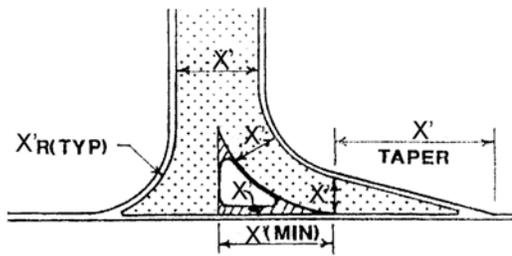


d. BOULEVARD DRIVEWAYS

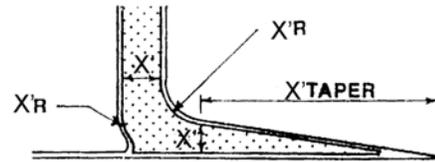
Note: The left-turn lanes in d. Boulevard Driveways will work better if the left-turn lanes are directly across from one another. This requires cutting off a portion of the nose of the boulevard. Also, turning radii and throat width need to be designed to accommodate vehicles using the driveway. See also *MDOT Design Guide for Commercial Driveways, VII-680A*.

Figure 2-3

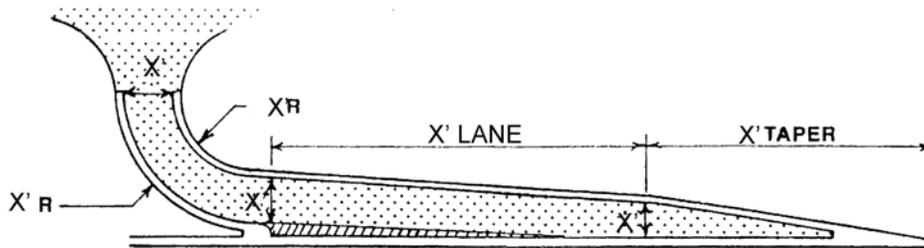
CHANNELIZATION ISLAND OPTIONS FOR CONTROLLING TURNS



a. TO PREVENT LEFT-TURN INGRESS MOVEMENTS



b. TO ALLOW RIGHT-TURN IN ONLY



c. TO ALLOW RIGHT TURN IN ONLY

Note: The dimension of X' is variable depending on site conditions, speed, number of vehicles and the design needs of the vehicles to use it. The local ordinance must specify what these dimensions are. [See MDOT Traffic and Safety Division Notes #7.3 and #7.5 and *Design Guide VII-650C* in Appendix D.]

Source: adapted from Delta Township Zoning Ordinance. See also MDOT *Geometric Design Guide VII-680* and *VII-650 series* in Appendix D.

2. Vertical curves, with a minimum length of 15 feet shall be provided on driveway approaches at a change in grade of 4% or more. [SEE MDOT RULE 63(E) OF THE ADMINISTRATIVE RULES TO ACT 200 IN APPENDIX D.]
3. Driveways shall be constructed such that drainage from impervious areas located outside of the public right-of-way, which are determined to be in excess of existing drainage from these areas shall not be discharged into the roadway drainage system absent the approval of the

responsible agency. Storm drains, or culverts, if required shall be of a size adequate to carry the anticipated storm flow and be constructed and installed pursuant to the specifications of the responsible road authority. [SEE RULE 61 OF THE ADMINISTRATIVE RULES TO ACT 200 IN APPENDIX D].

Table 2.2-4 Minimum Throat Length Requirement

Land Use	Building Site	Minimum Throat Length (Feet)	
		Collector	Arterial
Apartments	<100 Units	25	50
	100-200 Units	50	75
	>200 Units	75	125
Office	<50,000 Sq ft	25	50
	50,001 - 100,000 Sq ft	25	75
	100,001 - 200,000 Sq ft	50	100
	200,001 - 500,000 Sq ft	100	150
Retail	<500,000 Sq ft	125	250
	<30,000 Sq ft	25	50
	> 30,000 Sq ft	25	75
Shopping Center	< 250,000 Sq ft	25	50
	250,001 - 500,000 Sq ft	50	75
	500,000 - 750,000 Sq ft	75	200
	> 750,000 Sq ft	125	250
Supermarket	<20,000 Sq ft	50	75
	>20,000 Sq ft	75	125
Restaurant	<15,000 Sq ft	25	50
	>15,000 Sq ft	25	75
Drive-in Restaurant	<2,000 Sq ft	25	75
	>2,000 Sq ft	50	100
Motel	<150 Rooms	25	75
	>150 Rooms	25	100
Light Industrial	<100,000 Sq ft	25	50
	100,001 - 500,000 Sq ft	50	100
	>500,000 Sq ft	50	200

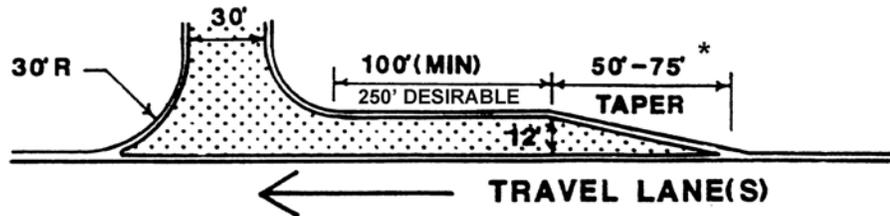
Source: *Oshtemo Township Zoning Ordinance*, Section 67, Access Management Guidelines, 1991

[THESE THROAT LENGTHS SHOULD BE ADJUSTED TO FIT LOCAL CIRCUMSTANCES]

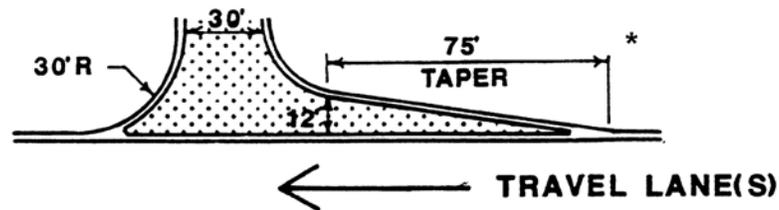
Figure 2-4

[EXAMPLES A AND C ADAPTED FROM DELTA TOWNSHIP, MICHIGAN. EXAMPLE B FROM DELTA TOWNSHIP, MICHIGAN. EXAMPLE D FROM MDOT *DESIGN GUIDE VII-650 C*, SHEET 2]

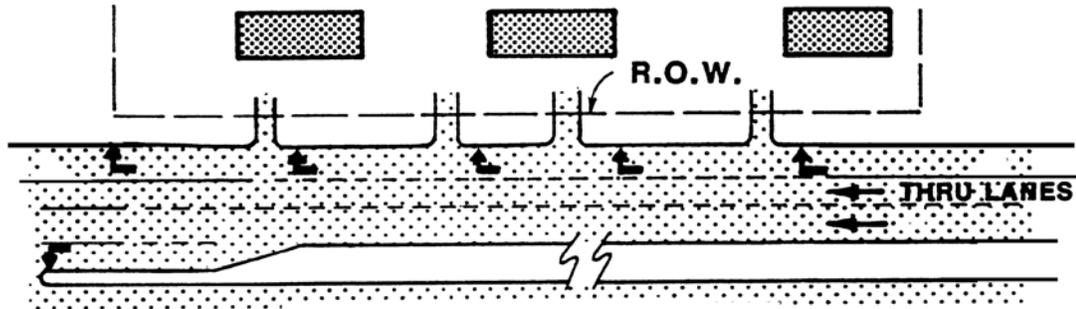
a. DECELERATION TAPER WITH PARALLEL LANE



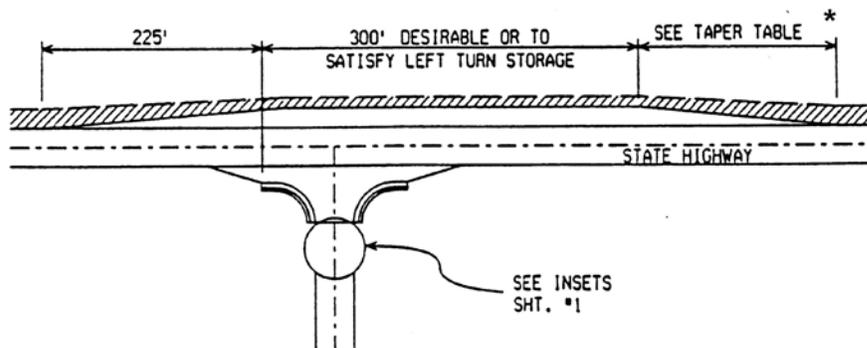
b. DECELERATION TAPER



c. CONTINUOUS RIGHT-TURN LANE



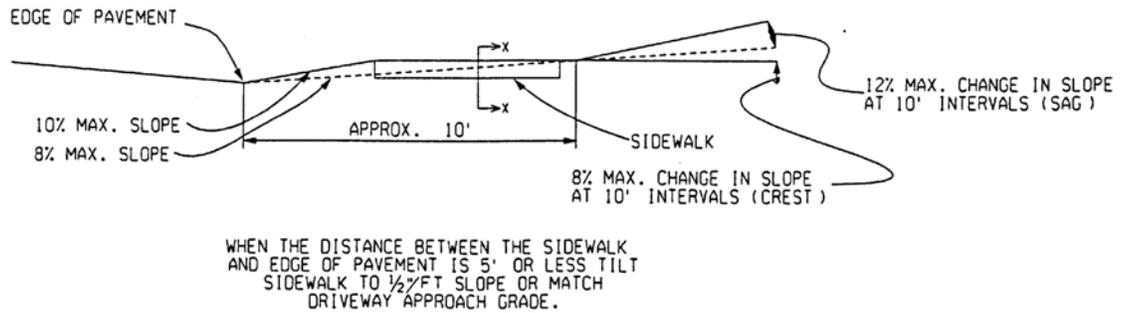
d. TYPE 4 MODIFIED (PASSING FLARE), FOR T-INTERSECTIONS



*All taper lengths should be based on posted speeds, see MDOT Design Guide VII-650C.

Figure 2-5

LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES



Source: MDOT, *Geometric Design Guide VII-680A*, Sheet 3.

- e. **Surface and Curb Construction -**
Commercial and all other nonresidential driveways shall be constructed of a permanent asphalt or concrete material sufficient to provide the bearing capacity needed to carry the anticipated traffic loads as determined by the appropriate road authority unless the road authority approves use of another material. Where a driveway connects with a curbed road, it shall be paved and curbed from the edge of pavement to either the right-of-way line or point of curvature of the radius returns. [SEE MDOT RULES 51 AND 52 OF ADMINISTRATIVE RULES TO ACT 200 IN APPENDIX D.] All soil erosion and sedimentation requirements shall be met.

- f. **Directional Signs and Pavement Markings -**
In order to ensure smooth traffic circulation on the site, direction signs and pavement markings shall be installed at the driveway(s) in a clearly visible location as required by the _____ (*name of jurisdiction*) as part of the site plan review process and approved by the Michigan Department of Transportation and _____ County Road Commission (as

appropriate), and shall be maintained on a permanent basis by the property owner. Directional signs and pavement markings shall conform to the standards in the Michigan Manual of Uniform Traffic Control Devices. [BE SURE TO COORDINATE THIS WITH EXISTING SIGN STANDARDS IN THE ZONING ORDINANCE WHICH MAY REFER TO A DIFFERENT TYPE OF DIRECTIONAL SIGN.]

F. Shared Access

Shared access is strongly encouraged and in some cases may be required. When required, one or more of the following options, and the standards of Section 2.3 apply.

1. **Shared Driveways:** Sharing or joint use of a driveway by two or more property owners shall be encouraged. In cases where access is restricted by the spacing requirements of Section 2.2.D, "Access Point Spacing Standards", a shared driveway may be the only access design allowed. The shared driveway shall be constructed along the midpoint between the two properties unless a written easement is provided which allows traffic to travel across one parcel to access another, and/or access the public street.
2. **Frontage Roads:** In cases where a frontage road exists, is recommended either in the _____'s Comprehensive Plan or in

an adopted corridor study, and/or is proposed in an approved site plan for an adjoining lot or parcel, access shall be provided via such frontage road, rather than by direct connection to the abutting arterial street.

3. Rear Service Drives: Rear service drives shall be encouraged, especially for locations where connection to a side street is available. In addition to access along the rear service drive, direct connection(s) to the arterial street may be allowed, provided that the driveways meet the requirements of Section 2.2.C, "Number of Driveways", and 2.2.D, "Access Point Spacing Standards."

G. Parking Lot Connections

Where a proposed parking lot is adjacent to an existing parking lot of a similar use, there shall be a vehicular connection between the two parking lots where physically feasible, as determined by the Planning Commission. For developments adjacent to vacant properties, the site shall be designed to provide for a future connection. A written access easement signed by both landowners shall be presented as evidence of the parking lot connection prior to the issuance of any final zoning approval. [SOME COMMUNITIES PROVIDE AN INCENTIVE FOR PARKING LOT CONNECTIONS BY ALLOWING A REDUCTION OF 5-10% OF REQUIRED PARKING SPACES FOR EACH USE IF THERE IS A PARKING LOT CONNECTION. SEE SECTION 2.6 FOR AN EXAMPLE.]

H. Access Easements

Shared driveways, cross access driveways, connected parking lots, and service drives shall be recorded as an access easement and shall constitute a covenant running with the land. Operating and maintenance agreements for these facilities should be recorded with the deed. [SEE APPENDIX B FOR EXAMPLES.]

I. Medians and Median Openings

1. The type, location and length of medians on public roads shall be determined by the entity having jurisdiction over such roads. This determination will be made in consultation with the Planning Commission and will be based on existing and projected traffic conditions; the type, size, and extent

of existing and projected development and traffic generated by development; traffic control needs; and other factors.

2. The minimum spacing between median openings shall be as shown in Table 2.2-5: [INSERT LOCAL NUMBERS IF BEING APPLIED ON A ROAD NOT UNDER MDOT CONTROL.]

Table 2.2-5: Minimum Directional Median Opening Spacing

Location	Directional crossover spacing
Urban	660 feet
Rural	1,320 feet

See MDOT Traffic and Safety Division, *Directional Median Crossovers, #11.4 and Geometric Design Guide VII-670.*

3. Median openings intended to serve development must meet or exceed the minimum median opening spacing standards and must also be justified by a traffic impact analysis approved by the entity having jurisdiction over such roads, in consultation with the Planning Commission (*add as appropriate:* ,or by the Planning Commission where driveways are proposed to connect to city roads). The cost for preparation of the traffic impact analysis and construction of the median opening or openings, including installation and operation of signals and other improvements where warranted, shall be borne by the applicant.

Section 2.3 Service Drives and Other Shared Access Standards

A. The use of shared access, parking lot connections and service drives, in conjunction with driveway spacing, is intended to preserve traffic flow along major thoroughfares and minimize traffic conflicts, while retaining reasonable access to the property. Where noted above, or where the Planning Commission determines that restricting new access points or reducing the number of existing access points may have a beneficial impact

on traffic operations and safety while preserving the property owner's right to reasonable access, then access from a side street, a shared driveway, a parking lot connection, or service drive connecting two or more properties or uses may be required instead of more direct connection to the arterial or collector street. However, where traffic safety would be improved, and the driveway spacing requirements of this ordinance can be met, then direct connection to the arterial or collector street may be allowed in addition to a required service drive.

1. In particular, shared access, service drives or at least a connection between abutting land uses may be required in the following cases:
 - a. Where the driveway spacing standards of this section can not be met.
 - b. Where recommended in the _____ Corridor or Access Management Plan and/or other corridor or sub-area master plans of _____ (*name of jurisdiction*).
 - c. When the driveway could potentially interfere with traffic operations at an existing or planned traffic signal location.
 - d. The site is along a collector or arterial with high traffic volumes, or along segments experiencing congestion or a relatively high number of crashes.
 - e. The property frontage has limited sight distance.
 - f. The fire (or emergency services) department recommends a second means of emergency access.
2. In areas where frontage roads or rear service drives are recommended, but adjacent properties have not yet developed, the site shall be designed to accommodate a future road/facility designed according to the standards of this Section. The Planning Commission may approve temporary access points where a continuous service drive is not yet available and a performance bond or escrow is accepted to assure elimination of temporary access when the service road is constructed. (See Section 2.4 Temporary Access Permits).

B. Notwithstanding the requirements of the _____ (*community name and ord. No.*) Land Division Ordinance, the standards for all service drives shall be as follows:

1. Site Plan Review - The Planning Commission shall review and approve all service drives to ensure safe and adequate continuity of the service drive between contiguous parcels as part of the site plan review process in Section _____.
2. Front and Rear Service Drives - A front or rear service drive may be established on property which abuts only one public road. The design of a service road shall conform with national design guidelines such as those identified in the National Access Management Manual by TRB, the AASHTO "Green Book", and National Cooperative Highway Research Program (NCHRP), "Access Management Guidelines to Activity Centers" Report 348 and "Impacts of Access Management Techniques" Report 420.
3. Location - Service roads shall generally be parallel to the front property line and may be located either in front of, or behind, principal buildings and may be placed in required yards. In considering the most appropriate alignment for a service road, the Planning Commission shall consider the setbacks of existing and/or proposed buildings and anticipated traffic flow for the site.
4. Width and Construction Materials - A service drive shall be within an access easement permitting traffic circulation between properties. The easement shall be recorded with the County Register of Deeds. This easement shall be at least forty (40) feet wide. A service drive shall have a minimum pavement width of _____ (*typically 26-36*) feet, measured face to face of curb with an approach width of _____ feet (*typically 36-39 feet*) at intersections. The service drive shall be constructed of a paved surface material that is resistant to erosion and shall meet _____ (*city or village, County Road Commission or MDOT -- depending on what road the service drive parallels*) standards for base

and thickness of asphalt or concrete, unless the community has more restrictive standards.

5. Snow Storage and Landscaping Area - A minimum of fifteen (15) feet of snow storage/landscaping area shall be reserved along both sides of the service drive. Frontage roads shall have a minimum setback of 30 feet from the right-of-way, with a minimum of 60 feet of storage at the intersection for entering and exiting vehicles as measured from the pavement edge (See Figure 2-6a).
6. Distance from Intersection on Service Drives - Frontage road and service drive intersections at the collector or arterial street shall be designed according to the same minimum standards as described for driveways in Section 2.2.D.2.
7. Driveway Entrance - The Planning Commission shall approve the location of all accesses to the service drive, based on the driveway spacing standards of this Article (*or Chapter*). Access to the service drive shall be located so that there is no undue interference with the free movement of service drive and emergency vehicle traffic, where there is safe sight distance, and where there is a safe driveway grade as established by the applicable road authority (*local, MDOT or CRC*).
8. Driveway Radii - All driveway radii shall be concrete curbs and conform with the requirements of Section 2.2.E.4.
9. Acceleration Lanes and Tapers - The design of the driveway, acceleration, deceleration or taper shall conform with the requirements of Section 2.2.E.4.
10. Elevation - The elevation of a service drive shall be uniform or gently sloping between adjacent properties.
11. Service Drive Maintenance - No service drive shall be established on existing public right-of-way. The service drive shall be a public street (if dedicated to and accepted by the public), or a private road maintained by the adjoining property owners it serves who shall enter into a formal agreement for the joint maintenance of the service drive. The agreement shall also specify who is responsible for enforcing speed limits, parking and related vehicular activity on the service drive. This agreement shall be approved by the _____ (*municipal*) attorney and recorded with the deed for each property it serves by the County Register of Deeds. If the service drive is a private road, the local government shall reserve the right to make repairs or improvements to the service drive and charge back the costs directly or by special assessment to the benefiting landowners if they fail to properly maintain a service drive.
12. Landscaping - Landscaping along the service drive shall conform with the requirements of Section _____ (*reference applicable landscaping standards*). Installation and maintenance of landscaping shall be the responsibility of the developer or a property owners association.
13. Parking Areas - All separate parking areas (*i.e. those that do not use joint parking cross access*) shall have no more than one (1) access point or driveway to the service drive.
14. Parking - The service road is intended to be used exclusively for circulation, not as a parking, loading or unloading aisle. Parking shall be prohibited along two-way frontage roads and service drives that are constructed at the minimum width (*see B.4. above*). One-way roads or two-way roads designed with additional width for parallel parking may be allowed if it can be demonstrated through traffic studies that on-street parking will not significantly affect the capacity, safety or operation of the frontage road or service drive. Perpendicular or angle parking along either side of a designated frontage road or service drive is prohibited. The Planning Commission may require the posting of "no parking" signs along the service road. As a condition to site plan approval, the Planning Commission may permit temporary parking in the easement area where a continuous service road is not yet available, provided that the layout allows removal of the parking in the future to allow extension of the service road.

Temporary parking spaces permitted within the service drive shall be in excess of the minimum required under Article____, Parking and Loading Standards.

15. Directional Signs and Pavement Markings - Pavement markings may be required to help promote safety and efficient circulation. The property owner shall be required to maintain all pavement markings. All directional signs and pavement markings along the service drive shall conform with the current Michigan Manual of Uniform Traffic Control Devices.
16. Assumed Width of Pre-existing Service Drives - Where a service drive in existence prior to the effective date of this provision has no recorded width, the width will be considered to be _____ (*typically 40-66*) feet for the purposes of establishing setbacks and measured an equal distance from the midpoint of the road surface.
17. Pedestrian and Bicycle Access - Separate, safe access for pedestrians and bicycles shall be provided on a sidewalk or paved path that generally parallels the service drive unless alternate and comparable facilities are approved by the Planning Commission.
18. Number of Lots or Dwellings Served - No more than twenty-five (25) lots or dwelling units may gain access from a service drive to a single public street.
20. Service Drive Signs - All new public and private service drives shall have a designated name on a sign meeting the standards on file in the office of the Zoning Administrator.
21. In the case of expansion, alteration or redesign of existing development where it can be demonstrated that pre-existing conditions prohibit installation of a frontage road or service drive in accordance with the aforementioned standards, the Planning Commission shall have the authority to allow and/or require alternative cross access between adjacent parking areas through the interconnection of main circulation aisles. Under these conditions, the aisles serving the parking stalls shall be aligned perpendicularly to the access aisle, as

shown in Figure 2-6c, with islands, curbing and/or signage to further delineate the edges of the route to be used by through traffic.

Section 2.4 Temporary Access Permits

A.A temporary access permit may be conditionally issued to a property included in an adopted corridor or access management plan that programs road improvements and installation of service drives and shared driveways that would eliminate the need for the temporary driveway.

B.Conditions may be included in the temporary access permit including but not limited to, a limitation on development intensity on the site until adjoining parcels develop which can provide a shared driveway, shared access via a service drive, and/or cross parking lot connection consistent with the requirements of Section 2.3.

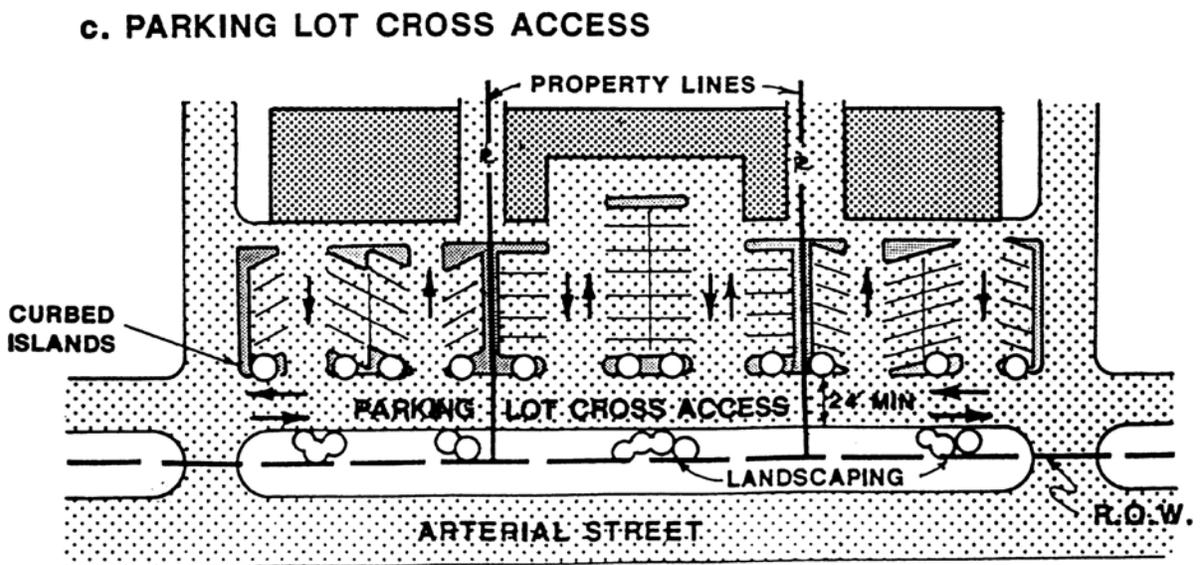
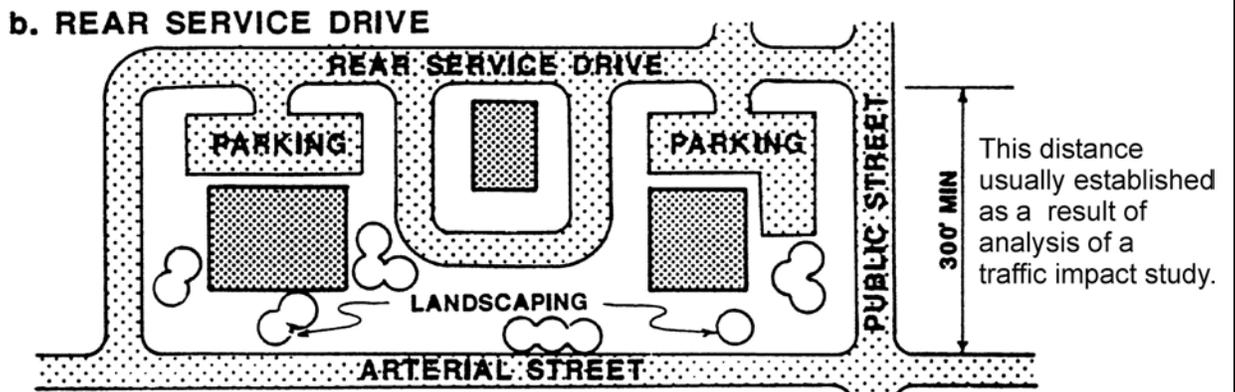
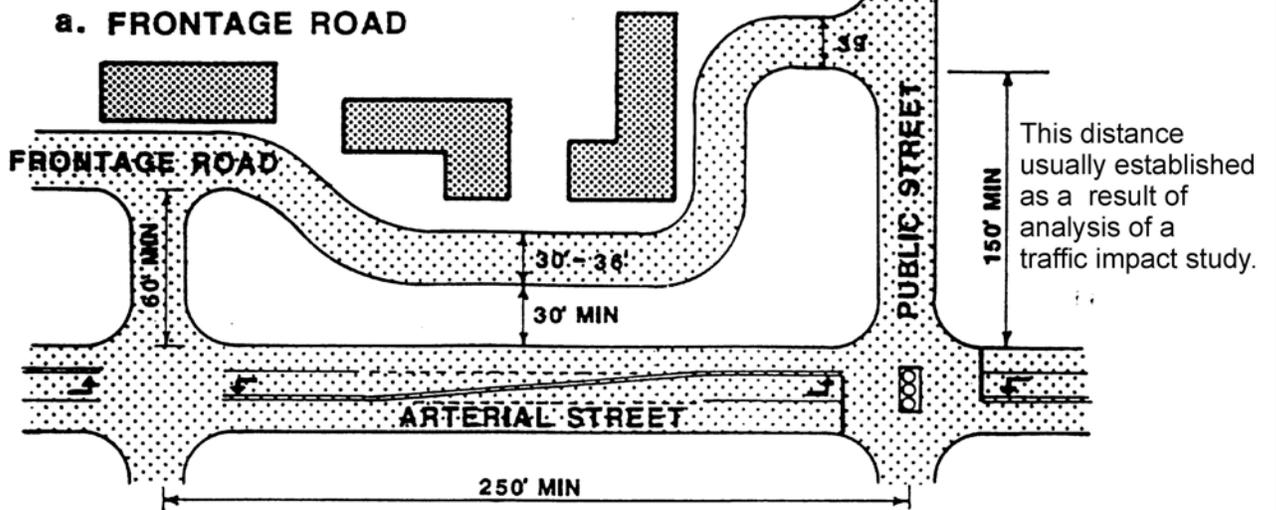
C. A temporary access permit shall expire when the use of the site for which the temporary access permit was granted has ceased for twelve (12) months or more, or the use of the site or the driveway has changed such that the use of the driveway has increased from its initial use level at least _____ percent.

D. A site plan for property that cannot meet the access requirements of Section 2.3 nor the waiver standards in Section 2.7, and has no alternative means of reasonable access to the public road system may be issued a temporary access permit. When adjoining parcels develop which can provide a shared driveway, shared access via a service drive or a cross parking lot connection, the temporary access permit shall be rescinded and an application for an access permit consistent with the requirements of Section 2.3 shall be required.

Section 2.5 Nonconforming Driveways

A. Driveways that do not conform to the regulations in this Article (*or Chapter*), and were constructed before the effective date of this Article (*or Chapter*), shall be considered legal

FIGURE 2 - 6



[EXAMPLE FROM DELTA TOWNSHIP, MICHIGAN]

nonconforming driveways. Existing driveways granted a temporary access permit are legal nonconforming driveways until such time as the temporary access permit expires.

B. Loss of legal nonconforming status results when a nonconforming driveway ceases to be used for its intended purpose, as shown on the approved site plan, or a plot plan, for a period of twelve (12) months or more. Any reuse of the driveway may only take place after the driveway conforms to all aspects of this Article.

C. Legal nonconforming driveways may remain in use until such time as the use of the driveway or property is changed or expanded in number of vehicle trips per day or in the type of vehicles using the driveway (such as many more trucks) in such a way that impact the design of the driveway. At this time, the driveway shall be required to conform to all aspects of the Ordinance.

[OR THE FOLLOWING LESS RESTRICTIVE APPROACH. USE ONE OR THE OTHER BUT NOT BOTH.]

C. When the owner of a property with an existing, nonconforming driveway or driveways, applies for a permit to upgrade or change the use of the property, the Planning Commission will determine whether it is necessary and appropriate to retrofit the existing driveway or driveways.

1. The property owner may be required to establish a retrofit plan. The objectives of the retrofit plan will be to minimize the traffic and safety impacts of development by bringing the number, spacing, location, and design of driveways into conformance with the standards and requirements of this Article (*or Chapter*), to the extent possible without imposing unnecessary hardship on the property owner. The retrofit plan may include:
 - a. elimination of driveways,
 - b. realignment or relocation of driveways,
 - c. provision of shared driveways and/or cross parking lot connection,
 - d. access by means of a service drive
 - e. restriction of vehicle movements (e.g. elimination of left-turns in and out),
 - f. relocation of parking,

- g. traffic demand management (e.g. a reduction in peak hour trips),
- h. signalization, or
- i. such other changes as may enhance traffic safety.

2. The requirements of the retrofit plan shall be incorporated as conditions to the permit for the change or upgrade of use and the property owner shall be responsible for the retrofit.

D. Driveways that do not conform to the regulations in this Ordinance and have been constructed after adoption of this Ordinance, shall be considered illegal nonconforming driveways.

E. Illegal nonconforming driveways are a violation of this Ordinance. The property owner shall be issued a violation notice which may include closing off the driveway until any nonconforming aspects of the driveway are corrected. Driveways constructed in illegal locations shall be immediately closed upon detection and all evidence of the driveway removed from the right-of-way and site on which it is located. The costs of such removal shall be borne by the property owner.

F. Nothing in this Ordinance shall prohibit the repair, improvement, or modernization of lawful nonconforming driveways, provided it is done consistent with the requirements of this Article.

Section 2.6 Incentives

A. In order to ensure the safe and efficient movement of traffic along a road and between the road and properties abutting the road, shared driveways, service roads, and interconnected parking lots are encouraged.

B. The Planning Commission may waive the required bulk, area and coverage requirements including lot width, setbacks, density, area, height, parking, or open space otherwise required in the zoning district by up to ____ % (*typically 5-10%*) when such property owner elects to provide and maintain shared driveways, service roads, or

interconnected parking lots. [MOST COMMUNITIES DO NOT ALLOW ANY WAIVERS. SOME MAY WISH TO ONLY ALLOW A WAIVER ON ONE OR TWO ITEMS UP TO THE MAXIMUM AMOUNT. NOT ALL OF THESE ITEMS NEED BE INCLUDED, IF THERE IS A SENTIMENT IN FAVOR OF WAIVERS. THE TWO ITEMS OF GREATEST INCENTIVE VALUE ARE OFTEN LOT WIDTH AND PARKING. INCENTIVES ARE MOST USEFUL AT IMPROVING ACCESS IN EXISTING DEVELOPED AREAS, TRANSITION AREAS AND OTHER AREAS WHERE A RETROFIT PLAN WOULD BE BENEFICIAL.]

C. The Planning Commission reserves the authority to determine, in its discretion, the adequacy of the access management amenities to be accepted and the particular incentive to be provided to a property owner. [NOTE: MANY COMMUNITIES BELIEVE NO INCENTIVES ARE NECESSARY OR DESIRABLE, IN LIGHT OF CONCERN ABOUT EQUAL TREATMENT OF ALL PROPERTY OWNERS. SOME COMMUNITIES BELIEVE THE NEXT SECTION ON "WAIVERS AND VARIANCES" IS ALL THAT IS NEEDED.]

Section 2.7 Waivers and Variances

A. Any applicant for access approval under the provisions of this Article (*or Chapter*) may apply for a waiver of standards in Section 2.3 if the applicant cannot meet one or more of the standards according to the procedures provided below:

1. For waivers on properties involving land uses with less than 500 vehicle trips per day based on rates published in the Trip Generation Manual of the Institute of Transportation Engineers: Where the standards in this Article (*or Chapter*) cannot be met, suitable alternatives, documented by a registered traffic engineer and substantially achieving the intent of the Article (*or Chapter*) may be accepted by the Zoning Administrator, provided that all of the following apply:
 - a. The use has insufficient size to meet the dimensional standards.
 - b. Adjacent development renders adherence to these standards economically unfeasible.

- c. There is no other reasonable access due to topographic or other considerations.
 - d. The standards in this Article (*or Chapter*) shall be applied to the maximum extent feasible.
2. For waivers on properties involving land uses with more than 500 vehicle trips per day based on rates published in the Trip Generation Manual of the Institute of Transportation Engineers: During site plan review the Planning Commission shall have the authority to waive or otherwise modify the standards of Section 2.3 following an analysis of suitable alternatives documented by a registered traffic engineer and substantially achieving the intent of this Article (*or Chapter*), provided all of the following apply:
 - a. Access via a shared driveway or front or rear service drive is not possible due to the presence of existing buildings or topographic conditions.
 - b. Roadway improvements (such as the addition of a traffic signal, a center turn lane or bypass lane) will be made to improve overall traffic operations prior to project completion, or occupancy of the building.
 - c. The use involves the redesign of an existing development or a new use which will generate less traffic than the previous use.
 - d. The proposed location and design is supported by the _____ County Road Commission and/or the Michigan Department of Transportation, as applicable, as an acceptable design under the circumstances.

B. Variance Standards: The following standards shall apply when the Board of Appeals considers a request for a variance from the standards of this Article.

1. The granting of a variance shall not be considered until a waiver under Section 2.7.A or a temporary access permit under Section 2.4.D. has been considered and rejected. [SOME COMMUNITIES MAY DECIDE A VARIANCE OPTION IS NOT NEEDED]

BECAUSE OF THE FLEXIBILITY OFFERED IN SECTION 2.7.A AND 2.4.D. IF SO, DROP THIS SUBSECTION B. AND DROP “AND VARIANCES” FROM THE TITLE IN SECTION 2.7. IT IS NOT APPROPRIATE TO DROP EITHER SECTION 2.7 OR SECTION 2.4.D AND ONLY KEEP THE VARIANCE SECTION IN 2.7.B. ZONING BOARD OF APPEALS MEMBERS ARE NOT ADEQUATELY TRAINED TO CONSIDER DRIVEWAY OR OTHER ACCESS VARIANCES.]

2. Applicants for a variance must provide proof of practical difficulties unique to the parcel (such as wetlands, steep slopes, an odd parcel shape or narrow frontage, or location relative to other buildings, driveways or an intersection or interchange) that make strict application of the provisions of this Article (*or Chapter*) impractical. This shall include proof that:
 - a. indirect or restricted access cannot be obtained; and,
 - b. no reasonable engineering or construction solution can be applied to mitigate the condition; and,
 - c. no reasonable alternative access is available from a road with a lower functional classification than the primary road; and,
 - d. without the variance, there is no reasonable access to the site.
3. The Board of Appeals shall make a finding that the applicant for a variance met their burden of proof under B.2. above, that a variance is consistent with the intent and purpose of this Article, and is the minimum necessary to provide reasonable access.
4. Under no circumstances shall a variance be granted unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an unnecessary hardship on the applicant. No variance shall be granted where such hardship is self-created.

OPTION 3 -- BEST SUITED FOR AN URBAN COMMUNITY WITH LITTLE UNDEVELOPED LAND AND MANY RETROFIT OR REDEVELOPMENT OPPORTUNITIES

Option 3 is Option 2 modified to meet the needs of a particular urban situation. Usually the lots are narrower along major arterials in an old city or village. In addition, the nature of land use change includes much more adaptive reuse and redevelopment along major arterials in a built-out city, than in a suburbanizing township or rural area.

It may also be necessary to either exempt the downtown from the access management standards, or to adopt a different set of access management standards in the downtown because:

- *lots are often much narrower,*
- *speed limits and traffic is much slower,*
- *there are many more signalized intersections and they are often closer together,*
- *there are many more pedestrians and bicycles,*
- *many delivery trucks double park because there are inadequate places for loading and unloading,*
- *many blocks with on-street parking and no driveways*
- *vacant land is not available for service drives,*
- *building setbacks are typically much less than in suburban areas,*
- *parking may be provided off-site or parking may be in a ramp instead of at ground level.*

Consequently, the sample language in Option 2 would need to be modified in the following ways to best fit each individual urban situation:

- *The driveway and intersection spacing standards in Section 2.2.D. may need to be reduced because of preexisting narrower and shallower lots that don't permit many opportunities for shared driveways, frontage roads or rear service drives.*

- *Some of the technical construction standards may need to be reduced (like driveway width) in keeping with reduced space (narrow lots) and slower speeds.*
- *Alternative access options in Section 2.3 may be less feasible because of narrow lot width, shallow lot depth, and a large number of shallow setback buildings.*
- *Pedestrian and service vehicle considerations may have a higher status which may affect the ability to apply some standards.*
- *Parking facility design will have different importance and ramps will impose new considerations.*
- *Signal spacing will be determined by existing blocks.*
- *Medians become landscaping opportunities as well as traffic control devices.*
- *The incentives in Section 2.6 may need to be relied upon more frequently, but will probably need to be modified as lot width is usually established and parking may be provided by the community.*
- *The process and standards for waivers and variances in Section 2.7 may need to be refined.*



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

APPENDIX TM4-4

FDOT Model Ordinance to Protect Corridors and Rights-of-Way

MODEL ORDINANCE PROTECTION OF CORRIDORS AND RIGHTS-OF-WAY

Notes to Users:

General:

This model ordinance is provided for adoption, in whole or in part, into the local land development code. Florida's local governments represent a range of size, character, and unique local situations. Thus, local governments should modify standards or procedures for consistency with local conditions and practice. Text in parentheses and italics is intended to be replaced with appropriate local terminology, such as the name of the jurisdiction, citations of plan policies, and so forth.

The model ordinance begins with general provisions and then provides the user with two options – the first option is intended for system wide application and the second option is a corridor protection overlay district. The system wide option includes numbered sections for consistency of proposed development with the long-range transportation map, right-of-way dedication, right-of-way preservation, and right-of-way acquisition. These are followed by an alternative option for designation of a corridor protection overlay district. Although a numbering system is provided here for the purposes of the model, the user should use a numbering system and format consistent with the local land development code, or other local land development regulations.

Relationship to the comprehensive plan:

This ordinance is intended to carry out the local government comprehensive plan. The user should examine the comprehensive plan to determine that an adequate planning foundation has been established for these regulations. If additional plan language is desirable, model plan language is provided as guidance for a plan amendment.

Issues related to access to corridors:

This model ordinance does not specifically address access management. The user is directed to the Model Land Development & Subdivision Regulations that Support Access Management.¹ In adopting corridor preservation regulations, the user should consider the CUTR/FDOT model access management regulations together with other regulations of this model ordinance.

Administrative procedures:

Separate administrative procedures are not specified in this model ordinance. The local government should integrate the regulations of this model ordinance into existing review and approval procedures for developments, because the preservation and protection measures are

¹ Williams, Kristine M., Daniel E. Rudge, Gary Sokolow, and Kurt Eichen, *Model Land Development and Subdivision Regulations That Support Access Management for Florida Cities and Counties*, CUTR and FDOT, 1994.

"triggered" by a development application in or near a protected corridor. For additional assistance on administrative procedures, the user is directed to the Model Land Development Code for Florida Cities and Counties,² Article XII, or Section 23 of the Model Land Development Regulations That Support Access Management.

The user should review variance procedures for the jurisdiction. Separate variance procedures are not included in this model ordinance, under the assumption that the opportunity would be available for variance from these provisions.

SECTION I. GENERAL PROVISIONS

1.1 FINDINGS

- A. The (city/county) has adopted within the (comprehensive plan) a Future Transportation Map, a Long-Range Traffic Circulation Map, (and/or) a Thoroughfare Corridor and Right-Of-Way Protection Map to assure (city/county)-wide continuity of the transportation system.

Note: The local government must have the Future Transportation Map pursuant to various provisions of 9J-5. It may choose to have a separate map for identifying corridors and rights-of-way to be protected, with a longer range time period than the Future Transportation Map. Each community may have a different name for the above maps. The appropriate maps should be referenced in this finding. However, it should be noted that the courts refer to the "Thoroughfare Map".

- B. It is in the best interests of the public and citizens of (city/county) to anticipate future needs in areas where right-of-way does not exist, in order to establish harmonious, orderly, efficient development of (city/county) and ensure a safe and efficient transportation system.
- C. The preservation, protection, or acquisition of rights-of-way and corridors is necessary to implement coordinated land use and transportation planning, to provide for future planned growth, and to ensure that the transportation system is adequate to meet future needs, and complies with the concurrency requirements of the (comprehensive plan) and this land development code.
- D. The interim use of land in future rights-of-way provides a means for economic use of land until that land is needed for transportation purposes.
- E. Future corridors and rights-of-way must be protected from permanent encroachment to ensure availability consistent with long-range plans for the (city/county).

Note: The user should include any additional findings that are appropriate to the local circumstances.

² McPherson, John, David Coffey, and Gail Easley, 1989. Model Land Development Code for Florida Cities and Counties. Florida Department of Community Affairs, Tallahassee.

1.2 INTENT AND PURPOSE

The intent of this ordinance is to preserve, protect, and/or acquire rights-of-way and transportation corridors that are necessary to provide future facilities and facility improvements to meet the needs of growth projected in the *(city/county)* comprehensive plan and to coordinate land use and transportation planning. These rights-of-way and corridors are part of a network of transportation facilities and systems, which provide mobility between and access to businesses, homes, and other land uses throughout the jurisdiction, the region, and the state. The *(governing body of city/county)* recognizes that the provision of an adequate transportation network is an essential public service. The plan for that transportation network is described in the *(city/county)* comprehensive plan, and implemented through a capital improvements program, other policies and procedures, and through regulations on land use and development as well as regulations to preserve and protect the corridors and rights-of-way for the transportation network. The purpose of this ordinance is to foster and preserve public health, safety, comfort, and welfare and to aid in the harmonious, orderly, and beneficial development of the *(city/county)* in accordance with the comprehensive plan.

1.3 RELATIONSHIP TO COMPREHENSIVE PLAN, OTHER PLANS, REGULATIONS, LAND STATUTES

- A. The adoption of this ordinance implements the following goals, objectives, and policies of the *(city/county)* comprehensive plan. In addition, this ordinance is a part of the land development code for *(city/county)*.

Note: The user should specify those objectives and policies of the local comprehensive plan which support this ordinance, including those contained in the future land use, transportation, and capital improvements elements.

- B. This ordinance is consistent with policies of the *(name)* Metropolitan Planning Organization and the policies of the Florida Department of Transportation set forth in the Florida Transportation Plan.

Note: The user should specify the MPO by name; if the local government is not within an MPO area, none of the references to MPO should be used. In addition, the user may wish to cite specific statutory authority for corridor designation as support for this implementing ordinance.

1.4 APPLICABILITY

This ordinance shall apply to all land within the jurisdiction of *(city/county)* which abuts or is located within existing or future corridors and rights-of-way as identified in *(insert name of appropriate plan, map, or other document that identifies applicability, such as the Future Transportation Map, Long Range Traffic Circulation Map, a Major Thoroughfare Map, or other document)*.

1.5 SEVERABILITY

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance is for any reason held by a court of competent jurisdiction to be unconstitutional or otherwise invalid, the validity of the remaining portions of this ordinance shall continue in full force and effect.

1.6 EFFECTIVE DATE

This ordinance shall be effective on *(date)*.

OPTION ONE

SECTION 2. CONSISTENCY OF PROPOSED DEVELOPMENT WITH LONG RANGE TRAFFIC CIRCULATION MAP

- A. All development shall be consistent with the Major Thoroughfare Map or Future Transportation Map.
- B. Conceptual, preliminary, and final site plans and preliminary or final subdivision plats submitted for review shall include information regarding the location of any corridors designated on the *(city/county)* Major Thoroughfare Map or Future Transportation Map which cross, abut, or are within 1000' of the property of the proposed project. During the review process, the *(name of reviewing body, such as Technical Review Committee, Development Review Committee, or Planning Commission)* shall consider the proximity of the proposed project to future corridors for purposes of assessing the impact, if any, of the project on future corridors.
- C. Either preliminary or final approval shall include findings regarding the consistency of the proposed project with the future corridor, and shall note any impacts that may be anticipated from the proposed project, along with recommendations for mitigating such impacts. If the proposed project is inconsistent with the future corridor location, it may be necessary for the applicant to modify the proposed project or to propose an amendment to the *(city/county)* comprehensive plan. However, it is intended that corridor locations shall have some flexibility so as to be compatible with proposed development, so long as the basic intent to provide continuity of the corridor is met.

Note: This section is concerned primarily with corridors where studies have not yet been done to establish the alignment. Most jurisdictions have within their development review process requirements to identify specific and detailed information regarding existing roads and planned improvements [within the TIP and/or the CIE]. Therefore, such information is not presented herein. The user is directed to such documents as the Model Land Development Code from DCA or the Model Land Development Regulations that Support Access Management from the Center for Urban Transportation Research for additional assistance in the latter situation.

It is suggested that this language, or a modification of this language, be included in the section of the local government land development code which deals with development review, whether site plan review, major development review, or subdivision plat review.

SECTION 3. RIGHT-OF-WAY DEDICATION

- A. Projects proposed adjacent to or abutting a right-of-way for which improvements are shown in the current five-year Capital Improvements Program, shall, as a condition of approval, dedicate lands within the project site which are necessary for that right-of-way to *(city/county)*. Such dedication shall occur by recordation on the face of the plat, deed, grant of easement, or other method acceptable to *(city/county)*. Land to be dedicated shall be only that shown by engineering study and/or design to be necessary for the planned improvements. The amount of land required to be dedicated also shall not exceed the amount that is roughly proportionate to the transportation impacts to be generated by the proposed project unless the landowner is to be compensated in some fashion for any additional dedicated land.

Note: This section provides for the mandatory dedication of right-of-way for projects proposed adjacent to roads with planned improvements within the next five years [the time period of the adopted Capital Improvements Element]. The local government may prefer to use three years to coincide with the time period used for concurrency determinations. The important feature is that the planned improvement be considered imminent, as opposed to long range and therefore potentially less certain.

Local governments must tailor their dedication requirements to comply with Dolan v. City of Tigard, 1994 WL 276693 (June 24, 1994). In Dolan, the United States Supreme Court held that mandatory dedications of land as a condition of development approval must be related both in nature and extent to the impact of the proposed development. Although the Court stated that no precise mathematical calculation is required, it held that the amount of the dedication must be roughly proportionate to the project's impacts.

- B. The value of dedicated right-of-way shall be a credit against transportation impact fees assessed to the proposed project. In the event that the impact fees calculated for the proposed project are greater than the lands within the project site (the site prior to any dedication or other set-aside) needed for future right-of-way, only the amount of land representing a value approximately equal to the impact fee shall be required to be dedicated.

Note: Generally, credits for right-of-way donations are offered only when the impact fee ordinance included right-of-way costs in the computation of the impact fee structure.

- C. The *(reviewing agency)* may consider the transfer of development rights, based on the gross density or intensity allowable on the site prior to any set-aside for future right-of-way. The transfer will be from land to be dedicated to other portions of the site. Approval of transfer of development rights may include consideration of variances from site design standards necessitated by the increased net density or intensity of the portions of the site receiving the transfer of development rights.

Note: The provision for transfer of development rights is based upon a transfer within the site, rather than to another parcel of land. Should the local government have a TDR program that

allows parcel-to-parcel transfer or the issuance of TDR certificates, paragraph (C) should be modified for consistency.

- D. The (*reviewing agency*) may grant approval of transportation capacity (for concurrency purposes) based upon the approved density or intensity for the project. Such preliminary approval of transportation concurrency and capacity shall be specified as a total number of vehicle trips allowable for the site. The preliminary concurrency approval shall be valid for three years, and eligible for renewal for a period of two years.

Note: The concurrency approved should be expressed in the same terms as the concurrency calculations in use by the local government, which may or may not be vehicle trips. In addition, there should be a specific expiration date, consistent with the concurrency management system in place for the local government.

SECTION 4. RIGHT-OF-WAY AND CORRIDOR PRESERVATION

4.1 PROTECTION FROM ENCROACHMENT

- A. Corridors designated in the (*city/county*) comprehensive plan shall be protected from encroachment by structures, parking areas, or drainage facilities except as otherwise allowable in this ordinance and the comprehensive plan.
- B. Where an alignment has been established by engineering study and/or design, the setbacks of section (*cross-reference to that portion of the local government land development regulations which identify setbacks from roads and rights-of-way*) shall be considered sufficient for preservation of the right-of-way.
- C. Where an alignment has not been established, the following techniques shall be considered for protecting the corridor from encroachment:
 - (1) The applicant may propose and (*city/county*) shall establish an approximate alignment, consistent with the need to provide continuity of the corridor as well as to meet conceptual site planning needs of the project.
 - (2) The approximate alignment shall be the basis for applying normal setbacks as specified in section (*cross-reference number*). When the specific alignment is later established through engineering study and design, the setback may be reduced through administrative approval up to, but not exceeding, 10.0% of the otherwise required setback, provided that such reduction is necessitated solely by the final alignment of the right-of-way.

Note: It is the intent that corridors through vacant land be compatible with the proposed development, and that the specific alignment have flexibility, so long as the intent to provide continuity of the corridor as well as the ability of the future facility to function are both met.

- (3) Clustering of structures may be allowable in order to retain full development rights while sitting structures, so as to avoid encroachment into the corridor. Clustering of structures under this provision of (*local government code*) may include administrative approval to reduce setbacks between buildings within a project site, reduction of buffers within a project site, or variation of other site design requirements. This provision is not intended to reduce perimeter bufferyards designed to ensure compatibility of adjacent uses.

Note: This provision should be used where clustering is not already allowable in the site design standards of the local government. This ensures that clustering, which may reduce standards for space between buildings within a site, or result in a greater net density on the portion of the site developed, is allowable.

- (4) Reduction of required setbacks, other than adjacent to the corridor, may be considered, in order to ensure that the location of structures does not encroach into future corridors. A reduction of up to, but not exceeding, 10.0% of the otherwise required setback may be approved administratively, provided such reduction is necessitated solely by the proposed alignment of the corridor. Greater reductions must be reviewed by the (*name of reviewing agency which considers variances*).

4.2 INTERIM USES TO BE RELOCATED

- A. The purpose of this section is to allow certain uses for a specified period of time within portions of a site designated as future right-of-way, or within a future corridor. The allowance of uses on an interim basis allows the property owner to make economic use of the property until such time as the right-of-way is needed for facilities or improvements.
- B. The following uses, directly related to the primary use of the project site, may be allowable on an interim basis:
 - (1) Stormwater retention, wet or dry, to serve the project site.
 - (2) Parking areas to serve the project.
 - (3) Entry features for the project such as signage, gatehouses, architectural features, fountains, walls, and the like.
 - (4) Temporary sales or leasing offices for the project site.
- C. The following conditions shall apply to the approval of interim uses specified in section 4.2.B:
 - (1) As a condition of preliminary or final development order, the applicant agrees to relocate these uses elsewhere on the project site. A developer's agreement shall specify the terms and conditions, including timing, of the relocation required by this section.

(2) Relocation of approved interim uses shall be beyond the setback area, subject to the provisions of section 4.1.C (2) above.

(3) Relocation sites shall be identified on the development plans submitted with the preliminary or final development order application. Sites identified for future relocation shall be reserved for that purpose.

D. The stormwater retention facility may, at the discretion of (*city/county and/or FDOT*), be incorporated into the design of the future transportation facility retention facilities. Should this option be chosen by the (*city/county and/or FDOT*), the developer need not relocate the storm water retention facility.

4.3 *INTERIM USES TO BE DISCONTINUED*

A. The following interim uses, not necessarily directly related to the principal use of the site, may be allowable:

- (1) Recreational facilities such as playgrounds, ball fields, outdoor courts, exercise trails, walking paths, bridal paths, and similar outdoor recreational uses.
- (2) Produce stands, produce markets, farmers markets, and the like.
- (3) Periodic uses such as boat shows, automobile shows, RV shows, "tent" sales, and the like.
- (4) Periodic events such as festivals, carnivals, community fairs, and the like.
- (5) Plant nurseries and landscape materials yards.
- (6) Agricultural uses, such as pasture, crop lands, tree farms, orchards, and the like, but not including stables, dairy barns, poultry houses, and the like.
- (7) Storage yards for equipment, machinery, and supplies for building and trades contractors, and similar outdoor storage.
- (8) Outdoor advertising.
- (9) Golf driving ranges.
- (10) RV or boat storage yards.

Note: It is the intent in this section to list those uses that have a relatively low investment in structural improvements to the site. However, the local government may wish to include other uses - such as mini-storage facilities or other warehousing - where the investment in structural improvements is amortized over a relatively short period of time. If such uses are included, additional language in the developer's agreement should specify that the eventual acquisition of the land for right-of-way does not include acquisition of the structures, nor does the future value of the land include value of the structures. The intent is to recognize that a potentially wider range of uses may be allowable provided that the developers agreement recognizes the discontinuance, and that the government is not willing to pay for the structures, but is willing to allow a long enough interim use period for the owner to amortize the investment.

B. The following conditions shall apply to interim uses specified in section 4.3.A:

- (1) As a condition of preliminary or final development order, the applicant agrees to discontinue these uses on the project site by a specified date. A developer's agreement shall specify the terms and conditions of both the approval of interim uses pursuant to this section and the discontinuance of interim uses as required in this section.

Note: It may be desirable to include a time period within the ordinance. Such period should be sufficient to allow economically feasible use of the site. Time periods may be as long as 10 or more years for new corridor locations. The designation of a date for discontinuance is most likely a negotiable issue and should be capable of being extended.

- (2) Bufferyards shall be provided, consistent with provisions of section (*cross-reference buffer section of the local land development code*), in order to ensure compatibility of interim uses with other uses adjacent or nearby.
- (3) Interim uses shall meet site design requirements for setbacks for the district.
- (4) Impervious surface ratios for interim uses shall not exceed 20.0% of the specified interim use site.

Note: Because the list of interim uses includes a wide range of intensities and impact, it may be desirable to specify a buffer rather than to rely on existing bufferyard standards. It may also be desirable to include conditions regarding locations of access drives, percent of the site to be devoted to the interim use, parking standards, lot area, and so on.

SECTION 5. RIGHT-OF-WAY ACQUISITION

5.1 VOLUNTARY DEDICATION OF FUTURE RIGHT-OF- WAY

- A. The provisions of this section apply to projects proposed adjacent to or abutting a future corridor or right-of-way for which improvements are anticipated beyond the five-year period of the Capital Improvements Program. A property owner may, at any time during the application process for preliminary, conceptual, or final approval of a project, voluntarily dedicate lands within the project site that are in the future corridor or right-of-way.
- B. Where an alignment has been established by engineering study or design, lands to be dedicated shall be within the designated future right-of-way.
- C. Where an alignment has not been established, an approximate alignment shall be established.

Note: It is the intent that corridors through vacant land be compatible with the proposed development, and that the specific alignment have flexibility, so long as the intent to provide continuity of the corridor as well as the ability of the future facility to function are both met.

5.2 PURCHASE OF FUTURE CORRIDORS AND RIGHTS-OF- WAY

- A. The (city/county/other agency) may enter into an agreement to purchase, in fee simple, the lands designated as a future corridor or right-of-way.
- B. The (city/county/other agency) may enter into an agreement to purchase the development rights to lands designated as a future corridor or right-of-way. Development rights are defined as either the number of residential units allowable on the portion of the site designated, or as the total floor area allowable in non- residential use of the portion of the site designated.

Note: If the local government has a program to purchase development rights, it should be referenced in this section. If no program exists, and the local government wishes to establish one for this purpose, the following issues should be addressed: method of establishing fair market value, timing of purchase, whether or not the rights purchased are available for purchase by other developers in other parts of the jurisdiction, and approval processes for the purchase.

- C. The (city/county/other agency) may enter into an agreement to purchase a perpetual easement including lands designated as a future corridor or right-of- way. Land included within the easement shall be either that land designated through engineering study or design as necessary for future right-of-way, or that land established as an approximate right-of-way. An approximate right-of-way shall be consistent with the need to provide continuity of the corridor as well as to meet conceptual site planning needs of the project.

Note: The agreement should specify the uses granted with the easement to the local government and the interim uses remaining with the property owner. If this section is to be used, the local government should establish a method for determining the value of the easement.

OPTION TWO

SECTION 2. CREATION OF A CORRIDOR PROTECTION OVERLAY DISTRICT

2.1 PURPOSE

The purpose of the corridor protection overlay district is to impose special development regulations on areas of (city/county) which have been designated in the (city/county comprehensive plan) as future transportation corridors. The general location of these corridors has been established through inclusion on the Future Transportation Map of the (city/county) comprehensive plan. In order to ensure the availability of lands within the corridor to meet

needs as shown in the comprehensive plan, additional review is required of proposed development which potentially lies within or adjacent to the designated corridor.

2.2 *PERMISSIBLE AND PROHIBITED USES*

The underlying uses, as determined by the applicable land use district on the Future Land Use Map and the (*zoning code or other use regulation*) remain undisturbed by the creation of this overlay district.

2.3 *DENSITY AND INTENSITY OF DEVELOPMENT*

The gross density and intensity of development shall be that allowable by the underlying land use and zoning district. However, as a condition of approval of the development, such density and intensity shall be transferred to portions of the site that lie outside the corridor. Such transfer may result in a greater net density on the developed portion of the project. This section is not intended to grant approval to the location of development in environmentally sensitive or otherwise protected lands within the project site. It is intended to allow approval of the transfer of development rights within the contiguous lands of the project, without additional review procedures beyond the review for a preliminary or final development order.

2.4 *SITE DESIGN REQUIREMENTS*

- A. In order to protect the future corridor from potential encroachment by structures, parking areas, or drainage facilities, setbacks will be required from the approximate alignment. This approximate alignment shall be consistent with the need to provide continuity of the corridor as well as to meet conceptual site planning needs of the project. The normal setbacks shall be as required by the underlying land use (*or zoning district - specify cross-reference to the appropriate section of the code*). When the final alignment is established through engineering study and design, the setback may be reduced through administrative approval up to, but not exceeding, 10.0% of the otherwise required setback, provided that such reduction is necessitated solely by the final alignment of the corridor.
- B. Clustering of structures may be allowable in order to retain full development rights while sitting structures so as to avoid encroachment into the corridor. Clustering of structures under this provision of the (*local government code*) may include administrative approval to reduce setbacks between buildings within a project site, reduction of buffers within a project site, or variation of other site design requirements. This provision is not intended to reduce perimeter bufferyards designed to ensure compatibility of adjacent uses.

2.5 *REVIEW OF PROPOSED DEVELOPMENT FOR CONSISTENCY WITH THE COMPREHENSIVE PLAN*

- A. Conceptual, preliminary, and final site plans and preliminary or final subdivision plats submitted for review shall include information regarding the location of any corridors

designated on the (*city/county*) Major Thoroughfare Map or Future Transportation Map which cross, abut, or are within 1,000 feet of the property of the proposed project. During the review process, the (*name of reviewing body, such as Technical Review Committee, Development Review Committee, or Planning Commission*) shall consider the proximity of the proposed project to future corridors for purposes of assessing the impact, if any, of the project on future corridors.

- B. Either preliminary or final approval shall include findings regarding the consistency of the proposed project with the future corridor, and shall note any impacts that may be anticipated from the proposed project, along with recommendations for mitigating such impacts. If the proposed project is inconsistent with the future corridor location, it may be necessary for the applicant to modify the proposed project or to propose an amendment to the (*city/county*) comprehensive plan. However, it is intended that corridor locations shall have some flexibility so as to be compatible with proposed development, so long as the basic intent to provide continuity of the corridor is met.

Note: If the local government chooses to use the Overlay District Option, it may nevertheless use this section alone. It may also use Section 3 (R.O.W. Dedication). If Section 4 is used, some modification may be necessary to acknowledge differences between the underlying land uses and the interim uses.

Source: Prepared by Hennigar & Ray, Inc., Hamilton Smith & Associates, and Apgar, Pelham, Pfeiffer & Theriaque, for the Florida Department of Transportation, as amended 12/1/01.



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

APPENDIX TM4-5

FDOT/CUTR Model Land Development & Subdivision Regulations that Support Access Management

**Model Land Development and Subdivision Regulations
That Support Access Management**

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The following model ordinance language is provided for adoption into the local land development code. Local governments should obtain professional planning and legal assistance when adapting this model language to fit local needs. Although a regulatory program is essential, it is further recommended that local governments prepare subarea plans for high priority corridors that are experiencing development pressure.

Section 1. Intent and Purpose

The intent of this ordinance is to provide and manage access to land development, while preserving the regional flow of traffic in terms of safety, capacity, and speed. Major thoroughfares, including highways and other arterials, serve as the primary network for moving people and goods. These transportation corridors also provide access to businesses and homes and have served as the focus for commercial and residential development. If access systems are not properly designed, these thoroughfares will be unable to accommodate the access needs of development and retain their primary transportation function. This ordinance balances the right of reasonable access to private property, with the right of the citizens of the *(city/county)* and the State of Florida to safe and efficient travel.

To achieve this policy intent, state and local thoroughfares have been categorized by function and classified for access purposes based upon their level of importance, with highest priority on the Florida Intrastate Highway System and secondary priority on the primary network of regional arterials. Regulations have been applied to these thoroughfares for the purpose of reducing traffic accidents, personal injury, and property damage attributable to poorly designed access systems, and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.

Section 2. Applicability

This ordinance shall apply to all arterials and selected collectors within *(city/county)*, as identified in Table 1, and to all properties that abut these roadways. The access classification system and standards of the Florida Department of Transportation shall apply to all roadways on the State Highway System.

Section 3. Conformance with Plans, Regulations, and Statutes

This ordinance is adopted to implement *(cite specific policies)* of the *(city/county)* as set forth in the *(name local comprehensive plan)*. In addition, this ordinance conforms with *(cite specific policies)* of the Metropolitan Planning Organization (MPO) as specified in the *(name of long range transportation plan)*, and the planning policies of the Florida Department of Transportation set forth in the Florida Transportation Plan. The ordinance also conforms with the access classification system and standards of the Florida Department of Transportation, the access management requirements of the Florida Intrastate Highway System Program, and policy and planning directives of the federal Intermodal Surface Transportation Efficiency Act of 1991.

***Commentary:** The link between regulations and public policy has undergone intense legal scrutiny in recent years. To establish this link, local governments should clearly identify the intent and purpose of the regulatory program, and specify any plans, state and federal regulations, or statutes that will be carried out through the regulatory standards. It is also important to cite specific planning policies that are being advanced through these regulations. Local governments in designated transportation management areas may also cite access management as a congestion management measure in accordance with the federal Intermodal Surface Transportation Efficiency Act of 1991. Communities that do not lie within the planning area boundaries of a Metropolitan Planning Organization (MPO) would simply leave out the reference to MPOs in this section. Demonstrating conformance with state and federal law, and with the local comprehensive plan, is important in strengthening the legal basis for any local regulatory program.*

Section 4. Definitions

Access - A way or means of approach to provide vehicular or pedestrian entrance or exit to a property.

Access Classification - A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.

Access Connection - Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.

Access Management - The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.

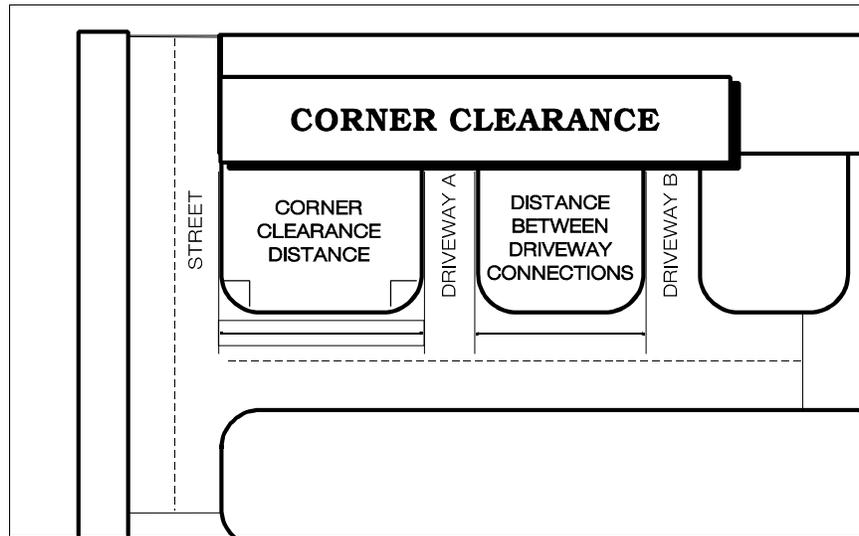
Access Management Plan (Corridor) - A plan illustrating the design of access for lots on a highway segment or an interchange area that is developed jointly by the state, the metropolitan planning organization, and the affected jurisdiction(s).

Cartway - That area of road surface from curb line to curb line or between the edges of the paved or hard surface of the roadway, which may include travel lanes, parking lanes, and deceleration or acceleration lanes.

Connection Spacing - The distance between connections, measured from the closest edge of pavement of the first connection to the closest edge of pavement of the second connection along the edge of the traveled way.

Corner Clearance - The distance from an intersection of a public or private road to the nearest access connection, measured from the closest edge of the pavement of the intersecting road to the closest edge of the pavement of the connection along the traveled way. (see Figure 1)

Figure 1: Corner Clearance and Connection Spacing



Corridor Overlay Zone - Special requirements added onto existing land development requirements along designated portions of a public thoroughfare.

Cross Access - A service drive providing vehicular access between two or more contiguous sites so the driver need not enter the public street system. (see Figure 4)

Deed - A legal document conveying ownership of real property.

Directional Median Opening - An opening in a restrictive median which provides for specific movements and physically restricts other movements. Directional median openings for two opposing left or "U-turn" movements along a road segment are considered one directional median opening.

Easement - A grant of one or more property rights by a property owner to or for use by the public, or another person or entity.

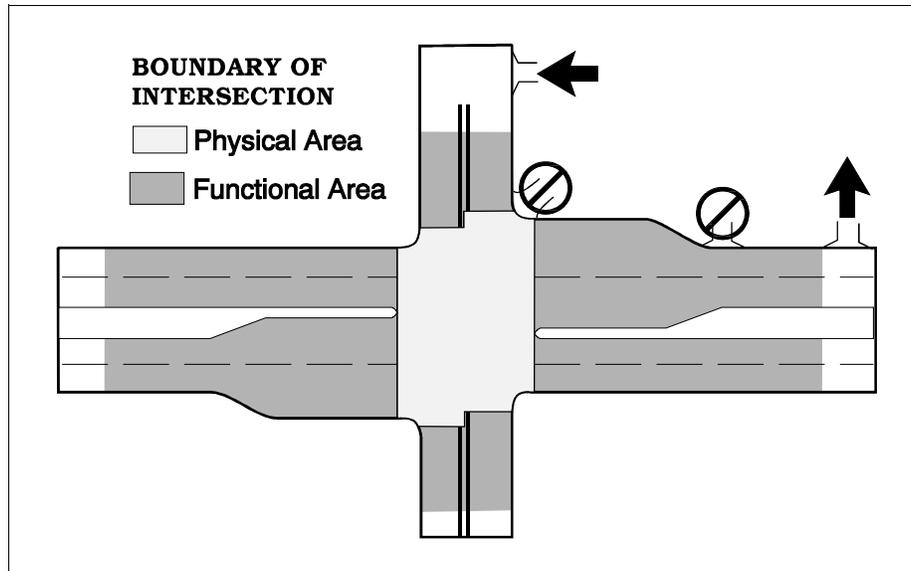
Florida Intrastate Highway System - The specially designated statewide system of limited access and controlled access facilities, as designated by FDOT and adopted by the legislature, that allows for high-speed and high-volume traffic movement within the state.

Frontage Road - A public or private drive which generally parallels a public street between the right-of-way and the front building setback line. The frontage road provides access to private properties while separating them from the arterial street. (see also Service Roads)

Full Median Opening - An opening in a restrictive median that allows all turning movements from the roadway and the intersecting road or access connection.

Functional Area (Intersection) - That area beyond the physical intersection of two controlled access facilities that comprises decision and maneuver distance, plus any required vehicle storage length, and is protected through corner clearance standards and driveway connection spacing standards (see Figure 2).

Figure 2: Functional Area of Intersection



Functional Classification - A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.

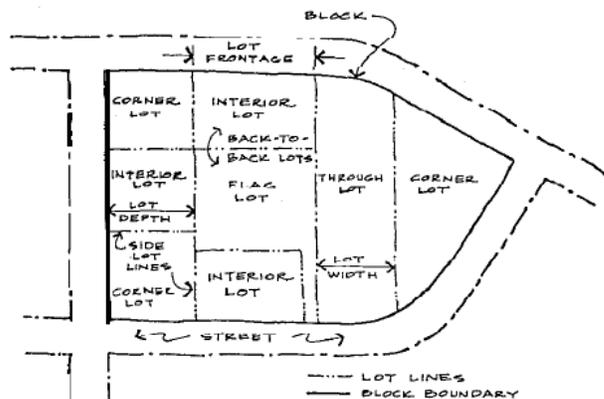
Green Book, The Florida (Manual of Uniform Minimum Standard for Design, Construction, and Maintenance) - A manual produced by the Florida Department of Transportation which provides for uniform standards and criteria for transportation facilities for both state and local roads.

Intrastate Highway System - (see Florida Intrastate Highway System)

Joint Access (or Shared Access) - A driveway connecting two or more contiguous sites to the public street system.

Lot - A parcel, tract, or area of land whose boundaries have been established by some legal instrument, which is recognized as a separate legal entity for purposes of transfer of title, has frontage upon a public or private street, and complies with the dimensional requirements of this code.

Figure 3: Types of Lots



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Lot, Corner - Any lot having at least two (2) contiguous sides abutting upon one or more streets, provided that the interior angle at the intersection of such two sides is less than one hundred thirty-five (135) degrees.

Commentary: Corner lots can create confusion in relation to dimensional requirements. The recommended approach is to designate one frontage as the "front" and the rear lot line would be that opposite the designated frontage. Both portions of the lot with street frontage should still be required to meet the required frontyard setback to ensure adequate sight distance and consistency of setback with abutting properties. A lot abutting a curved street(s) is typically considered a corner lot if the arc has a radius less than one hundred and fifty (150) feet.

Lot Depth - The average distance measured from the front lot line to the rear lot line.

Lot, Flag - A large lot not meeting minimum frontage requirements and where access to the public road is by a narrow, private right-of-way or driveway.

Lot, Nonconforming - A lot that does not meet the dimensional requirements of the district in which it is located and that existed before these requirements became effective.

Lot, Through (also called a double frontage lot) - A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lot.

Lot Frontage - That portion of a lot extending along a street right-of-way line.

Lot of Record - A lot or parcel that exists as shown or described on a plat or deed in the records of the Clerk of the Circuit Court.

Lot Width - The horizontal distance between side lot lines measured parallel to the front lot line at the minimum required front setback line.

Manual of Uniform Traffic Control Devices (MUTCD) - A Federal document adopted by the Florida Department of Transportation that provides standards for traffic control devices. Florida Administrative Rule 14-110 establishes the MUTCD to be Florida's Standard for traffic control devices.

Minor Subdivision - A subdivision of land into not more than two (2) lots where there are no roadways, drainage, or other required improvements.

Nonconforming Access Features - Features of the access system of a property that existed prior to the date of ordinance adoption and do not conform with the requirements of this code or requirements of the Administrative Rule 14-97 of the Florida Department of Transportation.

Nonrestrictive Median - A median or painted centerline that does not provide a physical barrier between traffic traveling in opposite directions or turning left, including continuous center turn lanes and undivided roads.

Outparcel - A parcel of land abutting and external to the larger, main parcel, which is under separate ownership and has roadway frontage.

Parcel - A division of land comprised of one or more lots in contiguous ownership.

Plat - An exact and detailed map of the subdivision of land.

Private Road - Any road or thoroughfare for vehicular travel which is privately owned and maintained and which provides the principal means of access to abutting properties.

Public Road - A road under the jurisdiction of a public body that provides the principal means of access to an abutting property.

Reasonable Access: The minimum number of access connections, direct or indirect, necessary to provide safe access to and from the thoroughfare, as consistent with the purpose and intent of this code and any applicable plans and policies of the (*city/county*).

Restrictive Median - A physical barrier in the roadway that separates traffic traveling in opposite directions, such as a concrete barrier or landscaped island.

Right-of-Way - Land reserved, used, or to be used for a highway, street, alley, walkway, drainage facility, or other public purpose.

Service Road - A public or private street or road, auxiliary to and normally located parallel to a controlled access facility, that maintains local road continuity and provides access to parcels adjacent to the controlled access facility.

Significant Change in Trip Generation - A change in the use of the property, including land, structures or facilities, or an expansion of the size of the structures or facilities causing an increase in the trip generation of the property exceeding 10 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under local jurisdiction; or exceeding 25 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under state jurisdiction, as defined in 335.18, F.S.

Commentary: In 1992, the legislature amended the State Highway System Access Management Act to reduce the definition of "substantial change" from a 10% threshold to 25%, as shown above. This diminished the ability of the State to require properties with nonconforming access to the State Highway System to mitigate their nonconformity. However, local governments may adopt requirements that are more restrictive than State standards for roadways under local jurisdiction. The 10% threshold is recommended for non-state thoroughfares (see also, Nonconforming Access Features).

Standard Index (Roadway and Traffic Design Standards) - A Florida Department of Transportation document with detailed standards for the construction of connections.

State Highway System (SHS) - The network of limited access and controlled access highways that have been functionally classified and are under the jurisdiction of the State of Florida.

Stub-out (Stub-street) - A portion of a street or cross access drive used as an extension to an abutting property that may be developed in the future.

Subdivision - Is the process and the result of any of the following:

- a. The platting of land into lots, building sites, blocks, open space, public areas, or any other division of land;
- b. Establishment or dedication of a road, highway, street or alley through a tract of land, by the owner thereof, regardless of area;
- c. The re-subdivision of land heretofore subdivided (however, the sale or exchange of small parcels of land to or between adjoining property owners, where such sale or exchange does not create additional lots and does not result in a nonconforming lot, building, structure or landscape area, shall not be considered a subdivision of land);
- d. The platting of the boundaries of a previously unplatted parcel or parcels.

Substantial Enlargements or Improvements - A 10% increase in existing square footage or 50% increase in assessed valuation of the structure.

Commentary: This standard is typical of many standards used to address nonconforming situations. Check these standards related to nonconforming situations against those of your code to assure consistency.

Temporary Access - Provision of direct access to the controlled access facility until that time when adjacent properties develop, in accordance with a joint access agreement or frontage road plan.

Section 5. Access Management Classification System and Standards

1. The following access classifications have been assigned to major thoroughfares under state and local jurisdiction as provided in Table 1 in accordance with Chapter 14-97, Administrative Rules of the Department of Transportation, and the requirements of this Code. These access classes are defined as follows:

Access Class 1 - Limited Access Highways, designed for high-speed, high volume traffic movements. Access is permitted only via interchanges.

Access Class 2 - Highly controlled access facilities distinguished by their ability to carry high speed, high volume traffic over long distances in a safe and efficient manner. These highways are distinguished by a system of existing or planned service roads, a highly controlled limited number of connections, median openings and infrequent traffic signals.

Access Class 3 - These facilities are controlled access facilities where direct access to abutting land will be controlled to maximize the through movement of traffic. This class will be used where existing land use and roadway sections have not been built out to the maximum land use or roadway capacity or where the probability of significant land use change in the near future is high. These highways are distinguished by existing or planned restrictive medians and maximum distance between signals and driveway connections. Local land use planning, zoning and subdivision regulations should be such to support the restrictive spacings of this designation.

Access Class 4 - These facilities are controlled access highways where direct access to abutting land will be controlled to maximize the through movement of traffic. This class will be used where existing land use and roadway sections have not been built out to the maximum land use or roadway capacity or where the probability of significant land use change in the near future is high. These highways are distinguished by existing or planned non-restrictive median treatments.

Access Class 5 - This class will be used where existing land use and roadway sections have been built out to a greater extent than those roadway segments classified as Access Classes 3 and 4 and where the probability of a major land use change is not as high as those roadway segments classified Access Classes 3 and 4. These highways will be distinguished by existing or planned restrictive medians.

Access Class 6 - This class will be used where existing land use and roadway sections have been built out to a greater extent than those roadway segments classified as Access Classes 3 and 4, and where the probability of a major land use change is not as high as those roadway segments classified Access Classes 3 and 4. These highways will be distinguished by existing or planned non-restrictive medians or centers.

Access Class 7 - This class shall only be used in urbanized areas where existing land use and roadway sections are built out and where significant land use changes or roadway widening will be limited. This class shall be assigned only to roadway segments where there is little intended purpose to provide high speed travel. Access needs, though generally high in those roadway segments, will not compromise the public health, welfare or safety. Exceptions to standards in this class will be considered if the applicant's design changes substantially reduce the number of connections compared to existing conditions. These highways can have either restrictive or non-restrictive medians.

Example

Table 1: Access Classification of State and County Roadways

Jurisdiction	Segment	Access Class
State Roads:		
SR 400 (I-4)	County Line to County Line	1
SR 500 (US 192-441)	Kissimmee CL to St. Cloud CL	2
SR 530 (US 192)	World Dr. to I-4	1
SR 535 (Vineland Rd.)	US 192 to County Line	2
County Roads:		
Bermuda Avenue	Emmett St. to Vine St.	7
Dart Blvd.	I-4 to Florida's Turnpike	2
Hoagland Blvd.	Zaheed Ave. to Carroll St.	5
Neptune Rd.	Stroupe Rd. to 13th St.	6

Note: The information in this table was adapted from a draft access management ordinance and is provided as an example of a table format.

Commentary: *These access classifications reflect those of the Florida Department of Transportation for the State Highway System and run from the most restrictive (class 1) to the least restrictive (class 7). Access classifications are assigned to roadway segments based upon the current condition of the roadway and any planned improvements. Access Class 2 segments usually have access restrictions supported by local ordinances and agreements with FDOT and Classes 2- 4 are generally intended for roadways without extensive development or small subdivided frontages. Classes 5- 7 are intended for roadways that have or are planned to have moderate to extensive development. Access classes also vary according to posted speed limit and whether the roadway has or is planned to have a restrictive or non-restrictive median.*

Local governments may apply the FDOT access management classification system and standards to thoroughfares under local jurisdiction by adopting these access classifications into their code, as shown in this model ordinance language. This allows you to coordinate with the access classification adopted by FDOT for state highways, and to assign access classifications to thoroughfares under local jurisdiction, as well. An alternative is to adopt the state access classification system and standards for state highways only by reference, as in this example from Bay County: "The separation between access points on state-maintained roads shall be in accordance with Florida Department of Transportation (FDOT) rules, Chapter 14-96 and Chapter 14-97." Collectors and arterials under local jurisdiction that are not assigned an access classification would be required to meet connection spacing standards based upon posted speed limit, as shown in (3) below.

2. All connections on facility segments that have been assigned an access classification shall meet or exceed the minimum connection spacing requirements of that access classification, as specified in Table 2. *[Note: These standards are consistent with those of the Florida Department of Transportation, Chapter 14-97, Administrative Rules. If the rules are amended at a future date then these standards should be amended accordingly.]*

Table 2: Access Classification System & Standards

Functional Class	Access Class	Medians**	Connection Spacing (feet)		Median Opening Spacing		Signal Spacing
			>45 mph	≤45 mph	Directional	Full	
Arterials Collectors	2	Restrictive w/ Service Roads	1320	660	1320	2640	2640
	3	Restrictive	660	440	1320	2640	2640
	4	Non-Restrictive	660	440			2640
	5	Restrictive	440	245	660	2640/1320	2640/1320
	6	Non-Restrictive	440	245			1320
Arterials, Collectors, Residential Collectors	7	Both Median Types	125		330	660	1320

* For roads with posted speed limits ≥ 45mph.

** A "Restrictive" median physically prevents vehicle crossing. A "Non-Restrictive" median allows turns across any point.

3. Separation between access connections on all collectors and arterials under local jurisdiction that have not been assigned an access classification shall be based upon the posted speed limit in accordance with Table 3:

Table 3: Driveway Spacing for Nonclassified Roadways

Posted Speed Limit (MPH)	Driveway Spacing (Feet)
≤ 35	125
36-45	245
> 45	440*

*Ideally any road having a speed limit over 45 mph should be given an access management classification.

4. Driveway spacing shall be measured from the closest edge of the pavement to the next closest edge of the pavement (*see Definition section and Figure 1*). The projected future edge of the pavement of the intersecting road shall be used in measuring corner clearance, where widening, relocation, or other improvement is indicated in an adopted local thoroughfare plan or five year transportation plan of the metropolitan planning organization.
5. The (*permitting department*) may reduce the connection spacing requirements in situations where they prove impractical, but in no case shall the permitted spacing be less than 80% of the applicable standard, except as provided in Section 24.
6. If the connection spacing of this code cannot be achieved, then a system of joint use driveways and cross access easements may be required in accordance with Section 7.
7. Variation from these standards shall be permitted 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 (*city/county*) in determining whether the proposed change would exceed roadway safety or operational benefits of the prescribed standard.

***Commentary:** Driveway spacing standards limit the number of driveways on a roadway by mandating a minimum separation distance between driveways. This reduces the potential for collisions as travellers enter or exit the roadway and encourages sharing of access, where appropriate. Driveway spacing at intersections and corners should provide adequate sight distance and response times and permit adequate stacking space. Driveway spacing on nonclassified arterials and collectors may be tied to posted speed limit, as shown here, with the minimum distance between driveways greater as speed limits increase. The method used to regulate driveway spacing does, however, vary widely across local governments. Some jurisdictions tie driveway spacing to functional classification rather than speed limit, and others provide variable spacing depending upon the land use intensity of the site served and that of adjacent sites. The standards above fall within the recommended range and are compatible with connection spacing standards in Table 2.*

Section 6. Corner Clearance

1. Corner clearance for connections shall meet or exceed the minimum connection spacing requirements for that roadway.
2. New connections shall not be permitted within the functional area of an intersection or interchange as defined by the connection spacing standards of this code, unless:
 - a) No other reasonable access to the property is available, and

- b) The (*permitting department*) determines that the connection does not create a safety or operational problem upon review of a site specific study of the proposed connection prepared by a registered engineer and submitted by the applicant.
3. 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 (i.e. right in/out, right in only, or right out only) may be required.
4. In addition to the required minimum lot size, all corner lots shall be of adequate size to provide for required frontyard setbacks and corner clearance on street frontage.

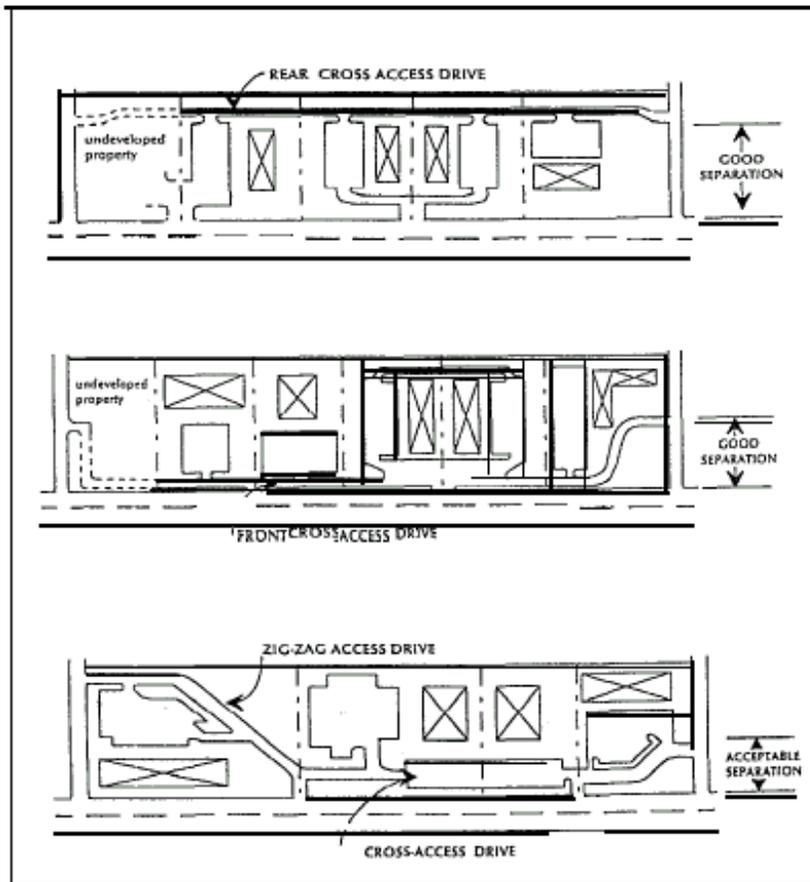
Section 7. Joint and Cross Access

1. Adjacent commercial or office properties classified as major traffic generators (i.e. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.

Commentary: Adjacent shopping centers or office parks are often not connected by a service drive and sidewalk. As a result, customers who wish to shop in both centers, or visit both sites, must exit the parking lot of one, travel a short distance on a major thoroughfare, and then access the next site. A cross access drive reduces traffic on the major thoroughfare and reduces safety hazards. This in turn, can have positive business benefits by providing easy access to one site from another.

2. A system of joint use driveways and cross access easements as shown in Figure 4 shall be established wherever feasible along (*name affected corridors, including FIHS, or refer to a list*) and the building site shall incorporate the following:
 - a) A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.
 - b) A design speed of 10 mph and sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles;
 - c) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross-access via a service drive;
 - d) A unified access and circulation system plan that includes coordinated or shared parking areas is encouraged wherever feasible.

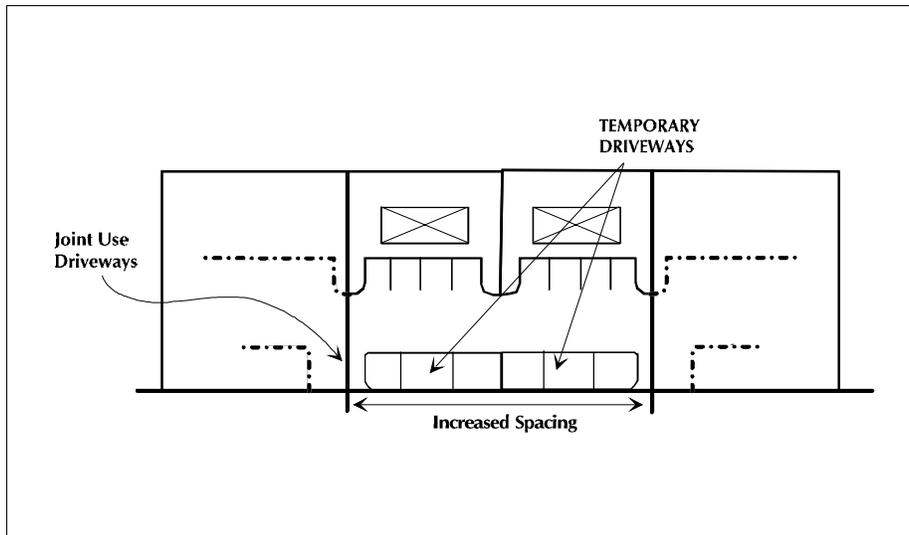
Figure 4: Examples of Cross Access Corridor Design



Source: City of Orlando

This illustration shows that sufficient separation is needed between side street access to the property and the major road.

Figure 5: Joint and Cross Access



Source: City of Orlando.

3. Shared parking areas shall be permitted a reduction in required parking spaces if peak demand periods for proposed land uses do not occur at the same time periods.

Commentary: For example, a bank and a movie theater need parking for their patrons at two distinctly different times.

4. Pursuant to this section, property owners shall:
 - a) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;
 - b) Record an agreement with the deed that remaining access rights along the thoroughfare will be dedicated to the (city/county) and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;
 - c) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.

Commentary: See **Appendix I** for a sample cross access agreement from the City of Orlando. These agreements must be prepared with the assistance of an attorney. The joint access provisions above were adapted from the City of Orlando Code of Ordinances, Land Development Code, Chapter 61, Roadway Design and Access Management. These provisions should be mandatory for local segments of the Florida Intrastate Highway System and all other major thoroughfares zoned for intensive commercial or office development. Another option is that used by the City of Orlando, who ties joint access requirements to specific zoning districts.

5. The (*permitting department*) may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:
 - a) Joint access driveways and cross access easements are provided wherever feasible in accordance with this section.
 - b) The site plan incorporates a unified access and circulation system in accordance with this section.
 - c) The property owner shall enter a written agreement with the (*city/county*), recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint use driveway.
6. The (*permitting department*) may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make development of a unified or shared access and circulation system impractical.

Commentary: *This model provides that where properties are unable to meet driveway spacing requirements, then the planning or public works official may provide for less restrictive spacing, based on the conditions that joint use driveways and cross access easements must be established wherever feasible. A variance is provided only where joint and cross access is not practical. Variances and other remedial actions such as those described above are necessary to prevent unusual hardship on property owners and other situations that could incur a regulatory taking. (Note: Variances and special conditions, like standards for nonconforming features, must be consistently and rigorously applied.) These standards are also applied to phased development in the same ownership and leasing situations. Where abutting properties are in different ownership, cooperation is encouraged but not required. But the building site under consideration is subject to the requirements, which are recorded as a Binding Agreement prior to issuing a building permit. Abutting properties will be brought into compliance as they are developed or initiate retrofitting requirements, as provided in Section 13. In the meantime, the property owner will be permitted a temporary curb cut and driveway that will be closed upon development of the joint use driveway.*

Section 8. Interchange Areas

1. New interchanges or significant modification of an existing interchange will be subject to special access management requirements to protect the safety and operational efficiency of the limited access facility and the interchange area, pursuant to the preparation and adoption of an access management plan. The plan shall address current and future connections and median openings within 1/4 mile of an interchange area (measured from the end of the taper of the ramp furthest from the interchange) or up to the first intersection with an arterial road, whichever is less.
2. The distance to the first connection shall be at least 660 feet where the posted speed limit is greater than 45 mph or 440 feet where the posted speed limit is 45 mph or less. This distance shall be measured from the end of the taper for that quadrant of the interchange.

3. The minimum distance to the first median opening shall be at least 1320 feet as measured from the end of the taper of the egress ramp.

Commentary: New highway interchanges can have substantial impacts on land development patterns around the interchange area. In turn, if land development is not properly planned it can create safety hazards and interfere with the flow of traffic onto and off of the interchange. An access management plan would identify the appropriate access system around the interchange area, in accordance with a desired land development plan. Such a plan would also incorporate minimum spacing requirements for new interchanges required by the Florida Department of Transportation. These standards are provided above for incorporation into the local code.

Section 9. Access Connection and Driveway Design

1. Driveway grades shall conform to the requirements of FDOT Standard Index, Roadways and Traffic Design Standard Indices, latest edition.
2. Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view.
3. Construction of driveways along acceleration or deceleration lanes and tapers is discouraged due to the potential for vehicular weaving conflicts (see Figure 6).
4. Driveways with more than one entry and one exit lane shall incorporate channelization features to separate the entry and exit sides of the driveway. Double yellow lines may be considered instead of medians where truck off-tracking is a problem.
5. Driveways across from median openings shall be consolidated wherever feasible to coordinate access at the median opening.
6. Driveway width and flair shall be adequate to serve the volume of traffic and provide for rapid movement of vehicles off of the major thoroughfare, but standards shall not be so excessive as to pose safety hazards for pedestrians, bicycles, or other vehicles. (*Suggested standards appear in Table 4*).

Figure 6: Driveway Location

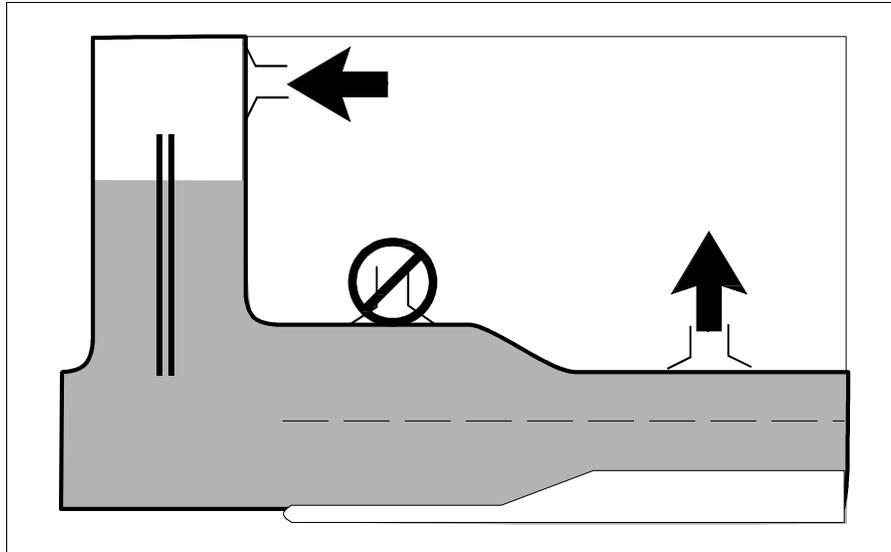


Table 4: Suggested Access Connection Design From FDOT Standard Index*

Trips/Day	1-20		21-600		601-4000	
Trips/Hour	or 1-5		or 6-60		or 61-400	
	URBAN SECTION	RURAL SECTION	URBAN SECTION	RURAL SECTION	URBAN SECTION	RURAL SECTION
Connection Width(2-way)	12' min 24' max	12' min 24' max	24' min 36' max	24' min 36' max	24' min 36' max	24' min 36' max
Flare (Drop Curb)	10' min	N/A	10' min	N/A	N/A	N/A
Returns (Radius)	N/A	15' min 25' std 50' max	small radii may be used	25' min 50' std 75' max	25' min 50' std 75' max	25' min 50' std 50' std (or 3 curves)
Angle of Drive			60'-90'	60'-90'	60'-90'	60'-90'
Divisional Island			4'-22' wide	4'-22' wide	4'-22' wide	4'-22' wide

Source: Florida Department of Transportation Standard Index, Roadway and Traffic Design Standards. 1992.

* Note: These standards are not intended for major access connections carrying over 4000 vehicles per day.

Commentary: The Florida Department of Transportation requires local governments to adhere to certain minimum design standards in the design and location of access connections or other traffic control features. These standards are contained in three separate but related technical documents: the Standard Index (Roadway and Traffic Design Standards); the "Florida Green Book" (Manual of Uniform Minimum Standard for Design, Construction, and Maintenance); and the MUTCD (Manual of Uniform Traffic Control Devices). The standards shown in Table 4 were adapted from the latest edition of the Standard Index.

4. The length of driveways or "Throat Length" (see Figure 7) shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation. General standards appear in Table 5 but these requirements will vary according to the projected volume of the individual driveway. These measures generally are acceptable for the principle access to a property and are not intended for minor driveways. Variation from these shall be permitted for good cause upon approval of the (city/county Traffic Engineer or Public Works Official).

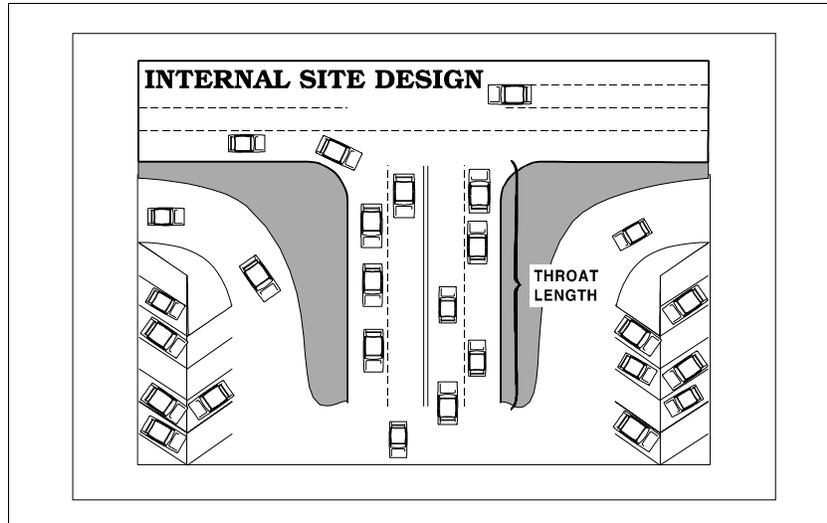
Table 5: Generally Adequate Driveway Throat Lengths

Shopping Centers > 200,000 GLA	200'
Smaller Developments ≤ 200,000 GLA	75'-95'
Unsignalized driveways	40'-60'

Source: Vergil G. Stover.

Commentary: The throat lengths in Table 5 are provided to assure adequate stacking space within driveways for general land use intensities. This helps prevent vehicles from stacking into the thoroughfare as they attempt to access the site. High traffic generators, such as large shopping plazas, need much greater throat length than smaller developments or those with unsignalized driveways. The guidelines here for larger developments refer to the primary access drive. Lesser throat lengths may be permitted for secondary access drives serving large developments.

Figure 7: Driveway Throat Length



Section 10. Requirements for Outparcels and Phased Development Plans

1. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall not be considered separate properties in relation to the access standards of this code. The number of connections permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations required under Section 7 shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this code and both shall be cited for any violation.
2. All access to the outparcel must be internalized using the shared circulation system of the principle development or retail center. Access to outparcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.
3. The number of outparcels shall not exceed one per ten acres of site area, with a minimum lineal frontage of 300 feet per outparcel or greater where access spacing standards for that roadway require. This frontage requirement may be waived where access is internalized using the shared circulation system of the principle development or retail center. In such cases the right of direct access to the roadway shall be dedicated to the *(city/county)* and recorded with the deed.

Commentary: The Florida Department of Transportation in its administrative rule on Access Management Standards (14-97.003(1)(g)) has attempted to manage the proliferation of individual access connection requests by separate properties under the same ownership. Essentially, this section states that adjacent properties under single ownership will be treated as one property unless the applicant can show the Department that the two properties should have separate access due to safety concerns (for example, a concrete plant next to a child care center). Marketing of the two properties is not a valid reason to have them treated as separate properties. The rule also states that leasehold interests in existence before February 12, 1991 (the effective date of Rule 14-97) may be considered separate properties.

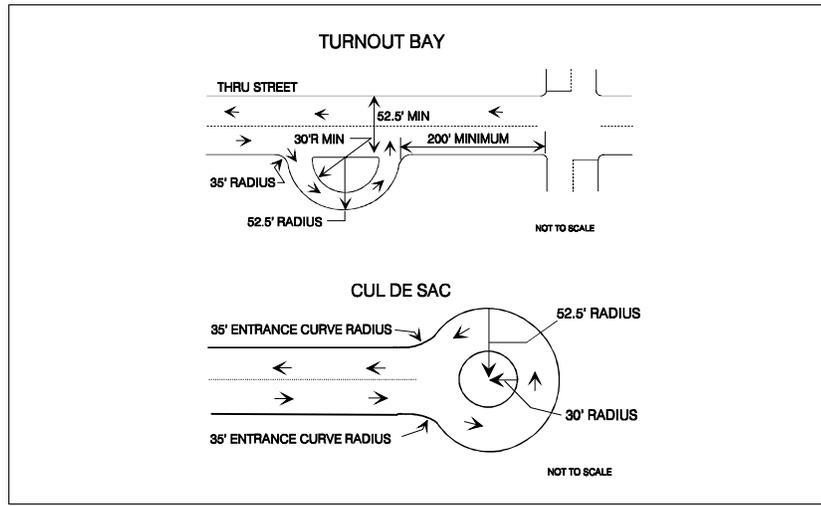
Section 11. Emergency Access

1. In addition to minimum side, front, and rear yard setback and building spacing requirements specified in this code, all buildings and other development activities such as landscaping, shall be arranged on site so as to provide safe and convenient access for emergency vehicles.

Section 12. Transit Access

1. In commercial or office zoning districts where transit service is available or is planned to be available within five years, provisions shall be made for adequate transit access, in the form of turn around loops or turnout bays. At a minimum, in the case of a loop or cul-de-sac, entrance curves shall have a 35 foot radius, and the internal circle shall have an inside radius of 30 feet and an outside radius of 52.5 feet. In the case of turnout bays, the curve radius shall be 35', the distance from the roadside edge to the inside edge of the the outside radius shall be 52.5 feet (see Figure 8).

Figure 8: Transit Bus Turning Radii



Source: Maryland Department of Transportation, Mass Transit Administration. [Access by Design: Transit's Role in Land Development, A Developer's Manual](#). September 1988.

***Commentary:** The bus turnaround standards in Figure 8 are provided for transit access along major commercial and office corridors to assure safe and convenient transit access. Bus turnarounds are also useful in circumstances where circulation via the internal street system of a development would be impractical based on cost, design constraints, or the need to maintain timely service. These bus turnarounds are based upon the turning radius of a standard 40 foot bus.*

Section 13. Nonconforming Access Features

1. Permitted access connections in place as of (*date of adoption*) that do not conform with the standards herein shall be designated as nonconforming features and shall be brought into compliance with applicable standards under the following conditions:
 - a) When new access connection permits are requested;
 - b) Substantial enlargements or improvements;
 - c) Significant change in trip generation; or
 - d) As roadway improvements allow.

Commentary: Nonconforming access features may continue in the same manner after adoption of land development regulations--a process known as "grandfathering." This protects the substantial investment of property owners and recognizes the expense of bringing those properties into conformance. Yet the negative impacts of nonconforming properties may be substantial, depending upon the degree of nonconformity. Nonconforming properties may pose safety hazards, increase traffic congestion, reduce property values, degrade the environment, and undermine community character. To address the public interest in these matters, land development regulations include conditions or circumstances where nonconforming features must be brought into conformance. Opportunities to bring nonconforming features into compliance typically occur after a change of ownership when the costs of required improvements may be amortized in the business loan or mortgage, thereby minimizing financial hardship. It is essential that these standards be consistently and rigorously applied and enforced and that data and other information supporting these decisions be well documented, or the community could be open to legal challenges regarding due process considerations.

2. If the principal activity on a property with nonconforming access features is discontinued for a consecutive period of (180 or 365) days, or discontinued for any period of time without a present intention of resuming that activity, then that property must thereafter be brought into conformity with all applicable connection spacing and design requirements, unless otherwise exempted by the permitting authority. For uses that are vacant or discontinued upon the effective date of this code, the (180 or 365) day period begins on the effective date of this code.

Commentary: The Access Management Act (335.182(3)(b) F.S.) defines in law that any property that expands its tripmaking potential by 25% and at least 100 trips per day needs to be evaluated as a possible new permit. However, this definition does not provide guidance on when a property that has been out of service for a long period of time should be required to undergo reevaluation and obtain a new permit. The Florida Department of Transportation is currently trying to further clarify when a vacant or abandoned property must obtain a new permit due to a Significant Change in property use. What is being proposed for the new Administrative Rule 14-96 (Access Permit Procedures) is a definition that requires a new permit if the intended use of property is stopped for one year. Local governments may choose to do the same for consistency or be more restrictive and provide only a 180 day grace period.

Section 14. Corridor Access Management Overlay

1. The minimum lot frontage for all parcels with frontage on (*name affected segments of thoroughfares here or refer to a list*) shall not be less than the minimum connection spacing standards of that thoroughfare, except as otherwise provided in this Section. Flag lots shall not be permitted direct access to the thoroughfare and interior parcels shall be required to obtain access via a public or private access road in accordance with the requirements of this Code.

Commentary: Overlay zones are an effective method for managing access along commercial corridors. The technique is used to add a special set of requirements to those of an existing zoning district or districts. Section 14(1) is for those major thoroughfares or portions of major thoroughfares under state or local jurisdiction that are not already extensively subdivided and are not planned for commercial or intensive development in the near future. This approach requires that any lot fronting designated thoroughfares (usually those with an assigned access classification) have a minimum lot frontage that meets or exceeds the minimum connection spacing standard for those thoroughfares. This may be as high as 660 feet on Access Class 3 thoroughfares with a speed limit greater than 45 mph, or as low as 245 feet for Access Class 6 thoroughfares with a speed limit less than 45 mph. Existing lots with less frontage would continue as nonconforming lots. Section 14(1) standards impose large minimum lot frontage requirements to coordinate with desired connection spacing. Such requirements could disperse development and should not be applied in areas intended for intensive development. They are designed for rural and semi-rural stretches of the state (or county) highway system.

2. The following requirements shall apply to segments of designated thoroughfares that are planned for commercial or intensive development. All land in a parcel having a single tax code number, as of (*date of adoption*), fronting on (*define segment of affected thoroughfare or refer to a Table defining affected segments*), shall be entitled one (1) driveway/connection per parcel as of right on said public thoroughfare(s). When subsequently subdivided, either as metes and bounds parcels or as a recorded plat, parcels designated herein shall provide access to all newly created lots via the permitted access connection. This may be achieved through subdivision roads, joint and cross access, service drives, and other reasonable means of ingress and egress in accordance with the requirements of this Code. The following standards shall also apply:

- a) Parcels with large frontages may be permitted additional driveways at the time of adoption of these requirements provided they are consistent with the applicable driveway spacing standards.

- b) Existing parcels with frontage less than the minimum connection spacing for that corridor may not be permitted a direct connection to the thoroughfare under this Section where the Planning Commission determines alternative reasonable access is available to the site. [*Note: The Planning Commission could allow for a temporary driveway as provided in Section 7 with the stipulation that joint and cross access be established as adjacent properties develop.*]

c) Additional access connections may be allowed where the property owner demonstrates that safety and efficiency of travel on the thoroughfare will be improved by providing more than one access to the site.

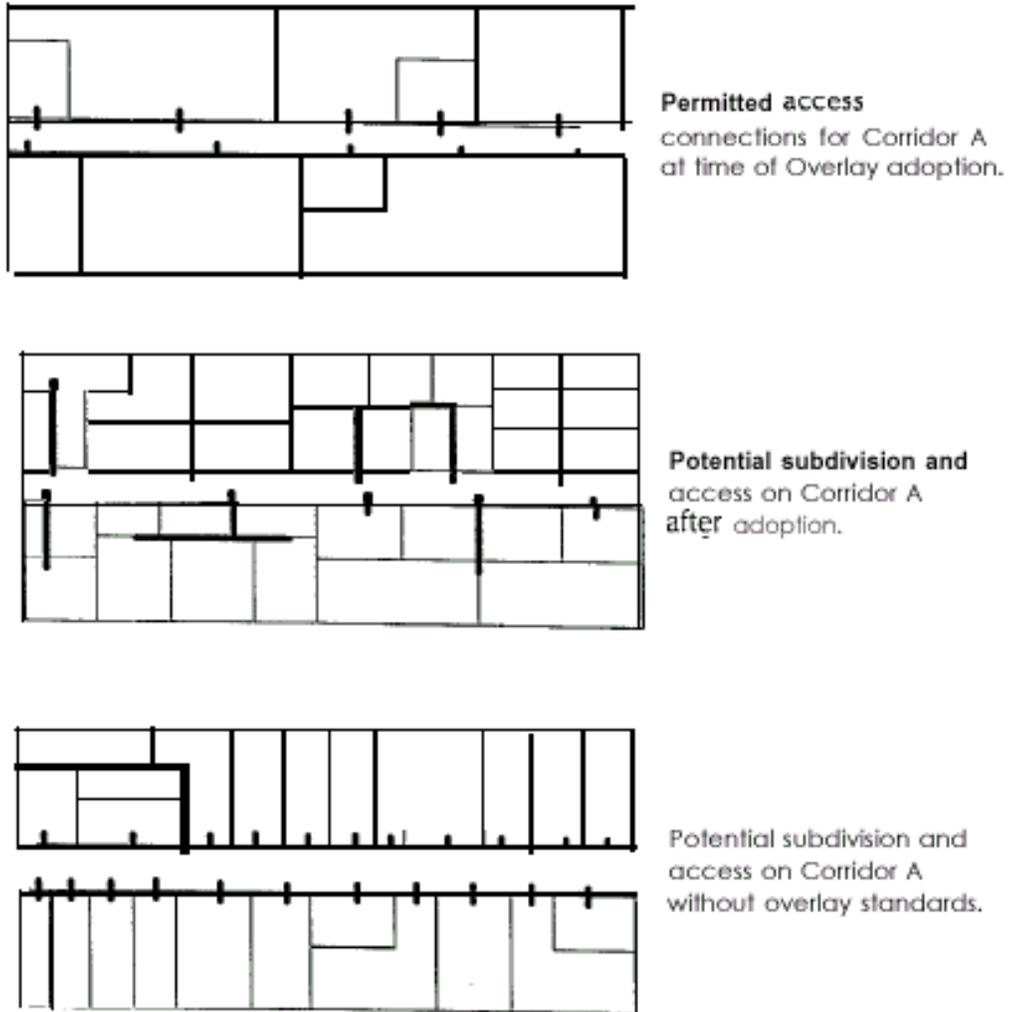
d) No parking or structure other than signs shall be permitted within (10-50) feet of the roadway right-of-way. The (10-50) foot buffer shall be landscaped with plants suitable to the soil and in a manner that provides adequate sight visibility for vehicles exiting the site. Property owners shall be permitted to landscape the right-of-way, pursuant to an approved landscaping plan.

e) Permitted connections shall be identified on a map that shall be adopted by reference and that portion of a corridor affected by these overlay requirements shall be delineated on the (city/county) zoning map with hatch marks.

Commentary: *The regulations in Section 14(2) are intended for corridors that are planned for commercial or intensive development and have not already been extensively subdivided into small lot frontages. Such corridors may or may not be currently zoned for commercial or mixed use development, but may already be experiencing development pressure. This approach focuses, rather than disperses, development along corridors while maintaining regional mobility through access management. The Section 14(2) overlay "freezes" allowable access to one connection by right per existing lot or parcel at the time of adoption. Lots or parcels may be extensively subdivided, but all future lots must obtain access via the access connections permitted at the time of overlay adoption.*

This overlay approach allows for continued subdivision and development of land while stimulating joint access, local roads, and other alternatives to direct thoroughfare access in the site design process (see Figure 9). These permitted connections must be designated on a map and adopted with the overlay requirements. For flexibility, additional driveways may be permitted for large parcels that meet or exceed the minimum access spacing standards for that thoroughfare, or where safety would be increased. Parcels with small frontages at the time of adoption are not permitted a driveway on the thoroughfare where this would create a safety hazard or where alternative reasonable access is available. In such cases a temporary driveway could be permitted under joint access requirements.

Figure 9: Corridor Access Management Overlay

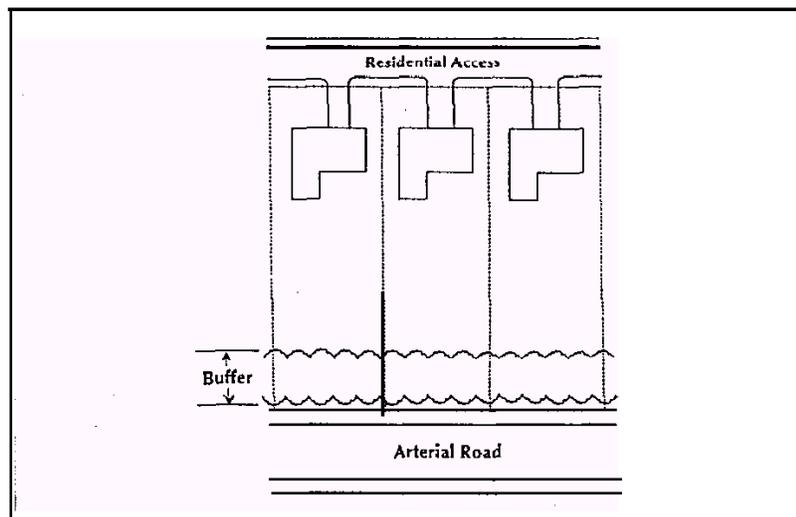


Local governments are also encouraged to apply design guidelines that enhance community character, including standards for pedestrian access and landscaping. Section 14(2)(d) above is one potential standard for improving the visual quality of commercial corridors through landscaping and setbacks. The setback between the right-of-way and the parking area or structure should at a minimum be 10 feet. Some communities require as much as 50 feet. The appropriate standard will vary according to local preferences and existing right-of-way. If the existing right-of-way is very small, for example, then the buffer should be increased and vice versa. Some communities are also promoting side and rear parking, or shared parking areas, to reduce the appearance of asphalt from the street and provide for a more pleasing site design.

Section 15. Reverse Frontage

1. Access to double frontage lots shall be required on the street with the lower functional classification.
2. When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through lots along the arterial with access from a frontage road or interior local road (see Figure 10). Access rights of these lots to the arterial shall be dedicated to the *(city/county)* and recorded with the deed. A berm or buffer yard may be required at the rear of through lots to buffer residences from traffic on the arterial. The berm or buffer yard shall not be located within the public right-of-way.

Figure 10: Reverse Frontage

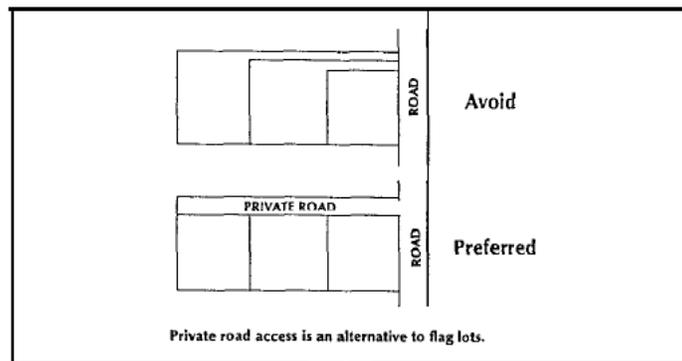


Commentary: If your community lacks any standards governing reverse frontage, it is essential that such standards be adopted. These standards are currently applied by many communities and are highly effective in preventing safety hazards caused by direct residential access to high speed roadways.

Section 16. Flag Lot Standards

1. Flag lots shall not be permitted when their effect would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other major thoroughfares.
2. Flag lots may be permitted for residential development, when deemed necessary to achieve planning objectives, such as reducing direct access to thoroughfares, providing internal platted lots with access to a residential street, or preserving natural or historic resources, under the following conditions:
 - a) Flag lot driveways shall be separated by at least twice the minimum frontage requirement of that zoning district.
 - b) The flag driveway shall have a minimum width of 20 feet and maximum width of 50 feet.
 - c) In no instance shall flag lots constitute more than 10% of the total number of building sites in a recorded or unrecorded plat, or three lots or more, whichever is greater.
 - d) The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.
 - e) No more than one flag lot shall be permitted per private right-of-way or access easement.

Figure 11: Flag Lots and Alternative Access



Source: K. Williams, T. McCauley, and M. Wyckoff. Land Division and Access Controls. Michigan Society of Planning Officials, Lansing: Planning and Zoning Center Inc., April 1990.

Commentary: Local plat maps often reveal lots shaped like flags with long narrow access "poles". Flag lots are especially prevalent along lakes, rivers, cul-de-sacs, and rural highways. Although they can be useful where natural features or land division patterns create access problems, they are subject to abuses. Flag lots proliferate in some areas where property owners use the technique to avoid plat review and further subdivide land. The result is a subdivision that lacks adequate access and creates long term problems for the community and those who purchase the lots. Where the narrow frontages abut a thoroughfare, they afford inadequate spacing between driveways and increase safety hazards from vehicles turning on and off the high speed roadway. Because flag lots often violate driveway spacing standards on the state highway system, they also create problems for the buyer who later attempts to build on the property and obtain a driveway permit. Under these standards existing flag lots would be nonconforming and allowed to continue. In areas where flag lots proliferate on a state or county thoroughfare, property owners should be contacted and strongly encouraged to consolidate access with adjacent properties--especially in the case of abutting flag lots.

Section 17. Lot Width-to-Depth Ratios

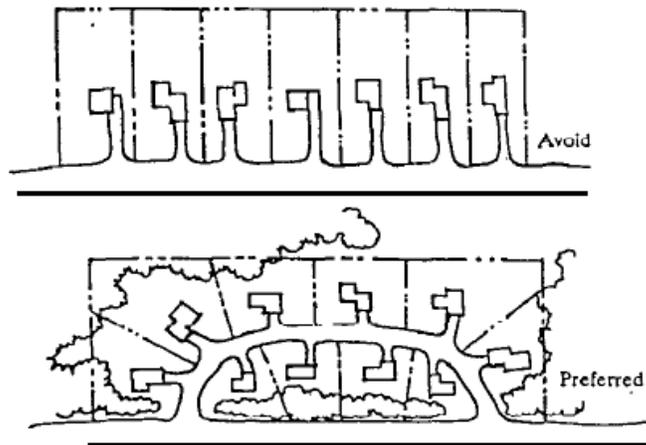
- 1. To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed 3 times its width (or 4 times its width in rural areas). The permitted depth shall be higher in coastal areas subject to erosion.**

Commentary: Minimum lot frontage and maximum lot width-to-depth ratios prevent the creation of long and narrow or irregularly shaped lots that can lead to access and circulation problems. This standard is especially useful in rural areas, to govern the dimensions of newly created lots and parcels. Note: Rural areas may adopt a maximum width-to-depth ratio of 1:4, meaning that parcels with 100 feet of frontage may not be deeper than 400 feet. Urban or suburban areas may use maximum ratios of 1:2.5 or 1:3. Width-to-depth ratios could be set as high as 1:7 in coastal areas that have a high risk of erosion and somewhat deeper lots may be permitted along arterials to provide for berms or buffer yards in reverse frontage situations.

Section 18. Shared Access

1. Subdivisions with frontage on the state highway system 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 (see Figure 12).
2. Direct access to individual one and two family dwellings shall be prohibited on the Florida Intrastate Highway System.
3. Subdivisions on a single residential access street ending in a cul-de-sac shall not exceed 25 lots or dwelling units, and the cul-de-sac shall have a minimum cartway radius of 30 feet.

Figure 12: Shared Access on Major Thoroughfares



Reprinted with permission from the The Tug Hill Commission. Cheryl S. Doble and George M. McCulloch. Community Design Guidelines Manual. New York: The New York State Tug Hill Commission, January 1991.

Commentary: Subdivisions served by a single access street ending in a cul-de-sac may inhibit emergency access and increase traffic congestion during peak hours by providing only one point of ingress and egress. Single access problems may also result in phased subdivisions where additional access is proposed for future phases. If future phases are not built, the remaining subdivision may have insufficient access. Although this is not a problem where only a few dwelling units are served, how many lots is too many? Average daily trips for residential streets provide a baseline for access and cul-de-sac standards. Listokin and Walker (1989) recommend that when a subdivision on a single access residential access street exceeds 25 lots (or 25 dwelling units), it

should have at least two access points. A minimum turning radius that accommodates emergency vehicles should be required for cul-de-sacs.

The above provisions for shared access are intended to prevent a proliferation of driveways on the state highway system--a common problem in some semi-rural and rural areas. Provisions for shared access also promote land development patterns that are more compatible with the rural character of the landscape. The shared access standard in Section 18(12) was taken from the landmark guidebook Dealing with Change in the Connecticut River Valley, and can be used together with conservation easements and clustering provisions to preserve natural resources. (see Yaro, Arendt, et al., Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development. Amherst: Lincoln Institute of Land Policy, 1988.)

Section 19. Connectivity

1. The street system of a proposed subdivision shall be designed to coordinate with existing, proposed, and planned streets outside of the subdivision as provided in this Section.
2. Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided as deemed necessary by the (city/county) to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with temporary turn-around or cul-de-sacs unless specifically exempted by the Public Works Director, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.
3. Collector streets shall intersect with collector or arterial streets at safe and convenient locations.
4. Subcollector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation, but such connections shall not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.

Commentary: Local governments must maintain a tenuous balance between enhancing accessibility and limiting excessive through traffic in residential areas. These standards strive to address both considerations.

Section 20. Minor Subdivisions

1. The (*approving Department*) may approve a Minor Subdivision that conforms to the following standards:

a) Each proposed lot must be buildable in conformance with the requirements of this Code and all other applicable regulations.

b) Each lot shall abut a public or private street for the required minimum lot frontage for the zoning district where the lots are located.

c) If any lot abuts a street right-of-way that does not conform to the design specifications of this Code, the owner may be required to dedicate one-half the right-of-way width necessary to meet minimum design requirements.

2. Further subdivision of the property shall be prohibited unless applicants submit a plat or development plan in accordance with requirements for major subdivisions in this Code.

Commentary: This standard prohibits property owners from incrementally subdividing land to avoid review.

3. The (*approving Department*) shall consider a proposed Minor Subdivision upon the submittal of the following materials:

a) An application form provided by the (*city/county*);

b) ___ () copies of the proposed Minor Subdivision plat; [*Note: The number of copies required should be based on number of entities that will review the plan under adopted procedures.*]

c) A statement indicating whether water and/or sanitary sewer service is available to the property; and

d) Land descriptions and acreage or square footage of the original and proposed lots and a scaled drawing showing the intended divisions shall be prepared by a professional land surveyor registered in the State of Florida. In the event a lot contains any principal or accessory structures, a survey showing the structures on the lot shall accompany the application.

4. Review Procedure

a) The *(approving official)* shall transmit a copy of the proposed Minor Subdivision to the appropriate *(departments or officials)* for review and comment.

b) If the proposed Minor Subdivision meets the conditions of this section and otherwise complies with all applicable laws and ordinances, the *(approving official)* shall approve the Minor Subdivision by signing the application form.

c) Upon approval of the Minor Subdivision, the *(approving official)* shall record the plat on the appropriate maps and documents, and shall, at the applicant's expense, record the plat in the official county records.

Commentary: These requirements for minor subdivisions are adapted from Florida's Model Land Development Code and provided here to emphasize the importance of adequate land division controls in access management. They provide for local review of divisions of land or "lot splits" that would otherwise be exempted from subdivision review and platting requirements. A review process for lot splits prevents creation of lots that are not in conformance with land development regulations and thus could be rendered unbuildable. It further prevents creation of lots with inadequate or inappropriate access to a public road. This allows local governments to prevent access problems attributable to flag lots, through lots, and corner lots. This review process is streamlined and platting requirements are less costly than those of a major subdivision, so as not to create a hardship for property owners engaged in only minor subdivision activity. Local governments are strongly advised not to provide exemptions from public review of land division activity based on lot size or number of lots, because this creates long term problems that can seriously undermine the local planning and regulatory program.

Section 21. Private Roads

1. Private roads may be permitted in accordance with the requirements of this Section and the following general standards shall apply:

a) All *(city/county)* roads shall be constructed to public specifications and have an easement of a minimum of sixty-six feet in width, except as otherwise provided in Section 21 (2).

b) Private roads that by their existence invite the public in shall have all traffic control features, such as striping or markers, in conformance with the Manual of Uniform Traffic Control Devices.

c) The minimum distance between private road outlets on a single side of a public road shall be 660 feet, or less where provided by access classification and standards for state roads and local thoroughfares.

d) All properties served by the private road shall provide adequate access for emergency vehicles and shall conform to the approved local street numbering system.

e) All private roads shall be designated as such and will be required to have adequate signage indicating the road is a private road and not publicly maintained.

f) All private roads shall have a posted speed limit not to exceed twenty miles an hour.

g) All private roads shall have adequate provisions for drainage and stormwater runoff as provided in Section (*refer to appropriate section of the local subdivision regulations*).

h) A second access connection to a public road shall be required for private roads greater than 2000 feet in length.

2. Private roads in rural and semi-rural areas may be permitted reductions in easement and roadway width and pavement standards to provide for adequate access while retaining the rural character of the landscape and design flexibility. At a minimum, the private road shall meet the (*city/county*) specifications for gravel roadway construction. Other standards shall apply in accordance with the following schedule:

a) A private road serving up to two lots shall have a minimum right-of-way easement of 30 feet and a roadbed of at least 12 feet.

b) A private road intended to serve no more than three to six lots shall have a minimum right-of-way easement of 30 feet and a roadbed of at least 16 feet.

c) A private road intended to serve no more than seven to twelve lots shall have a minimum right-of-way easement of 66 feet and a roadbed of at least 20 feet. Paving shall be required for all areas with grades of greater than three (3%) percent. Such pavement shall be a minimum of 18 feet in width.

d) A private road intended to serve no more than 13 to 24 lots shall have a minimum right-of-way easement of 66 feet, a roadbed of at least 24 feet and shall be paved.

e) A private road intended to serve 25 or more lots or parcels shall provide at least two access connections to a public road and shall meet the minimum design requirements for public roads.

Commentary: This section provides a sliding scale approach, allowing gravel roads of about 12 feet to 18 feet wide for 2-4 parcels and requiring higher design specifications for larger developments. The standards are intended to provide flexibility and to preserve the character of rural areas. Communities considering

a sliding scale approach to private roads should also adopt a site plan review process aimed at encouraging creative site design and landscape preservation.

3. **Applications for subdivision approval that include private roads shall include a drainage plan and road construction plan, prepared by a registered engineer. The (city/county) Public Works Official shall review private road plans for conformance with this Code.**
4. **Construction permits are required for connection to public roads. Application for road construction shall be made concurrent with the creation of a lot that does not have frontage on a public road. A road construction permit shall be issued after approval of the private road plan and the entire length of the road shall be inspected during construction and upon completion. If found in conformance, a final use permit shall be issued.**
5. **No building permit shall be issued for any lot served by a private road until the private road has been constructed and approved, so that all lots to be served by the private road have access to a public road.**
6. **A road maintenance agreement, prepared by the (city/county) attorney shall be recorded with the deed of each property to be served by a common private road. The agreement shall provide for:**
 - a) **A method to initiate and finance a private road and maintain that road in good condition;**
 - b) **A method of apportioning maintenance costs to current and future users;**
 - c) **A provision that the (city/county) may inspect, and if necessary, require that repairs be made to the private road to ensure that safe access is maintained for emergency vehicles. If required repairs are not made within six months of date of notice, the (city/county) may make the necessary repairs and assess owners of parcels on the road for the cost of all improvements plus an administrative fee, not to exceed 25% of total costs;**
 - d) **A provision that the majority vote of all property owners on the road shall determine how the road is maintained except in the case of emergency repairs as outlined above;**
 - e) **A statement that no public funds shall be used to construct repair or maintain the road;**
 - f) **A provision requiring mandatory upgrading of the roadway if additional parcels are added to reach the specified thresholds; and**
 - g) **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.

7. No private road shall be incorporated into the public road system unless it is built to public road specifications of the (city/county). The property owners shall be responsible for bringing the road into conformance.
8. All private roads shall have a sign and name meeting (city/county) standards and shall include the following notice: "Private Road" "Not maintained by the (city/county)".
9. An application fee will be established by the Director of Public Works to cover administrative, processing, and inspection costs.
10. All purchasers of property served by a private road shall, prior to final sale, be notified that the property receives access from a private road that shall be maintained collectively by all property owners along that road; that the (city/county) shall not be held responsible for maintaining or improving the private road; and that a right-of way easement to provide the only access to that property has been recorded in the deed for that property.
11. The United States postal service and the local school (board/district) is not required to use the private road for access to the parcels abutting the private road and may require that service be provided only at the closest public access point.

Commentary: These private road standards were adapted from sample regulations prepared for the Grand Traverse Bay Region (Planning & Zoning Center, Inc., Lansing, Michigan, September 1992). Some communities prohibit private roads altogether or require all private roads serving more than one dwelling unit to be built to public specifications and paved. This is because of problems associated with private roads, such as pressure to adopt the private road into the public road system in the future. Yet if properly regulated, private roads can offer an effective means of access to small subdivisions in rural areas. In the absence of private road regulations, common practice is the creation of multiple lots served by a common lot, easement, or multiple easements as in the example of stacked flag lots. The easement then becomes a private unpaved road serving several properties.

Unregulated private roads raise several problems. They may be inaccessible to emergency vehicles or large delivery trucks, placing public safety and private property at risk. Substandard roads deteriorate quickly and without a maintenance agreement, the local government may be called upon to maintain it. Buyers may not be aware of the maintenance issues associated with the road until after purchasing the property. Narrow rights-of-way may impede placement of utilities, and private roads can exacerbate inefficient land development patterns. These problems can be avoided through private road regulations that address design, construction, joint maintenance agreements, signage, and review. Private roads should be permitted for residential uses only and standards should be tied to lot split (minor replat) or subdivision regulations. Limitations should be placed upon the number of residences that may be served by a single 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.

Section 22. Regulatory Flexibility

- 1. The Planning Commission may permit departure from dimensional lot, yard, and bulk requirements of the zoning district where a subdivision or other development plan is proposed to encourage creativity in site design, protect natural resources, and advance the access objectives of this Code. Such regulatory modifications under this section are not subject to variance approval by the Board of Adjustment.**

Section 23. Site Plan Review Procedures

- 1. Applicants shall submit a preliminary site plan for review by *(name of department responsible for conducting review)*. At a minimum, the site plan shall show:**
 - a) Location of access point(s) on both sides of the road where applicable;**
 - b) Distances to neighboring constructed access points, median openings, traffic signals, intersections, and other transportation features on both sides of the property;**
 - c) Number and direction of lanes to be constructed on the driveway plus striping plans;**
 - d) All planned transportation features (such as auxiliary lanes, signals, etc.);**
 - e) Trip generation data or appropriate traffic studies;**
 - f) Parking and internal circulation plans;**
 - g) Plat map showing property lines, right-of-way, and ownership of abutting properties; and**
 - h) A detailed description of any requested variance and the reason the variance is requested.**
- 2. Subdivision and site plan review shall address the following access considerations:**
 - a) Is the road system designed to meet the projected traffic demand and does the road network consist of hierarchy of roads designed according to function?**

- b) Does the road network follow the natural topography and preserve natural features of the site as much as possible? Have alignments been planned so that grading requirements are minimized?
- c) Is access properly placed in relation to sight distance, driveway spacing, and other related considerations, including opportunities for joint and cross access? Are entry roads clearly visible from the major arterials?
- d) Do units front on residential access streets rather than major roadways?
- e) Is automobile movement within the site provided without having to use the peripheral road network?
- f) Does the road system provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection?
- g) Have the edges of the roadways been landscaped? If sidewalks are provided alongside the road, have they been set back sufficiently from the road, and has a landscaped planting strip between the road and the sidewalk been provided?
- h) Does the pedestrian path system link buildings with parking areas, entrances to the development, open space, and recreational and other community facilities?

Commentary: The subdivision and site plan review process provides local governments with the most effective opportunity for addressing access considerations and preventing access problems before they occur. This should be done as early as possible in the process. Developers will be far less amenable to revising the access plan later in the process or after the site plan or plat has been approved. The above checklist of access review considerations in Section 23(2) was adapted from David Listokin and Carole Walker. The Subdivision and Site Plan Handbook. New Brunswick, NJ: Center for Urban Policy Research, Rutgers University. 1989.

3. The (city/county) reserves the right to require traffic and safety analysis where safety is an issue or where significant problems already exist.
4. After 30 days from filing the application, applicants must be notified by the (permitting department) if any additional information is needed to complete the application.
5. Upon review of the access application, the (permitting department) may approve the access application, approve with conditions, or deny the application. This must be done within 90 days of receiving the complete application.

6. Any application that involves access to the State Highway System shall be reviewed by the Florida Department of Transportation for conformance with state access management standards. Where the applicant requires access to the State Highway System, and a zoning change, or subdivision or site plan review is also required, development review shall be coordinated with the Florida Department of Transportation, as follows:
 - a) An access management/site plan review committee that includes representatives of FDOT traffic operations, access permitting, and the local government shall review the application. The committee shall inform the developer what information will be required for access review. Information required of the applicant may vary depending upon the size and timing of the development, but shall at a minimum meet the requirements of this section.
 - b) Upon review of the application, the access management review committee shall advise the *(permitting department)* whether to approve the access application, approve with conditions, or deny the application.
7. If the application is approved with conditions, the applicant shall resubmit the plan with the conditional changes made. The plan, with submitted changes, will be reviewed within 10 working days and approved or rejected. Second applications may only be rejected if conditional changes are not made.
8. If the access permit is denied, the *(city/county)* shall provide an itemized letter detailing why the application has been rejected.
9. All applicants whose application is approved, or approved with conditions, have thirty days to accept the permit. Applicants whose permits are rejected or approved with conditions have 60 days to appeal.

Commentary: Effective coordination with the Florida Department of Transportation, the local traffic engineer, transportation planner, and/or public works official is essential to ensure conformance with land division and access requirements. One method of improving coordination is to establish the building permit as the lead permit during development review. In this way, property owners would be required to submit the necessary permits or certificates of approval from regulatory agencies involved in development review before issuing a building permit. This should include a notice of intent to approve the proposed access connection from the Florida Department of Transportation where the state highway system is involved to assure conformance with the State Highway System Access Management Act and administrative rules. The above review process would be incorporated into the community's overall subdivision and site plan review process. A conceptual review, before submission of the preliminary site plan or plat, is highly recommended. Communities should also set fees and develop the necessary forms to carry out the provisions of this code.

Section 24. Variance Standards

- 1. The granting of the variation shall be in harmony with the purpose and intent of these regulations and shall not be considered until every feasible option for meeting access standards is explored.**
- 2. Applicants for a variance from these standards must provide proof of unique or special conditions that make strict application of the provisions impractical. This shall include proof that:**
 - a) indirect or restricted access cannot be obtained;**
 - b) no engineering or construction solutions can be applied to mitigate the condition; and**
 - c) no alternative access is available from a street with a lower functional classification than the primary roadway.**
- 3. Under no circumstances shall a variance be granted, unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an exceptional and undue hardship on the applicant. No variance shall be granted where such hardship is self-created.**

Commentary: Each local government has its own process for handling appeals and variances. The standards above should be incorporated to this process. Providing for variances and other remedial measures is crucial to avoiding a takings claim by providing due process to the property owner and avoiding unreasonable hardship that may arise in relation to the regulatory framework. Federal case law has established that property owners should first exhaust available administrative remedies, including appeals to the local board of adjustment, before the case may be heard in a court of law. If local 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.



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TM 4 – Principles and Practices of Access Management

APPENDIX TM4-6

C.R.S. §43-2-147, Access to Public Highways, from Colorado State Highway Access Code

[Archive](#)

Colorado Statutes

Title 43. TRANSPORTATION

HIGHWAYS AND HIGHWAY SYSTEMS

Article 2. State, County, and Municipal Highways

Part 1. STATE, COUNTY, AND CITY HIGHWAY SYSTEMS

Current through 2012 First Extraordinary Session

§ 43-2-147. Access to public highways

- (1) The department of transportation and local governments are authorized to regulate vehicular
 - (a) access to or from any public highway under their respective jurisdiction from or to property adjoining a public highway in order to protect the public health, safety, and welfare, to maintain smooth traffic flow, to maintain highway right-of-way drainage, and to protect the functional level of public highways. In furtherance of these purposes, all state highways are hereby declared to be controlled-access highways, as defined in section [42-1-102\(18\)](#), C.R.S.
 - (b) Vehicular access to or from property adjoining a state highway shall be provided to the general street system, unless such access has been acquired by a public authority. Police, fire, ambulance, and other emergency stations shall have a right of direct access to state highways. After June 21, 1979, no person may submit an application for subdivision approval to a local authority unless the subdivision plan or plat provides that all lots and parcels created by the subdivision will have access to the state highway system in conformance with the state highway access code.
 - (c) The provisions of this section shall not be deemed to deny reasonable access to the general street system.
- (2) Repealed.
- and
- (3)
- (4) The commission shall adopt a state highway access code, by rule and regulation, for the implementation of this section, on or after March 16, 1980. The access code shall address the design and location of driveways and other points of access to public highways. The access code shall be consistent with the authority granted in this section and shall be based upon consideration of existing and projected traffic volumes, the functional classification of public highways, adopted local transportation plans and needs, drainage requirements, the character of lands adjoining the highway, adopted local land use plans and zoning, the type and volume of traffic to use the driveway, other operational aspects of the driveway, the availability of vehicular access from local streets and roads rather than a state highway, and reasonable access by city streets and county roads.
- (5) After the effective date of the access code, no person shall construct any driveway providing
 - (a) vehicular access to or from any state highway from or to property adjoining a state highway

without an access permit issued by the appropriate local authority with the written approval of the department of transportation. If the local authority fails to act within forty-five days after an access permit has been requested, such permit shall be deemed issued subject to written approval of the department of transportation. If the department of transportation does not act upon an access permit within twenty days after notice by the local authority, or within twenty days after local authorities should have acted, whichever is the lesser, such permit shall be deemed approved. Upon written request by a local authority, the department of transportation shall administer or assist in the administration of access permits in that jurisdiction. If the department of transportation undertakes to administer access permits in a jurisdiction, it shall act upon requested access permits within forty-five days of request. If the department of transportation fails to act within forty-five days upon a requested access permit, such permit shall be deemed approved. Access permits shall be issued only in compliance with the access code and may include terms and conditions authorized by the access code.

- (b) The issuing authority shall establish a reasonable schedule of fees for access permits issued pursuant to the access code and this section, which fees shall not exceed the costs of administration of access permits.
- (c) When a permitted driveway is constructed or utilized in violation of the access code, permit terms and conditions, or this section, either the issuing authority or the department of transportation or both may obtain a court order enjoining violation of the access code, permit terms and conditions, or this section. Such access permits may be revoked by the issuing authority if, at any time, the permitted driveway and its use fail to meet the requirements of this section, the access code, or the terms and conditions of the permit. The department of transportation may install barriers across or remove any driveway providing direct access to a state highway which is constructed without an access permit.
- (6) The provisions of this section shall not apply to driveways in existence on June 30, 1979, unless
 - (a) specifically stated otherwise. Driveways constructed between July 1, 1979, and the effective date of the access code shall comply with the driveway code adopted by the department of transportation pursuant to statutory authority prior to July 1, 1979.
- (b) Any driveway, whether constructed before, on, or after June 30, 1979, may be required by the department of transportation with written concurrence of the appropriate local authority to be reconstructed or relocated to conform to the access code, 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 of transportation 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.
- (c) Any party who has received an adverse decision by the department of transportation may request and shall receive a hearing before the transportation commission or before an administrative law judge from the department of personnel, at the discretion of the transportation commission. Such hearing shall be conducted in accordance with the provisions of article 4 of title 24, C.R.S. Decisions by the transportation commission or by an administrative law judge shall be considered final agency action.
- (d) Reconstruction or relocation of a driveway shall be administered in the same manner as the revocation of a license under the "State Administrative Procedure Act".

- (7) The boards of county commissioners may, by resolution, and other local authorities may, in the manner prescribed in article 16 of title [31](#), C.R.S., adopt by reference the state highway access code, in whole or in part, or may adopt separate provisions, for application to local roads and streets that are not a part of the state highway system.
- (7.5) The issuing authority shall grant a variance from the state highway access code if such variance would not be inconsistent with paragraph (a) of subsection (1) of this section and if such variance is reasonably necessary for the convenience, safety, and welfare of the public. If failure to grant a variance would deny reasonable access to the general street system, such denial may be subject to the provisions of section [43-1-208](#) and section 15 of article II of the state constitution.
- (8) As used in this section, unless the context otherwise requires:
- (a) "Access control plan" means a roadway design plan which designates preferred access locations and their designs for the purpose of bringing those portions of roadway included in the access control plan into conformance with their functional classification to the extent feasible.
- (b) "Appropriate local authority" means the board of county commissioners if the driveway is to be located in the unincorporated area of a county and the governing body of the municipality if the driveway is to be located within an incorporated municipality.
- (c) "Functional classification" means a classification system that defines a public roadway according to its purposes in the local or statewide highway plans. The commission shall determine the functional classification of all state highways. The functional classification of county roads and city streets shall be determined by the appropriate local authority.
- (d) "General street system" means the interconnecting network of city streets, county roads, and state highways in an area.
- (e) "Issuing authority" means the entity which issues access permits and includes the board of county commissioners, the governing body of a municipality, and the department of transportation.
- (f) "Local road" means a county road, as provided in sections [43-2-108](#) and [43-2-109](#) , and "local street" means a municipal street, as provided in sections [43-2-123](#) and [43-2-124](#) .

Cite as C.R.S § 43-2-147

History. L. 79: Entire section added, p. 1600, § 1, effective June 21. L. 81: (1)(b), (5)(a), and (6)(b) to (6)(d) amended, p. 2020, § 1, effective April 14. L. 84: (6)(b) and (6)(c) amended and (7.5) added, p. 1110, § 1, effective July 1. L. 87: (6)(c) amended, p. 976, § 101, effective March 13. L. 91: (1)(a), (5)(a), (5)(c), (6)(a) to (6)(c), and (8)(e) amended, p. 1108, § 153, effective July 1. L. 94: (1)(a) amended, p. 2571, § 99, effective January 1, 1995. L. 95: (6)(c) amended, p. 668, § 110, effective July 1. L. 2006: (2) and (3) repealed, p. 150, § 38, effective August 7.

Cross References:

For the state highway access code, see 2 CCR 601-1; for the "State Administrative Procedure Act", see article [4](#) of title [24](#).

[Archive](#)



US-60/Grand Avenue COMPASS

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TM 4 – Principles and Practices of Access Management

APPENDIX TM4-7

Oregon Administrative Rule (OAR) 734-051-0135, Deviations from Access Management Spacing Standards

Oregon Administrative Rule 734-051-0135

Deviations from Access Management Spacing Standards

(1) A deviation will be considered when an approach does not meet spacing standards and the approach is consistent with safety factors in OAR 734-051-0080(8). The information necessary to support a deviation must be submitted with an application or with the supplemental documentation as set forth in OAR 734-051-0070(5) and (6).

(2) For a private approach with no reasonable alternate access to the property, as identified in OAR 734-051-0080(2), spacing standards are met if property frontage allows or a deviation is approved as set forth in this section. The Region Manager shall approve a deviation for a property with no reasonable alternate access if the approach is located:

- (a) To maximize the spacing between adjacent approaches; or
- (b) At a different location if the maximized approach location:
 - (A) Causes safety or operational problems; or
 - (B) Would be in conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery.

(3) The Region Access Management Engineer shall approve a deviation if:

- (a) Adherence to spacing standards creates safety or traffic operation problems;
- (b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;
- (c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;
- (d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;
- (e) The highway segment functions as a service road;
- (f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or
- (g) Based on the Region Access Management Engineer's determination that:
 - (A) Safety factors and spacing significantly improve as a result of the approach; and
 - (B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020.

(4) When a deviation is considered, as set forth in section (1) of this rule, and the application results from infill or redevelopment:

(a) The Region Access Management Engineer may waive the requirements for a Traffic Impact Study and may propose an alternative solution where:

- (A) The requirements of either section (2) or section (3) of this rule are met; or
- (B) Safety factors and spacing improve and approaches are removed or combined resulting in a net reduction of approaches to the highway; and
- (b) Applicant may accept the proposed alternative solution or may choose to proceed through the standard application review process.

(5) The Region Access Management Engineer shall require any deviation for an approach located in an interchange access management area, as defined in the Oregon Highway Plan, to be evaluated over a 20-year horizon from the date of application and may approve a deviation for an approach located in an interchange access management area if:

(a) A condition of approval, included in the Permit to Operate, is removal of the approach when reasonable alternate access becomes available;

(b) The approach is consistent with an access management plan for an interchange that includes plans to combine or remove approaches resulting in a net reduction of approaches to the highway;

- (c) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway; or
- (d) The applicant demonstrates that existing development patterns or land holdings make utilization of a joint approach impracticable.

(6) The Region Access Management Engineer shall not approve a deviation for an approach if any of the following apply:

- (a) Spacing standards can be met even though adherence to spacing standards results in higher site development costs.
- (b) The deviation results from a self-created hardship including:

- (A) Conditions created by the proposed site plan, building footprint or location, on-site parking, or circulation; or
- (B) Conditions created by lease agreements or other voluntary legal obligations.

(c) The deviation creates a significant safety or traffic operation problem.

(7) The Region Access Management Engineer shall not approve a deviation for an approach in an interchange access management area where reasonable alternate access is available and the approach would increase the number of approaches to the highway.

(8) Where section (2), (3), (4) or (5) of this rule cannot be met, the Region Manager, not a designee, may approve a deviation where:

- (a) The approach is consistent with safety factors; and
- (b) The Region Manager identifies and documents conditions or circumstances unique to the site or the area that support the development.

(9) The Region Manager may require an intergovernmental agreement or completion of an access management plan or an interchange area management plan prior to approval of a deviation to construct a public approach.

(10) Approval of a deviation may be conditioned upon mitigation measures set forth in OAR 734-051-0145.

(11) Denial of a deviation is an appealable decision.

Stat. Auth.: ORS 184.616, 184.619, 374.310, 374.312, 374.345 & Ch. 972 & Ch. 974, OL 1999

Stats. Implemented: ORS 374.305 - 374.345, 374.990 & Ch. 974, OL 1999, Ch. 371, OL 2003

Hist.: TO 4-2000, f. 2-14-00, cert. ef. 4-1-00; HWD 2-2004, f. 2-18-04, cert. ef. 3-1-04, Renumbered from 734-051-0320; HWD 8-2010(Temp), f. & cert. ef. 7-30-10 thru 1-21-11; HWD 1-2011, f. & cert. ef. 1-19-11



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TM 4 – Principles and Practices of Access Management

APPENDIX TM4-8

**OAR 734-051-0155, Access Management and Interchange Access Management Plans,
Spacing Standards for Approaches**

Oregon Administrative Rule 734-051-0155

Access Management Plans and Interchange Area Management Plans

(1) The Department encourages the development of Access Management Plans and Interchange Area Management Plans to maintain and improve highway performance and safety by improving system efficiency and management before adding capacity. Access Management Plans and Interchange Area Management Plans:

- (a) Must be consistent with Oregon Highway Plan;
- (b) Must be used to evaluate development proposals; and
- (c) May be used to determine mitigation for development proposals.

(2) Access Management Plans and Interchange Area Management Plans must be adopted by the Oregon Transportation Commission as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed Access Management Plan and Interchange Area Management Plan is consistent with the local plan and codes.

(3) The priority for developing Access Management Plans should be placed on facilities with high traffic volumes or facilities that provide important statewide or regional connectivity where:

- (a) Existing developments do not meet spacing standards;
 - (b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or
 - (c) An Access Management Plan would preserve or enhance the safe and efficient operation of a state highway or interchange.
- (4) An Access Management Plan may be developed:

- (a) By the Department;
- (b) By local jurisdictions; or
- (c) By consultants.

(5) An Access Management Plan must comply with all of the following criteria, unless the Plan documents why a criterion is not applicable:

(a) Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.

(b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.

(c) Be developed in coordination with local governments and property owners in the affected area.

(d) Be consistent with any applicable Interchange Area Management Plan, corridor plan, or other facility plan adopted by the Oregon Transportation Commission.

(e) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Access Management Plan.

(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

(g) Consider whether improvements to local street networks are feasible.

(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

(6) The Department encourages the development of an Interchange Area Management Plan to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

(a) Interchange Area Management Plans are developed by the Department and local governmental agencies to protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;

(b) The Department will work with local governments to prioritize the development of Interchange Area Management Plans to maximize the operational life and preserve and improve safety of existing interchanges not scheduled for significant improvements; and

(c) Priority should be placed on those facilities on the Interstate system with cross roads carrying high volumes or providing important statewide or regional connectivity.

(7) An Interchange Area Management Plan is required for new interchanges and should be developed for significant modifications to existing interchanges. An Interchange Area Management Plan must comply with the following criteria, unless the Plan documents why compliance with a criterion is not applicable:

(a) Be developed no later than the time an interchange is designed or is being redesigned.

(b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

(c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

(d) Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

(e) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years.

(f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

(g) Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission.

(h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

Stat. Auth.: ORS 184.616, 184.619, 374.310, 374.312 & 374.345

Stats. Implemented: ORS 374.305 to 374.350 & 374.990

Hist.: TO 4-2000, f. 2-14-00, cert. ef. 4-1-00; HWD 2-2004, f. 2-18-04, cert. ef. 3-1-04, Renumbered from 734-051-0360; HWD 2-2007, f. & cert. ef. 1-26-07; Suspended by HWD 16-2011(Temp), f. 12-22-11, cert. ef. 1-1-12 thru 6-29-12



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TM 4 – Principles and Practices of Access Management

APPENDIX TM4-9

OAR 734-051-3080, Dispute

Resolution Pertaining to Access Control on State Highways, Oregon Department of Transportation

Dispute Resolution Pertaining to Access Control on State Highways

Oregon Administrative Rules (OAR)

734-051-3080

Post-Decision Review Processes

(1) Types of Post-Decision Review Processes. Three types of post-decision review processes are available to an applicant under division 51:

- (a) Post-decision collaborative discussion (OAR 734-051-3090);
- (b) Dispute review board (OAR 734-051-3100); and
- (c) Contested case hearing (OAR 734-051-3110).

(2) Sequence of Reviews.

(a) Except as noted in subsection (b) of this section, an applicant may request any or all of the types of reviews listed in section (1) of this rule, provided the reviews must be conducted in sequence (a) through (c).

(b) An applicant seeking further review of a determination of whether an application is moving in the direction of conformity pursuant to OAR 734-051-3020(10)(a) may request a collaborative discussion or review by the dispute review board, but may not request a contested case hearing. The option of a collaborative discussion is eliminated if the applicant chooses a review by the dispute review board prior to a collaborative discussion.

(3) Notice of Opportunity for Post Decision Reviews. Except for review of a department determination pursuant to OAR 734-051-3020(10)(a), the department shall notify the applicant when processing of the application has reached an opportunity for any of the types of post-decision review and shall provide instructions about how to request a review.

(4) Request for Post-Decision Review. Except for review of a department determination pursuant to OAR 734-051-3020(10)(a), the applicant must submit a written request to the region manager within twenty-one (21) days of the mailing date of notice of an opportunity for post-decision review, identifying which type of post-decision review the applicant is choosing and the documentation to be presented to the department.

(5) Subject of Post-Decision Reviews. Except for review of a department determination pursuant to OAR 734-051-3020(10)(a), all post-decision review processes shall consider the final decision reached by the department in the processing of the application.

Stat. Auth.: ORS 184.616, 184.619, 374.310–374.314, 374.345 & 374.355

Stats. Implemented: ORS 374.300–374.360, §27, ch. 330, OL 2011

Hist.: HWD 16-2011(Temp), f. 12-22-11, cert. ef. 1-1-12 thru 6-29-12; HWD 8-2012, f. 6-27-12, cert. ef. 6-29-12

Post-Decision Collaborative Discussion

(1) Purpose. An applicant or permit holder may request a collaborative discussion pursuant to this rule. The post-decision collaborative discussion process is an optional dispute resolution process that falls outside the 120-day timeline in OAR 734-051-3040(4).

(2) Conduct of the Post-Decision Collaborative Discussion. The post-decision collaborative discussion with the department shall be conducted as follows:

(a) The collaborative discussion shall be conducted under the alternative dispute resolution model in ORS 183.502;

(b) The applicant must request the collaborative discussion in writing before the discussion may proceed;

(c) During the post-decision collaborative process, the applicant or permittee and the department may present new or additional information in writing or in person for the collaborative discussion; and

(d) The collaborative discussion shall be conducted not more than forty-five (45) days from the date of the agreement to collaborate, unless the department and applicant or permittee agree to an extension.

(3) Settlement Offer. When the collaborative discussion process has concluded, the director may accept, modify or reverse the department's original decision in making a settlement offer. The director shall notify the applicant or permit holder in writing of the department's settlement offer.

(4) When the Applicant Rejects Settlement Offer. Except for review of a department determination pursuant to OAR 734-051-3020(10)(a), when an applicant rejects the director's settlement offer, the department will notify the applicant of their right to request review of the final department decision by dispute review board under OAR 734-051-3100 or contested case hearing under OAR 734-051-3110.

Stat. Auth.: ORS 184.616, 184.619, 374.310–374.314, 374.345 & 374.355

Stats. Implemented: ORS 374.300–374.360, §27, ch. 330, OL 2011

Hist.: HWD 16-2011(Temp), f. 12-22-11, cert. ef. 1-1-12 thru 6-29-12; HWD 8-2012, f. 6-27-12, cert. ef. 6-29-12

Access Management Dispute Review Board

(1) Dispute Review Board. In addition to requesting a contested case hearing under OAR 734-051-3110 or a post-decision collaborative discussion with the department under OAR 734-051-3090, an applicant or permittee may request review of a department decision or department determination pursuant to 734-015-3020(10)(a) through an access management dispute review board process. The dispute review board process is an optional dispute resolution process that falls outside the 120-day timeline in OAR 734-051-3040(4).

(2) Dispute Review Board Members. The department shall appoint an access management dispute review board consisting of any or all of the following in subsections (a) through (d) below:

(a) The director, or a designee of the director who is familiar with the location in which the disputed approach is located;

(b) A representative of the local jurisdiction in which the disputed approach is located;

(c) A traffic engineer who practices engineering in Oregon; and

(d) A representative from the economic or business sector.

(3) Procedure. The dispute review board review shall be conducted as follows:

(a) The access management dispute review board shall consider information presented by the parties;

(b) The applicant or permittee and the department may present new information to the dispute review board, if the new information has been shared with the other party in advance of the scheduled meeting and the party receiving the new information has a reasonable amount of time to prepare a response; and

(c) The dispute review board shall notify the applicant or permittee and the director of its findings regarding the department's original decision or its recommendations pursuant to OAR 734-051-3020(10)(a).

(d) The dispute review board review shall be conducted not more than forty-five (45) days from the date of applicant's request, unless the department and applicant or permittee agree to an extension.

(4) Settlement Offer. The director shall review the access management dispute review board's findings and recommendation and may accept, modify or reverse the department's original decision or determinations pursuant to OAR 734-051-3020(10)(a) in making a settlement offer. The director shall notify the applicant or permit holder in writing of the department's settlement offer.

(5) Rejection of Settlement Offer. Where an applicant rejects a settlement offer with respect to a determination pursuant to OAR 734-051-3020(10)(a), the department will issue a final decision pursuant to 734-51-3020(10)(b). In all other cases, if the applicant rejects the settlement offer, the applicant or permit holder is entitled to file a request for a contested case hearing of the original decision within 21 days of the issuance of the settlement offer.

Stat. Auth.: ORS 184.616, 184.619, 374.310–374.314, 374.345 & 374.35

Stats. Implemented: ORS 374.300–374.360, §27, ch. 330, OL 2011

Hist.: HWD 16-2011(Temp), f. 12-22-11, cert. ef. 1-1-12 thru 6-29-12; HWD 8-2012, f. 6-27-12, cert. ef. 6-29-12

734-051-3110

Contested Case Hearing Process

(1) Right to a Contested Case Hearing. Pursuant to ORS 374.313, a person holding an interest in real property, which is or would be served by an approach, may appeal a decision of the department by filing a request for a contested case hearing. Department decisions that result from conditions contained in a contract, condemnation judgment, recorded deed or permit cannot be appealed through the contested case hearing process.

(2) Procedure. The contested case hearing procedure is subject to the following requirements in subsections (a) through (f) below:

(a) The request for a hearing and the hearing are governed by OAR 137-003-0501 through 137-003-0700;

(b) After receiving a request for a contested case hearing, the department shall notify the office of administrative hearings of the request for the hearing;

(c) The hearings process falls within the 120-day timeline in OAR 734-051-3040(4) unless the department and the applicant mutually agree to a time extension;

(d) The department and the applicant may present additional information in writing or in person at the contested case hearing; and

(e) An administrative law judge will review the department's decision, conduct a hearing, and may approve, reverse, or modify the decision. The administrative law judge:

(A) Shall issue a proposed order as set forth in OAR 137-003-0645;

(B) May require conditions or limitations to be incorporated into the construction permit or the permit to operate; and

(C) The filing of exceptions stays the 120-day timeline for ODOT's final decision.

(f) The director shall issue a final order or may adopt as final the proposed order issued by the administrative law judge.

Stat. Auth.: ORS 184.616, 184.619, 374.310–374.314, 374.345 & 374.355

Stats. Implemented: ORS 374.300–374.360, §27, ch. 330, OL 2011

Hist.: HWD 16-2011(Temp), f. 12-22-11, cert. ef. 1-1-12 thru 6-29-12; HWD 8-2012, f. 6-27-12, cert. ef. 6-29-12



US-60/Grand Avenue COMPASS

Loop 303 to Interstate 10

TM 4 – Principles and Practices of Access Management

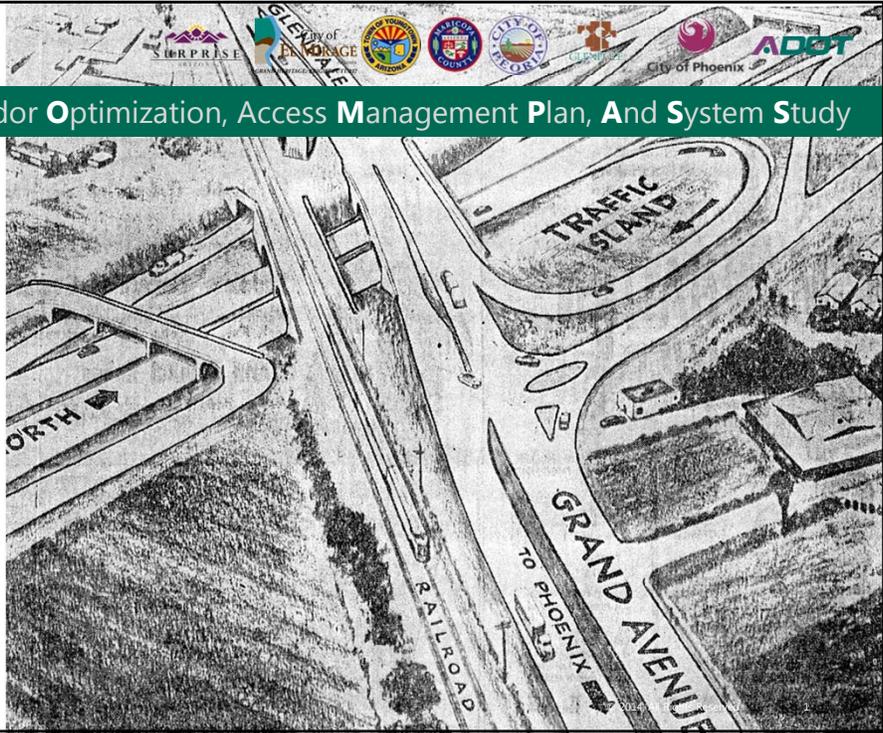
APPENDIX TM4-10

Planning Partners Access Management Workshop Presentation supporting the US-60/Grand Avenue Corridor Optimization, Access Management, and System Study

US-60/Grand Avenue Corridor Optimization, Access Management Plan, And System Study

Planning Partners Access Management Workshop

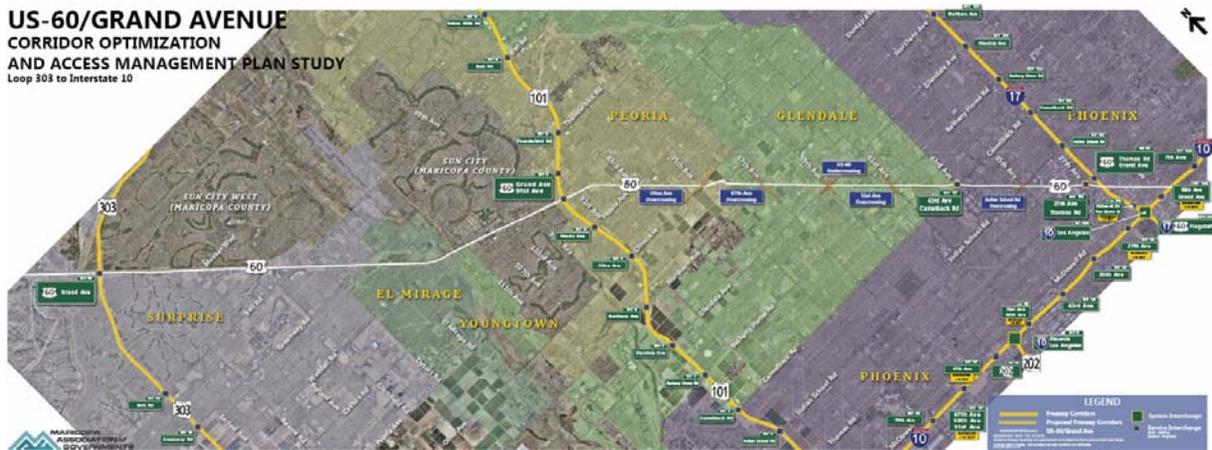
March 4 and 5, 2014



Corridor Limits

SR-303L (r.m. 138.051) to Willetta St (r.m. 161.880 on US-60X) (about 23.8 miles)

US-60/GRAND AVENUE CORRIDOR OPTIMIZATION AND ACCESS MANAGEMENT PLAN STUDY Loop 303 to Interstate 10

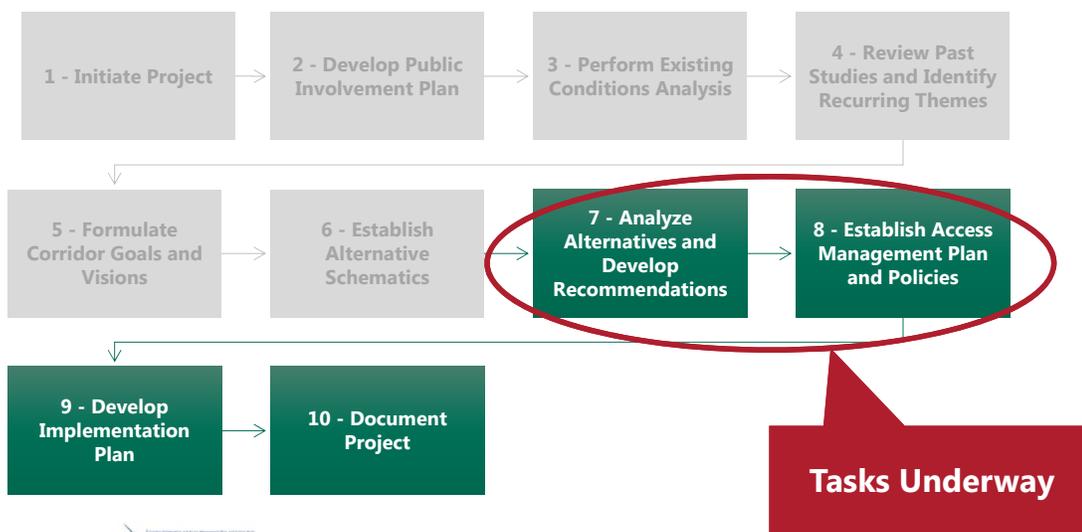


us-60compass.azmag.gov

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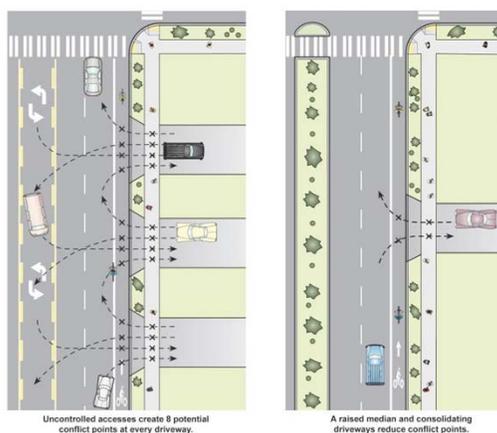
2

Project Tasks



Workshop Purpose

- Discuss the techniques and results of access management.
- Illustrate how these techniques could be applied to Grand Avenue.
- Focus on a few key locations to experiment with techniques. Discuss roll plots, mark-up ideas and possibilities.
- Discuss techniques and strategies that should be successful on Grand Avenue.
- Discuss corridor zoning overlays as a method to manage access on Grand Avenue.

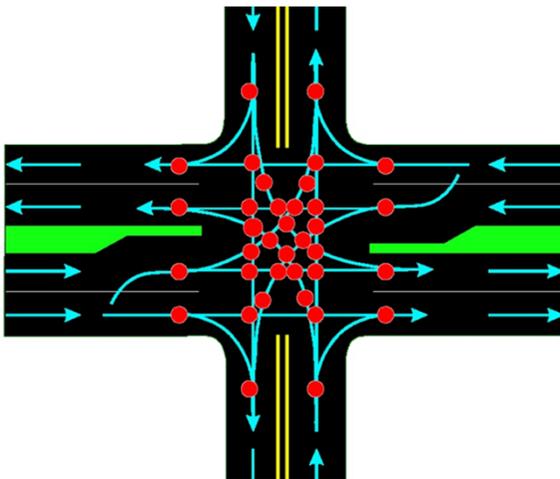


Intro Fig. Access Management - Caption: *Benefit of Access Management*

Establish Access Management Plan and Policies

- **GOAL: Greater efficiency and Safety.**
- Improve traffic signal spacing for better progression, fewer stops.
- No non-controlled left-turn out access points - Improves safety.
- Reduce number of private direct driveways - Less edge friction and crashes.
- Improve turning lane designs - Less speed differential issues, no thru lane blockage.
- Improve side street circulation - Lower driveway demand.
- Improve site circulation – Means fewer trips on Grand Ave and fewer driveways.
- Improve driveway design - Smoother transition off Grand Avenue.

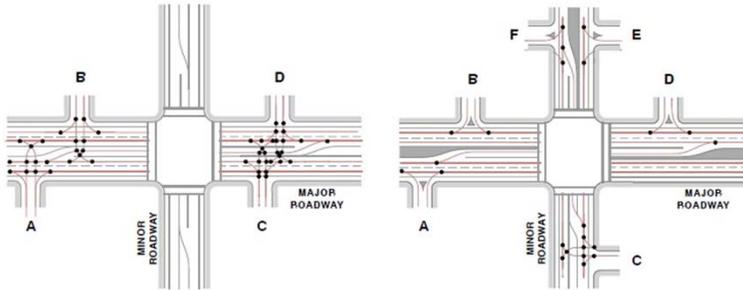
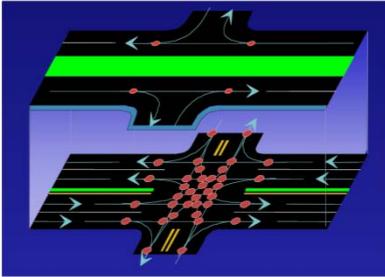
Open Four-leg Intersection CONFLICT POINTS



- Up to **32** Conflict Points.
- About **28 dangerous crossing conflicts** with 8 lanes from 6 through lanes, 2 turn lanes and far side entries.

Goal of Access Management

LIMIT ACCESS CONFLICTS AND SEVERE TYPES

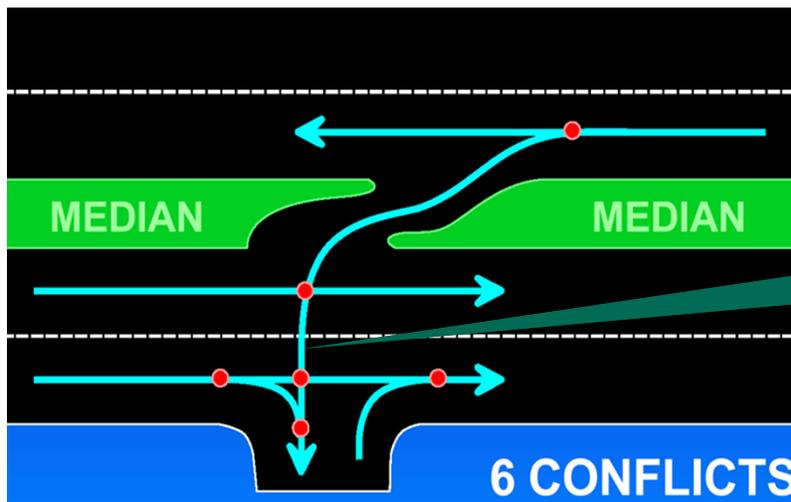


Source: Florida Department of Transportation and Federal Highway Administration.

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"3/4 Intersection" – No Lefts Out



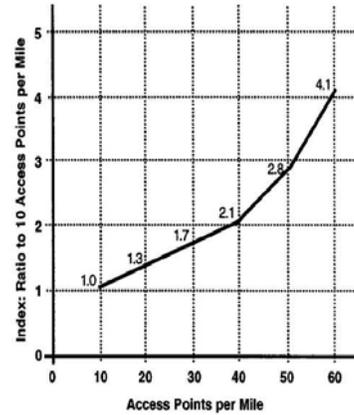
Source: Florida Department of Transportation.

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There is no such thing as Safe Access.

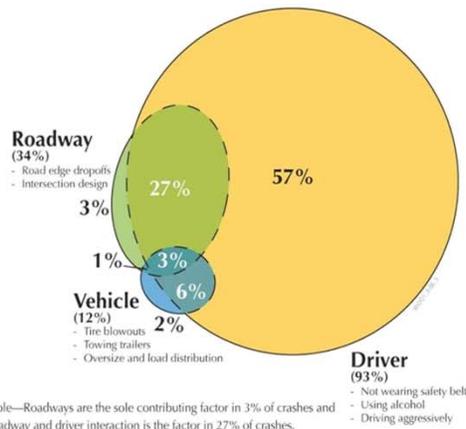
- As the number of access points per mile **increase**, the **frequency and rate of crashes increases**.
- Each access = 4%.



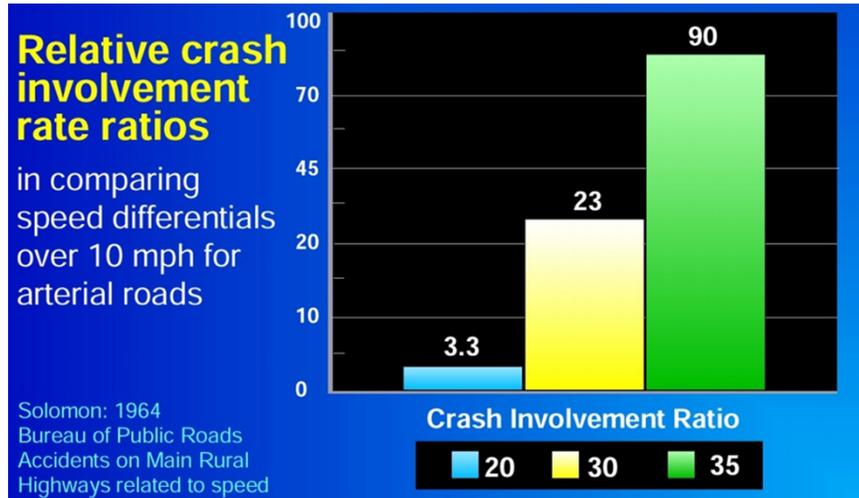
Source: Estimated from Various Sources
Figure 15. Composite accident rate indices.

It is not so much the design, it is driver error. But if we (agencies) reduce the conflicts, then we reduce the crash rates.

Crash Causation Factors



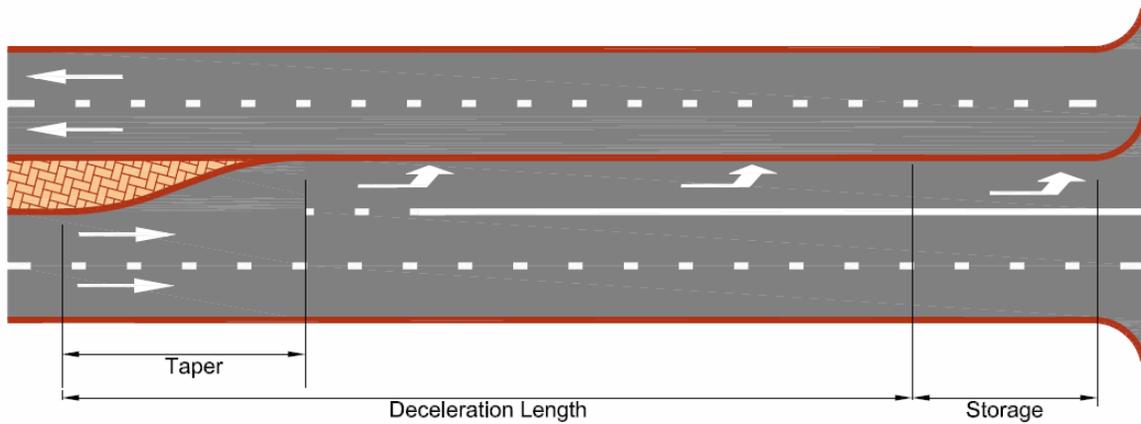
Speed Differential – A Critical Element in Design



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Left-Turn Lane Elements

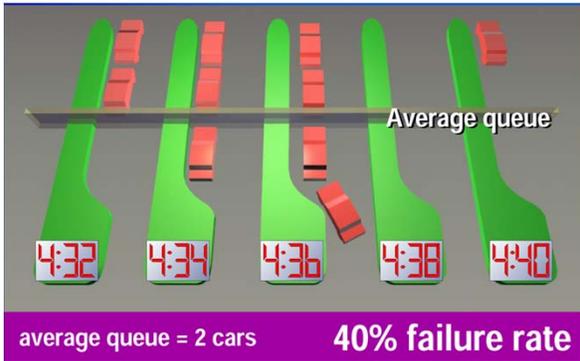


Not to Scale.

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Average Queue Design Failures



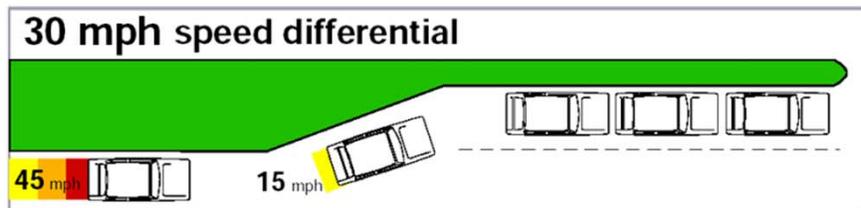
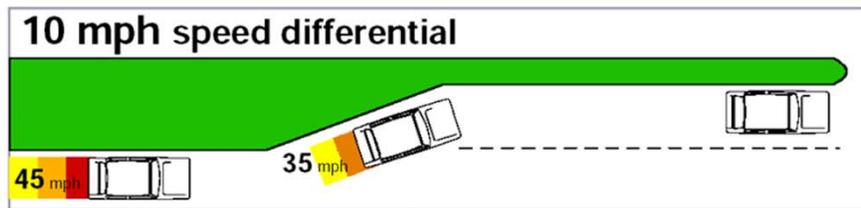
Left turn Queue backing up into and blocking through lanes on Grand Avenue.



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Combining Storage and Deceleration Lengths defeat Speed Differential Mitigation



Source: Florida Department of Transportation.

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Deceleration Lane Length Options

Speed in MPH	35	45	55	65
Deceleration Length, Ft.	215	345	510	710

10 mph speed differential for normal arterial.

Speed in MPH	35	45	55	65
Deceleration Length, Ft.	350	630	810	1060

Zero mph speed differential for major arterial and expressway.

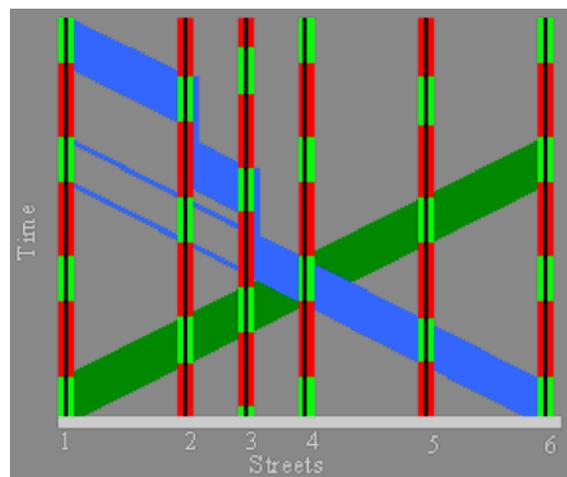
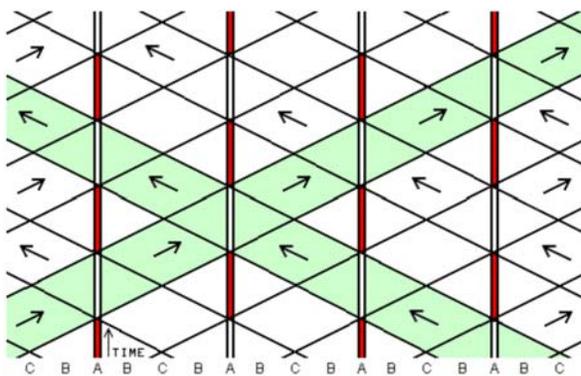


Source: Florida Department of Transportation.

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Evenly spaced Traffic Signals really Help

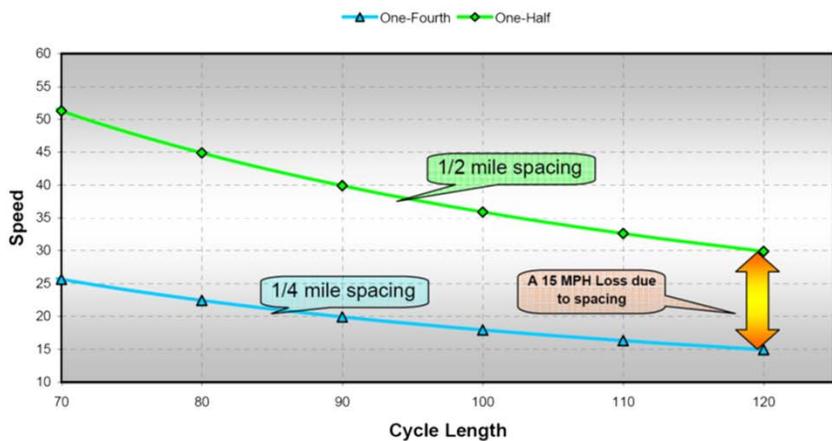


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The longer the Spacing between Signals, the faster the Progression Speeds.

Cycle Length and Progression Speed

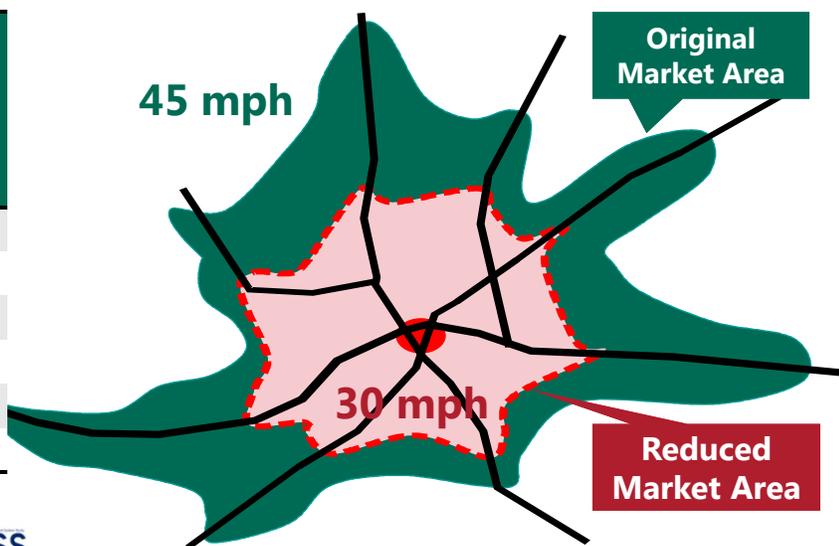


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Market Area Shrinks as Arterial Speed is Reduced Dropping from 45 mph to 30 mph means greater than 45% reduction

Reduction in Average System Speed	Market Area Relative to Previous Size
0%	100%
10%	81%
20%	65%
30%	45%
40%	36%
50%	25%

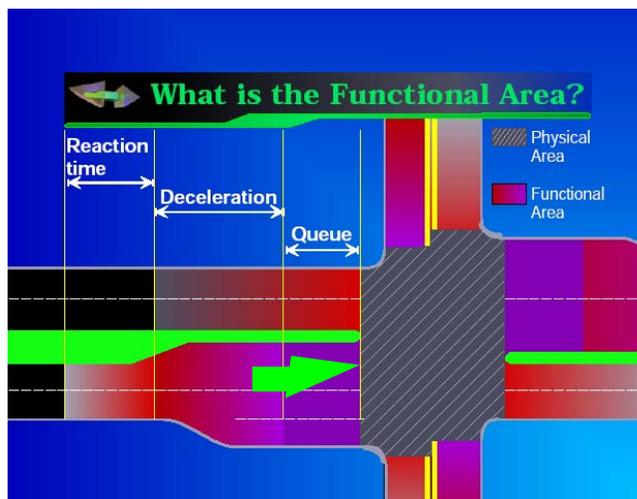


Source: Transportation and Land Development, Institute of Transportation Engineers.

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Keep Functional Areas Free



Source: Florida Department of Transportation.

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Improve Access Designs

- Smoother driveway movements.
- Longer turn lanes.
- Add turn lanes.



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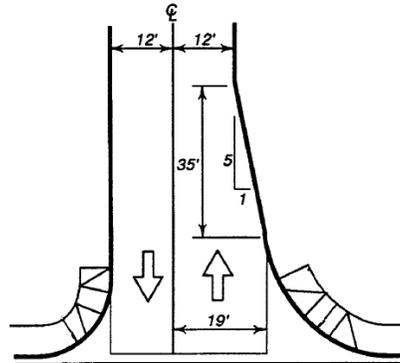
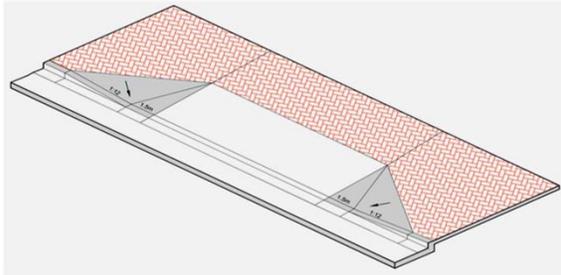
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Flared Entry Layout

Better radius and lane width for both right and left turns.

12:1 Transition wing, 5-ft flat flair.

Detail from Scottsdale.



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Meeker Road/Reems Road



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Back to Back Left Turn Lanes



- Left-Turn In.
- ¾ turn-in lane needs about 400-ft.
- It has about 200-ft.
- Should the opening be closed?
- Left-turn at signal.
- AASHTO recommends 345-ft for deceleration length at 45 mph prior to storage calculation.
- Total left to West Meeker Blvd is 430-ft. Should be 530-ft to 630-ft depending on peak hour Queue turning left.
- For the shortest and low-volume left-turn lanes anywhere on Grand, the minimum distance should be about 400-ft.
- At signals, left turn lanes should be 600- to 800-ft depending on turning movement counts.



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Meeker Rd/Reems Rd Recommendation



- Closest, in deceleration, often inside the signal queue, allows diagonal cross to Meeker Rd left-turns.
- Close #2, Better than 1, but has other reasonable access.
- Close left-in . . . too short, reduces primary left deceleration and storage; has speed differential issue.



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Southeast of Meeker Road/Reems Road Recommendation



- First signal only 1,300-ft spacing.
- Left turn bay 600-ft good length.
- No critical need for $\frac{3}{4}$ -opening.
- 300-ft, but not high volume.
- Backage road excellent planning.
- **Eight** driveway closures.
- **Three Right-in/Right-outs** remain.



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Parkview Place to Mountain View Boulevard



- First, second, too close to signal.
- Left Deceleration is 600-ft; $\frac{3}{4}$ -left deceleration is 320-ft.
- First (left) driveway too close to signal.
- Second is optional, connects to back road.
- Third is a street design access and serves several businesses and back road.
- Fourth, not a necessity, access from side road and backage. But this is where the short $\frac{3}{4}$ left is.
- Fifth and sixth, are close to the signal.
- East of signal the central access can serve both properties as well get to the Mountain View Blvd signal.



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113th Avenue to 111th Avenue

950-ft separate intersections . . . Entry to Youngtown



• 240-ft between 111th Dr and 111th Ave



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113th Avenue to 111th Avenue

Recommendation



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107th Avenue to 103rd Avenue



107th Avenue to 103rd Avenue Recommendation

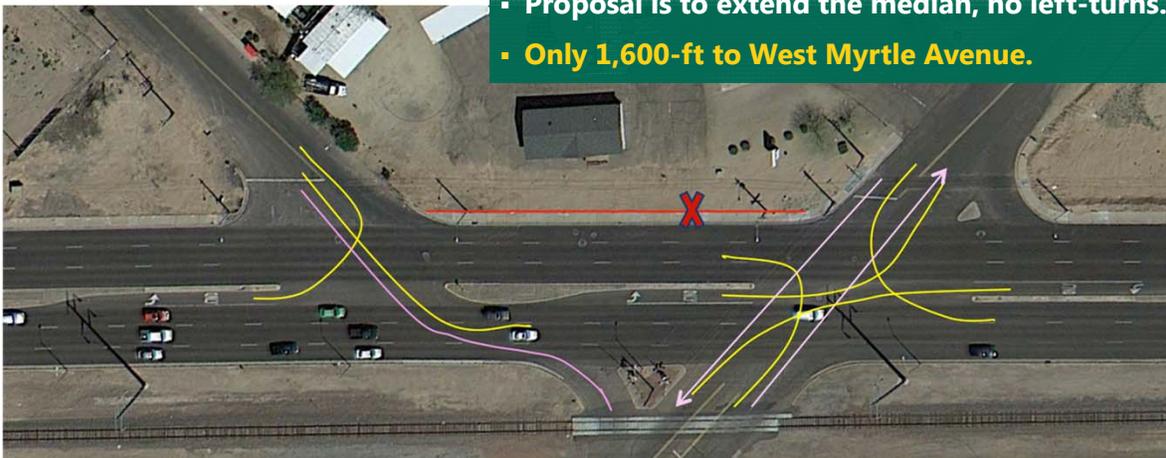


Northern Avenue to Myrtle Avenue Recommendation



- Close Median Access.
- Includes Orangewood Avenue and 63rd Avenue intersections.

63rd Avenue/Orangewood Avenue Nine Turning Movements across Multiple Through Lanes



- Proposal is to extend the median, no left-turns.
- Only 1,600-ft to West Myrtle Avenue.

Maryland Avenue to Bethany Home Road Recommendation



- Close median and reduce driveways.
- Identify potential for $\frac{3}{4}$ -intersections, opportunities for U-Turn ramps, and improved access to Maryland Avenue.

Interstate 17 to McDowell Road/19th Avenue Recommendation



- No median openings.
- Close, combine, consolidate driveways were feasible.
- No crossovers.
- No $\frac{3}{4}$ -intersections.
- With exception at Encanto Blvd to mitigate future grade-separated interchange at McDowell Road/19th Avenue.

Interstate 17 to McDowell Road/19th Avenue Recommendation



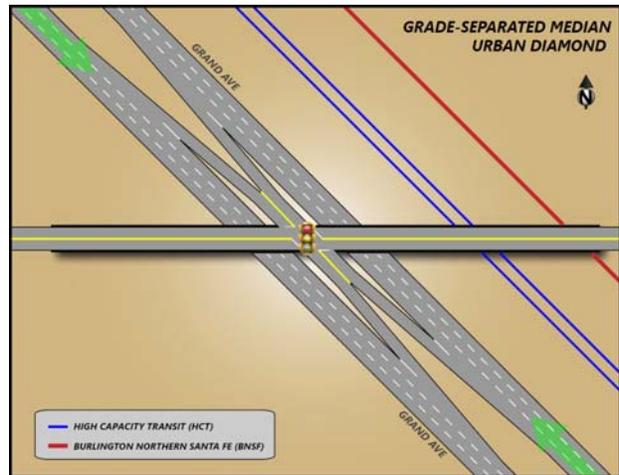
- Remove signal at Encanto Blvd.
- Raised median entire length.
- Allow Right-in/Right-out only when necessity and no other access alternative.

Corridor Overlay Zoning

- Create requirements that will ensure careful consideration of access impacts.
- Decisions will be consistent with the adopted access management plan for Grand Avenue.
- Each municipality and the county may adopt their own overlay zoning language.
- "The standards of this overlay district were created to help ensure a collaborative process between all jurisdictions along Grand Avenue regarding access decisions and to implement the recommendations of the adopted Grand Ave Access Management Plan."

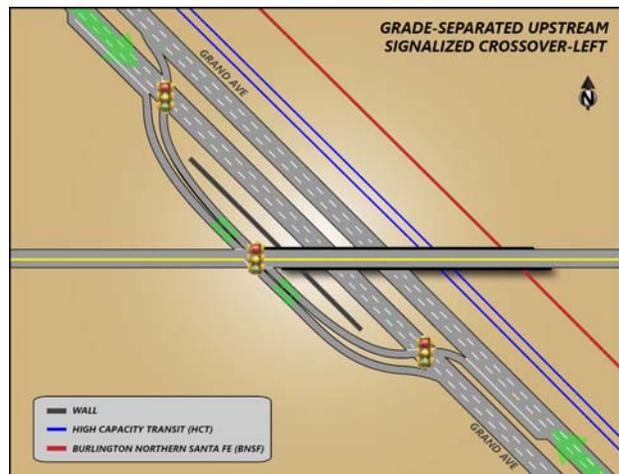
Operational Improvements

- General approach is to:
 - Reduce traffic signal phases,
 - Reduce number of intersection approaches, and
 - Introduce new grade separations.
- Median Urban Diamond (MUD).
- Upstream Signalized Crossover (USC).



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US-60/Grand Avenue Corridor Optimization, Access Management Plan, And System Study

**Planning
Partners
Access
Management
Workshop**

March 4 and 5, 2014

