



MONTGOMERY METROPOLITAN
PLANNING ORGANIZATION

Access Management Policy

DRAFT

Prepared by: Sain Associates, Inc.
In cooperation with the Montgomery MPO,
MPO Staff, and MPO Advisory Committees



SAIN
ASSOCIATES

MARCH 2021

Montgomery Metropolitan Planning Organization (MPO) Members

Voting Members

Mayor, City of Montgomery – Hon. Steven Reed
Mayor, City of Prattville – Hon. William Gillespie
Chairman, Autauga County Commission – Hon. Jay Thompson
Southeast Region Engineer, ALDOT – Mr. Steve Graben
Mayor, City of Wetumpka – Hon. Jerry Willis (**MPO Vice Chairman**)
Mayor, Town of Coosada – Hon. Anthony Powell
Councilman, City of Montgomery – Hon. Charles Jinright (**MPO Chairman**)
Chairman, Montgomery County Commission – Hon. Elton Dean
Mayor, City of Millbrook – Hon. Al Kelley
Councilman, City of Montgomery – Hon. CC Calhoun
Chairman, Elmore County Commission – Hon. Troy Stubbs
Mayor, Town of Pike Road – Hon. Gordon Stone
Mayor, Town of Deatsville – Hon. Clayton Edgar
Mayor, Town of Elmore – Hon. Margaret White
Vice-Chairman, Montgomery County Commission – Hon. Ronda Walker
Councilman, City of Montgomery – Hon. Tracy Larkin
Councilman, City of Montgomery – Hon. Richard Bollinger

Non-Voting Members

State Local Transportation Engineer, ALDOT – Brad Lindsey
General Manager, Montgomery Area Transit System – Mr. Kelvin L. Miller
Director, Central Alabama Regional Planning and Development Commission – Mr. Greg Clark
Autauga County Rural Transportation Director – Mrs. Rose Mary Thomas
Division Administrator, Federal Highway Administration – Mr. Mark D. Bartlett
Member of City of Montgomery Planning Commission – Mr. Frank Cook
Planning Director, Federal Transit Administration – Mr. Keith Melton
Director of Planning/MPO Administrator – Mr. Robert E. Smith, Jr

MPO Transportation Planning Staff

Director of Planning/MPO Administrator – Mr. Robert E. Smith, Jr.
Senior Planner – Mr. Kindell C. Anderson
Senior Planner – Vacant
GIS Analyst – Mr. James Askew
Grants Accountant – Vacant
Transportation Planning Technician – Ms. Lisa Walters

Montgomery Metropolitan Planning Organization Technical Advisory Committee (TAC)

TAC-Voting Members

Representative
ADECA

Mr. Richie Beyer
Chief Engineer and Operation Officer
Elmore County

Mr. Wesley Cox
Traffic Engineer
City of Montgomery

Mr. Chris Conway
Public Works Director
City of Montgomery

Mr. John Mark Davis
County Engineer
Autauga County

Hon. Margaret White
Mayor
Town of Elmore

Mr. Lee Connor (Chris Christensen)
Montgomery Association for Retarded Citizens

Mr. Scott Stephens
City Planner
City of Prattville

Mr. Robert E. Smith, Jr. (**TAC Chairman**)
Director, Planning Department
City of Montgomery/MPO Staff

Hon. W. Clayton Edgar
Mayor
Town of Deatsville

Mr. Clint Andrews
Planning & Program Management Team Leader
Federal Highway Administration

Mr. Jerry Peters
City Engineer
City of Millbrook

Mr. Chris Howard
ADEM
Air Division Planning Branch Chief

Mr. David Bollie
County Transportation Engineer
ALDOT Southeast Region

CARPDC Representative
Town of Coosada

Mr. Luke McGinty
County Engineer
Elmore County

Mr. Jeff Bridges
Traffic Engineer III
City of Montgomery

Mr. Brad Flowers
Engineer
Town of Pike Road

TAC cont'd

Mr. Kelvin L. Miller
General Manager
Montgomery Area Transit System

Mr. Greg Clark
Executive Director
Central AL Regional Planning &
Development Commission

Mrs. Rose Mary Thomas
Autauga County Rural
Transportation

City Planning and Project Director
City of Wetumpka

Mr. Tommy Tyson
Land Use Controls Administrator
City of Montgomery

Mr. Frank Filgo
President
Alabama Trucking Association

Mr. George Speake
County Engineer
Montgomery County

Mr. Patrick Dunson
City Engineer
City of Montgomery

Non-Voting TAC Members

Mr. Micheal Hora
Assistant State Local Transportation Engineer - Planning
ALDOT

Mr. Marshall Taggert
Executive Director
Montgomery Airport Authority

Natasha Clay
State Administrator for Environmental Services
ALDOT

**Montgomery Metropolitan Planning Organization
Citizens Advisory Committee (CAC)**

Vacant
Elmore County

Mr. Crews Reaves
City of Montgomery

Mr. Eddie Compton, III
City of Montgomery

Mr. Rodger Burnette
Montgomery County

Ms. Valeria Harman
City of Montgomery

Mrs. Karen Campbell
City of Montgomery

Vacant
Elmore County

Mr. David Martin
City of Montgomery

Ms. Kristen Gillis
City of Montgomery

Ms. Linda Davis
Town of Coosada

Mrs. Karen Campbell
City of Montgomery

Mrs. Ruth Ott
City of Montgomery

Ms. Gracie Stroud
City of Montgomery

Mr. Brannon Bowman
City of Millbrook

Mr. Augustus Townes, Jr.
City of Montgomery

Ms. Kimberlin Love
City of Montgomery

Mr. Cedric Williams
City of Montgomery

Mr. Jessie Donaldson
City of Montgomery

Vacant
City of Prattville

Vacant
City of Prattville

Mrs. Wendy Blackmon
Town of Pike Road

Resolution

Montgomery Metropolitan Planning Organization (MPO) Adopting the Final Access Management Policy

WHEREAS, the Montgomery Metropolitan Planning Organization (MPO) is the organization designated by the Governor of the State of Alabama as being responsible, together with the State of Alabama, for implementing the applicable provisions of 23 USC 134 and 135 (amended by the FAST Act, Sections 1201 and 1202, December 2015); 42 USC 2000d-1, 7401; 23 CFR 450 and 500; 40 CFR 51 and 93; and

WHEREAS,

WHEREAS,

WHEREAS, pursuant to its duties, functions, and responsibilities, the Montgomery Metropolitan Planning Organization (MPO) on this the ____ day of _____, 2021, did review and evaluate the aforementioned Final Access Management Policy, summarized on the attached pages; now,

THEREFORE, BE IT RESOLVED by the Montgomery Metropolitan Planning Organization (MPO) that the same does hereby endorse and adopt the Final Access Management Policy.

ADOPTED THIS THE ____ DAY OF _____, 2021.

Charles Jinright, MPO Chairman

DATE: _____

ATTEST:

Robert E. Smith, MPO Secretary

DATE: _____

Contents

Chapter 1 Purpose and Definitions	1-1
1.1 Purpose & Need	1-1
1.2 Definitions, Abbreviations, and Acronyms.....	1-2
Chapter 2 Principles of Access Management	2-1
2.1 Access Management Defined.....	2-1
2.2 Roadway Functional Classification.....	2-1
2.3 Accessibility vs. Mobility	2-3
2.4 Physical and Functional Areas of an Intersection.....	2-4
2.5 Conflict Points	2-4
2.6 Alternative Intersection Designs	2-6
Chapter 3 Design Guidelines	3-1
3.1 Connection Types	3-1
3.1.1 Full Access Connections	3-1
3.1.2 Directional Access Connections.....	3-1
3.2 Medians.....	3-3
3.2.1 Traversable Median.....	3-3
3.2.2 Non-Traversable Median	3-3
3.2.3 Median Openings.....	3-3
3.3 Spacing Criteria	3-3
3.3.1 Commercial/Industrial Driveway Spacing Requirements	3-3
3.3.2 Corner Clearance	3-5
3.3.3 Accesses Near Interchanges.....	3-6
3.3.4 Residential Driveway Spacing Requirements.....	3-6
3.3.5 Traffic Signal Spacing Requirements.....	3-6
3.3.6 Roundabout Spacing.....	3-6
3.4 Driveway Geometric Design	3-7
3.4.1 Driveway Width & Radii.....	3-7
3.4.2 Driveway Offsets	3-8
3.5 Turn Lanes.....	3-8
3.5.1 Turn Lane Warrants	3-9
3.5.2 Turn Lane Geometric Design	3-9
3.6 Bicycle, Pedestrian, and Transit Considerations.....	3-14
3.7 Sight Distance	3-14
Chapter 4 Access Management Plan Development & Implementation	4-1
4.1 Plan Development Process.....	4-1
4.2 Implementation Methods and Funding Opportunities.....	4-2
Chapter 5 Access Permit Process	5-1
5.1 Access Permit.....	5-1
5.2 Access Permit Application Steps.....	5-1
5.3 Traffic Impact Studies	5-1
5.3.1 Trip Generation	5-2
5.3.2 Traffic Impact Study Components	5-3
5.4 Inter-Agency Coordination.....	5-4
5.5 Appeals and Variance Procedures	5-6

Figures

Figure 1-1: Transportation and Land Use Cycle	1-1
Figure 2-1: Excerpt of Montgomery MPO Functional Classification Map	2-2
Figure 2-2: Mobility vs. Accessibility	2-3
Figure 2-3: Physical and Functional Areas of an Intersection	2-4
Figure 2-4: Conflict Points at 4-Leg Intersection	2-5
Figure 2-5: Conflict Points at 3-Leg Intersection	2-5
Figure 2-6: Conflict Points at RI/RO Intersection	2-5
Figure 2-7: Crash Percentages for Turning Motorists to and from a Driveway	2-5
Figure 2-8: Roundabout.....	2-6
Figure 2-9: Continuous Green T-Intersection.....	2-7
Figure 2-10: Median U-Turn Intersection	2-7
Figure 2-11: RCUT Intersection.....	2-7
Figure 3-1: Full Access Connections	3-1
Figure 3-2: Directional Connections	3-2
Figure 3-3: Medians.....	3-3
Figure 3-4: Measuring Connection Spacing	3-4
Figure 3-5: Corner Clearance	3-5
Figure 3-6: Driveway Features.....	3-7
Figure 3-7: Turn Lane Length Components.....	3-10
Figure 3-8: Shifting Taper Length – Widening on One Side.....	3-11
Figure 3-9: Shifting Taper Length – Symmetrical Widening.....	3-12
Figure 3-10: Left Turn Bypass Lane	3-12
Figure 3-11: Smart Channel Design	3-13
Figure 3-12: Sight Distance Measurement	3-14
Figure 5-1: TIS Typical Outline	5-4
Figure 5-2: Inter-Agency Coordination	5-5

Tables

Table 2-1: Conflict Points by Intersection Type	2-4
Table 3-1: Minimum Spacing Criteria	3-4
Table 3-2: Minimum Corner Clearance	3-5
Table 3-3: Access Spacing Near Interchanges	3-6
Table 3-4: Minimum Driveway Design Standards	3-8
Table 3-5: Turn Lane Length Minimums	3-10
Table 3-6: Shifting Taper Length.....	3-11
Table 3-7: Intersection Sight Distance	3-14
Table 5-1: Average Trip Generation Rates	5-3

Appendices

Appendix A: Montgomery MPO Functional Classification Map
Appendix B: Access Management Retrofit Techniques
Appendix C: Sample Access Management Resolution
Appendix D: Sample Access Request Form

Chapter 1

Purpose and Definitions

1.1 Purpose & Need

The Montgomery Metropolitan Planning Organization (MPO) and its member agencies have developed this Access Management Policy to provide uniform and effective access management policies for use within the jurisdictions of its members. According to the Transportation Research Board's (TRB) *Access Management Manual*, 2nd Edition:

"Access management is the coordinated planning, regulation, and design of access between roadways and land development. It encompasses a range of methods that promote the efficient and safe movement of people and goods by reducing conflicts on the roadway system and at its interface with other modes of travel."

Goals of access management include the following:

- protecting the health, safety, and welfare of the public
- maintaining the highway rights-of-way
- preserving the functional level of local roads and highways while meeting the needs of the traveling public

Effective management of a transportation system is imperative to maintain the function and character of roadway corridors. Without access management, traffic safety and operations can deteriorate rapidly. Figure 1-1 shows a typical transportation and land use cycle.

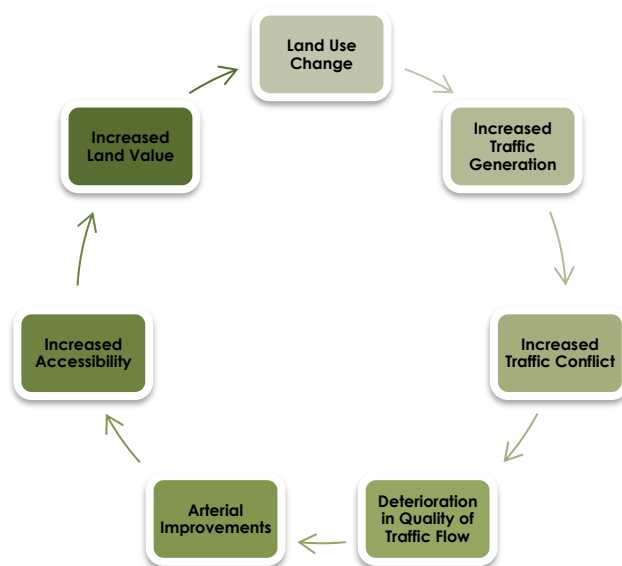


Figure 1-1: Transportation and Land Use Cycle (Source: TRB)

1.2 Definitions, Abbreviations, and Acronyms

For the purposes of this manual, the following definitions will apply:

1. AADT: the two-way annual average daily traffic volume. It represents the total annual traffic volume divided by the number of days in the year.
2. AASHTO: American Association of State Highway and Transportation Officials
3. Acceleration Lane: a speed-change lane, including tapered area, to enable a vehicle entering the traffic stream to accelerate to a speed where it can merge with traffic.
4. Access Connection: any driveway; approach; or connecting street, road, or highway that connects to a state highway.
5. Access Point: the location of the intersection of a highway, street, road, driveway, or approach with a state highway.
6. Applicant: The entity requesting the permit. The applicant for work on the right-of-way shall be the property owner.
7. Auxiliary lane: the portion of the roadway adjoining the traveled way for speed change, turning, weaving, truck climbing, maneuvering of entering and leaving traffic, and other purposes supplementary to through-traffic movement.
8. Commercial Access: access from an abutting parcel that is privately owned and is for the commercial use of the property owner.
9. Connection: the intersection of a public roadway and a private driveway or other public roadway.
10. Control of Access: the right of access to property adjacent to a highway is partially or fully controlled by public authority.
11. Corner Clearance: the distance measured along the curb line between the curvature of the corner radius (curb return) or curb cut and the point of curvature of the corner radius (curb return) of the nearest intersection.
12. Curb Cut: a depressed curb driveway that is allowed for single family residences only.
13. Curb line: the line, whether curbing exists or not, that is the outer edge of the paved portion of a highway.
14. Deceleration Lane: a speed-change lane, including the tapered areas, that allows vehicles exiting the through traffic lanes to slow or stop before turning from the highway.

15. Divided Highway: a highway with opposing traffic movements physically separated by medians, concrete barrier rails, raised traffic islands, or pavement markings. Due to conflicting traffic movements a two-way left turn lane does not establish a divided highway.
16. Driveway (also referred to as a Turnout): an access point to public roads from private, publicly owned, and commercial facilities.
17. Emergency Access: an access for the exclusive use by police, fire, and emergency service vehicles when responding to an emergency service situation. Such accesses shall not include the access to a police station, firehouse, or other emergency service facility.
18. Frontage Road (also referred to as a Service Road): any public street or road providing service and access from areas adjacent to a freeway or highway.
19. Functional Classification: a classification system that identifies a public roadway according to its purpose and hierarchy in the local or statewide highway system.
20. Highway (also referred to as a Roadway): for permit purposes, the area between the outermost limits of the right-of-way.
21. Interchange: a facility where grade separates intersecting roadways and provides directional ramps for movements between the roadways. The grade separation structure and ramps are considered to be part of the interchange.
22. Intersection: the location where two or more roadways meet at grade.
23. ITE: Institute of Transportation Engineers (ITE).
24. Median: the portion of a highway separating opposing traffic flows except two way left turn lanes.
25. MPH: a rate of speed expressed in miles per hour.
26. MPO: Metropolitan Planning Organization.
27. MUTCD: Manual on Uniform Traffic Control Devices.
28. Permit: form submitted by the applicant requesting to perform work on a municipality's right-of-way.
29. Private Access: access from an abutting parcel that is privately owned and is for the private use of the property owner.
30. Professional Engineer: a person who has been granted a certificate of registration by the Alabama Board of Professional Engineers and Land Surveyors based on

his/her professional education and practical experience to practice professional engineering in Alabama.

31. Public Access: a roadway connection provided for a public way.
32. Ramp: all types, arrangements, and sizes of turning roadways that connect two or more legs at an interchange. The geometry of the connecting road usually involves some curvature and a grade.
33. Roadway (also referred to as a Highway): for permit purposes, the area between the outermost limits of the ROW.
34. ROW: right-of-way – limits of property owned by the local government.
35. Signal Spacing: the distance (measured from center of intersection to center of intersection) between signalized intersections along a roadway.
36. Traveled Way: the portion of the highway available to the through movement of traffic. It does not include shoulders, sidewalks, gutters, medians, or auxiliary lanes.
37. Truck: Every motor vehicle designed, used or maintained primarily for the transportation of property. For specific vehicle configurations and dimensions for design purposes, refer to the AASHTO Policy on Geometric Design of Highways and Streets.

Chapter 2

Principles of Access Management

2.1 Access Management Defined

Access management involves balancing the two competing functions of roadways – providing mobility for through traffic and providing accessibility to property. The mobility function is defined as the provision of capacity for through traffic traveling along a roadway from point to point. The accessibility function of a roadway is defined as the provision of ingress and egress for adjacent property. The most basic example of the accessibility function is a driveway. A roadway can be very good at either of these functions, but it cannot perform both functions optimally at the same time. For example, a roadway lined with commercial driveways provides maximum access to adjacent businesses, but traffic entering and exiting these businesses creates congestion and driver frustration and significantly decreases the mobility of the roadway.

In simple terms, access management is a tool that provides safe and efficient traffic mobility while allowing reasonable accessibility to adjacent property. The key concept behind good access management is the application of proper roadway design principles and traffic engineering practices. Application of these principles and practices results in carefully planning, designing, and operating roadways, access connections, and the interaction among them. For example:

- Drivers searching for the access connection to a particular destination may hesitate, become distracted, slow down, and/or make abrupt lane changes.
- Once the access connection is located, a poorly designed driveway (e.g., a small turning radius) may cause further uncertainty for drivers and cause them to turn from the main roadway at an excessively slow speed, creating delays and potentially unsafe conditions on the main roadway.
- Poor parking lot designs may require a car to wait for a preceding vehicle to park, creating a queue of vehicles that extends into the main roadway.

Drivers should be able to see their destinations early (i.e., the proper driveway), easily maneuver their vehicles to the exit, and quickly and safely leave the roadway. Drivers making left turns also must wait for a gap in the opposing traffic flow. Once off the main roadway, vehicles should be able to move toward the center of the parking area to prevent backups. These and other driver-friendly elements can be provided through good roadway design, appropriate traffic control devices, and good access management practices.

2.2 Roadway Functional Classification

An important means of managing a roadway system is to maintain a clear understanding of how each roadway or individual segment of roadway is intended to function. This understanding is generally developed and maintained by having a functional classification system. A map depicting the functional classifications of the roadways within the MPO can be found [here](#). An excerpt of the map is shown in Figure 2-1, and

the full map is provided in Appendix A. The map classifies each roadway into one of the following categories: interstate, expressway, principal arterial, minor arterial, major collector, minor collector, or local road.

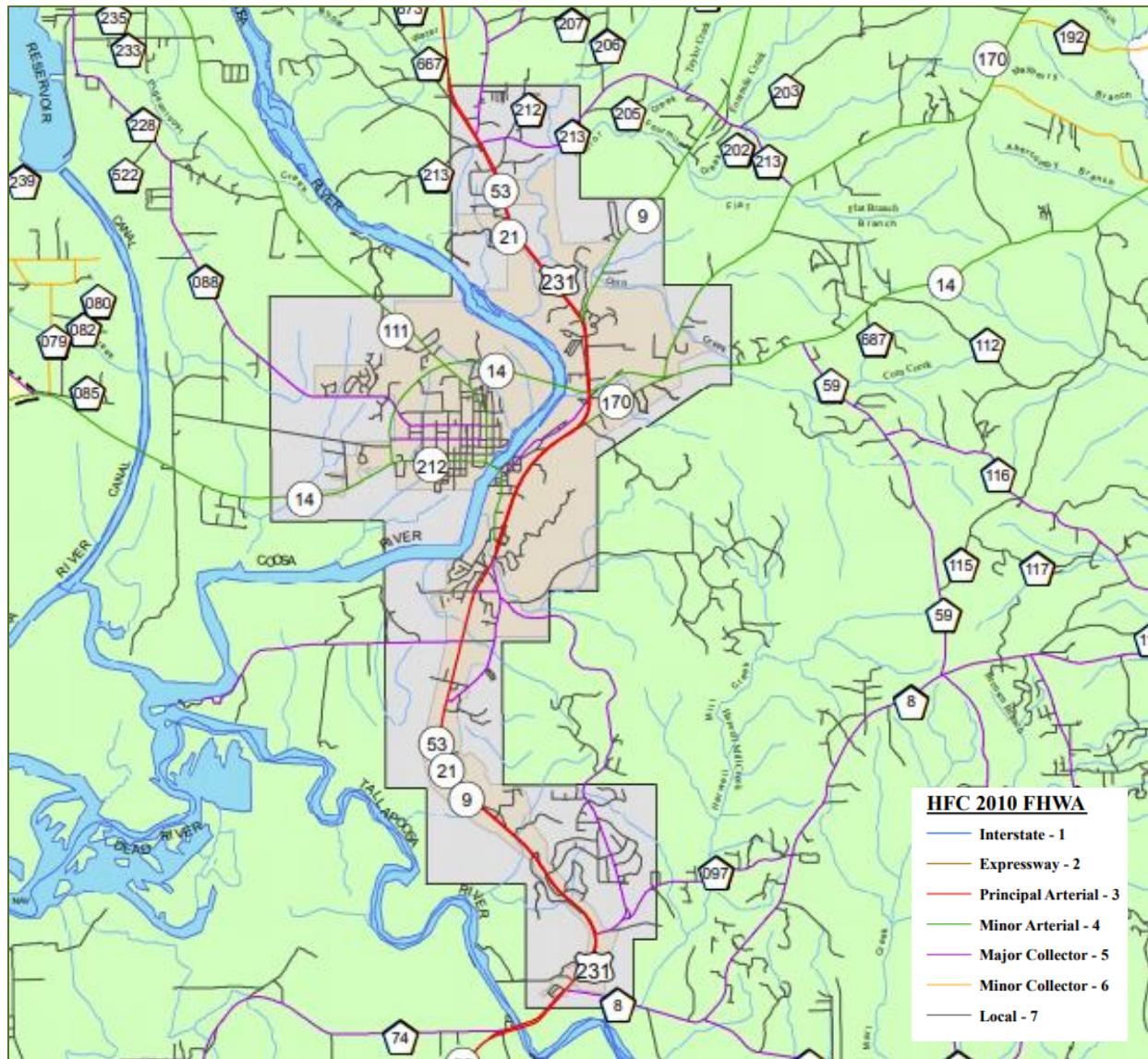


Figure 2-1: Excerpt of Montgomery MPO Functional Classification Map

Functional classification is important in the context of access management because of the expected speed and volume ranges on different types of roadways. The operational differences between roadways with lower speeds and those with higher speeds affect access management criteria (e.g., driveway spacing, turn lane requirements). For this reason, it is important to understand what type of roadway is being considered for access, so the correct access requirements are used. Principal arterials typically have higher speed limits. In some cases, it is reasonable to expect that rural minor arterials may also exhibit higher speeds. Urban minor arterials, collector roadways, and local roadways typically exhibit lower speeds.

The overall speed on the roadway correlates to how the roadway is expected to function. Higher-speed roadways provide mobility between different areas, regions, cities, etc., whereas lower speed roadways are intended to provide access to adjacent roadside development (business, residences, schools, etc.). The concepts of accessibility and mobility are described further in section 2.3.

2.3 Accessibility vs. Mobility

Proper access management requires that a roadway be planned, designed, and operated to provide the balance of accessibility and mobility appropriate for its functional classification. Figure 2-2 shows the relationship between the provision of mobility and accessibility and the functional classification system.

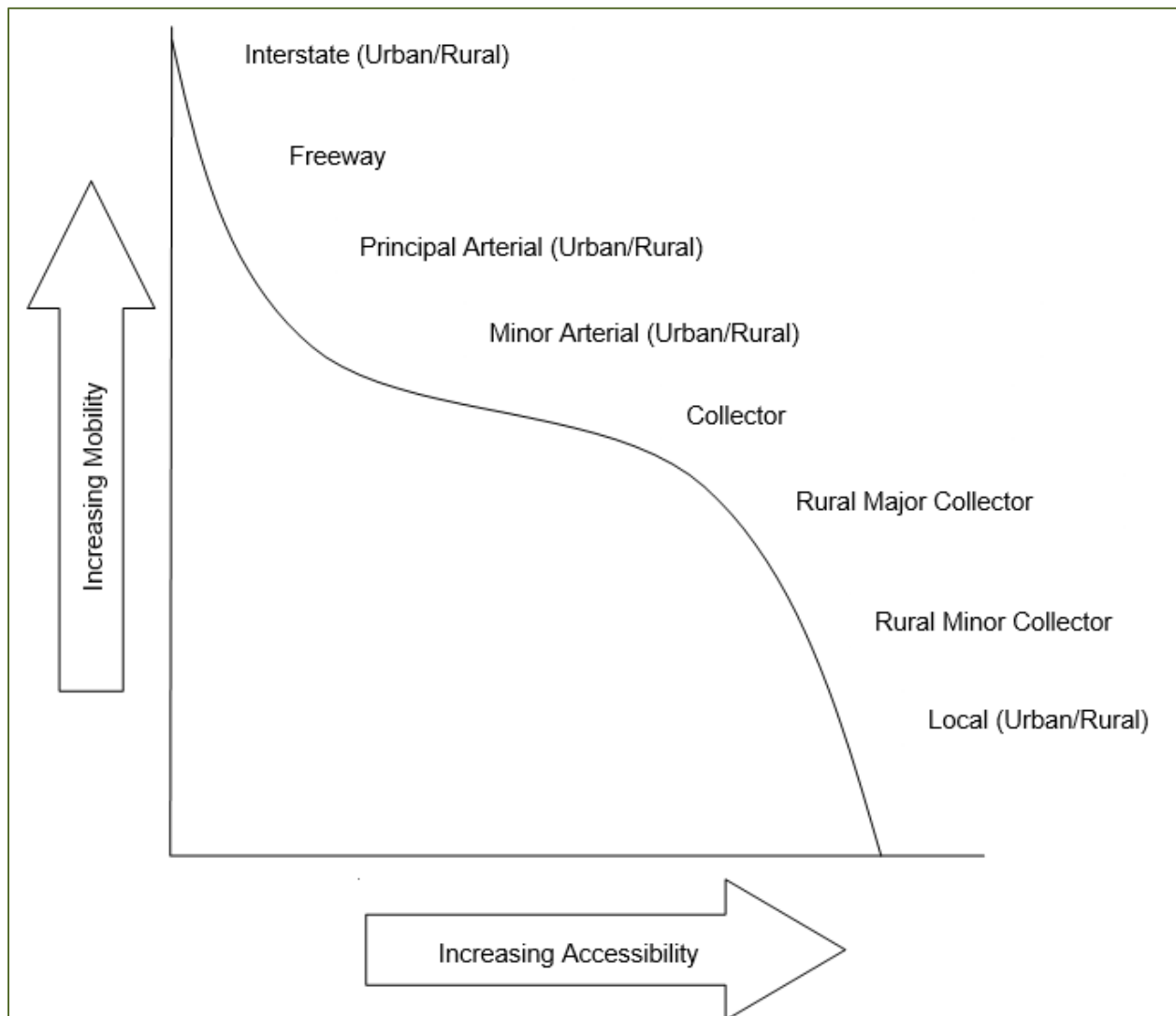


Figure 2-2: Mobility vs. Accessibility

Allowing roadways to operate according to their functional classification increases efficiency and enhances safety for all roadway users.

2.4 Physical and Functional Areas of an Intersection

Intersections can be defined by their physical and functional areas as shown in Figure 2-3. The physical area of an intersection is limited in size and bound by the corners of the intersection, while the functional area extends further and comprises the area affected by movements in the approaches and departures from the intersection. The upstream area includes travel for maneuvering, deceleration, and queue storage. The downstream area includes the length needed to reduce conflicts between through traffic and traffic accessing a property. Protecting the functional areas of the intersection with successful access management policies helps to reduce the number of conflicts and the number of decisions roadway users face, which mitigates intersection crashes.

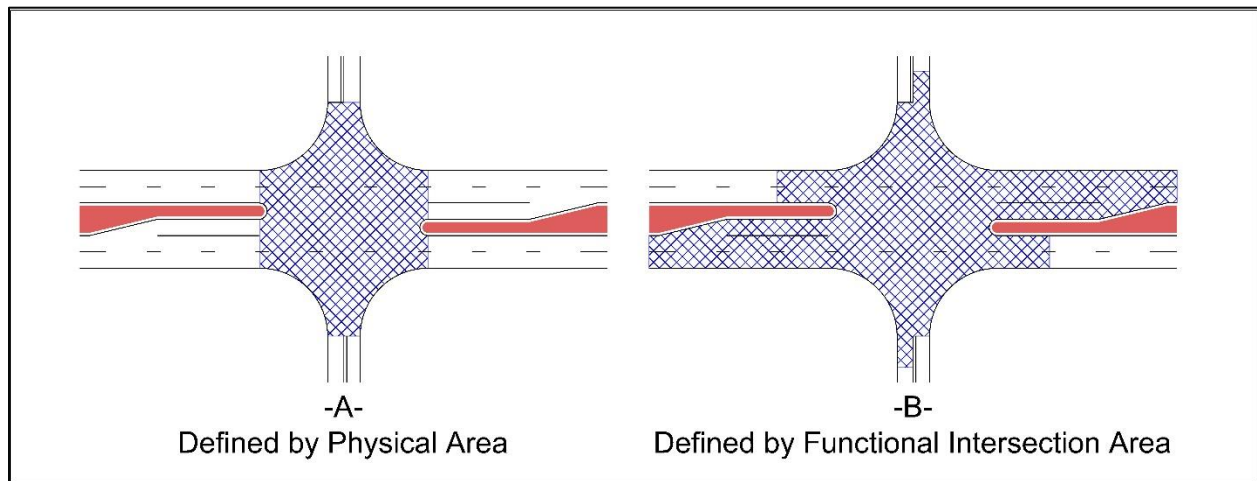


Figure 2-3: Physical and Functional Areas of an Intersection

2.5 Conflict Points

Traffic conflict points occur where vehicle paths cross, merge, or weave. Conflict points occur where there are connections along roadways, and different types of connections result in different levels of traffic conflicts. Access management increases safety by reducing the number of conflict points along a corridor. Table 2-1 summarizes the number of conflict points for different intersection types. Figures 2-4, 2-5, and 2-6 show the varying level of conflicts for four-leg, three-leg, and right-in/right-out intersections. It should be noted that crossing movements have the potential for higher-speed impacts and are referred to as “major” conflicts. Additionally, research suggests that approximately 72% of crashes at a driveway involve a left-turning vehicle [8]. The elimination or reduction of these crossing movements is particularly beneficial to intersection safety.

Table 2-1: Conflict Points by Intersection Type

Conflict Point Type	Number of Conflict Points						
	Standard 4-Leg Intersection	Two closely spaced T-Intersections	Median U-turn Intersection	Roundabout	3-Leg Intersection	3-Leg LI/RI/RO Intersection	3-Leg RI/RO Intersection
Crossing	16	12	12	0	3	1	0
Diverging	8	6	0	4	3	2	1
Merging	8	0	4	4	3	2	1
Total	32	18	16	8	9	5	2

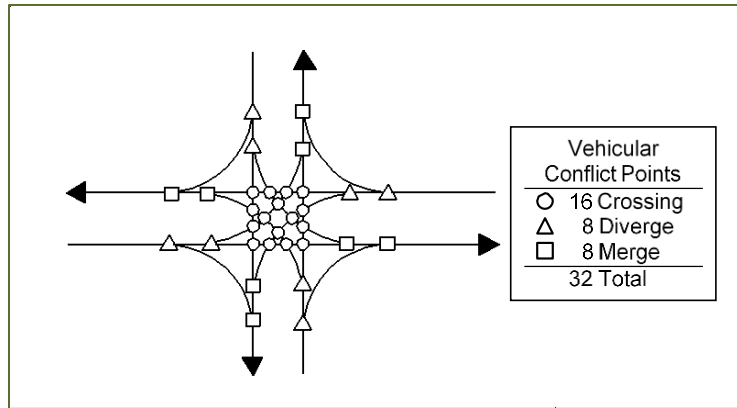


Figure 2-4: Conflict Points at 4-Leg Intersection

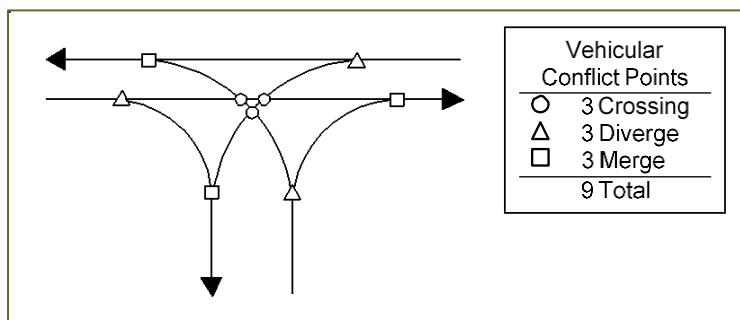


Figure 2-5: Conflict Points at 3-Leg Intersection

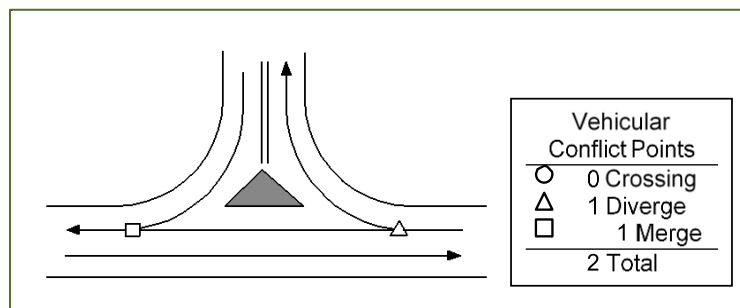


Figure 2-6: Conflict Points at RI/RO Intersection

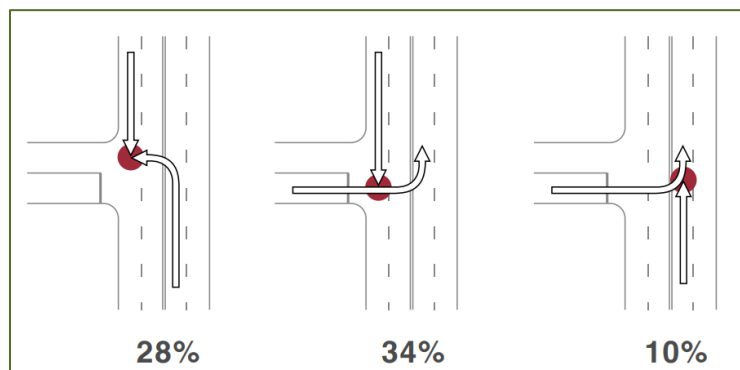


Figure 2-7: Crash Percentages for Turning Motorists to and from a Driveway (Source: FHWA)

2.6 Alternative Intersection Designs

Alternative intersection designs have been developed that help reduce the number of conflict points by restricting movements. The designs may offer additional benefits compared to conventional at-grade intersections. Four common alternative designs are illustrated in Figures 2-8 through 2-11 and described below:

- Roundabout – This design physically separates the turning movements with a central island. Vehicles can enter and exit the roundabout by making a right turn.
- Continuous Green T-Intersection (“Alabama T”) – This design is used at 3-leg intersections and allows one major street through movement to, as the name implies, have a continuous green signal phase. There must be adequate width in the median to allow for a full-length acceleration lane on the downstream end of the intersection.
- Median U-Turn (MUT) Intersection – This design eliminates the direct left turns from major and/or minor approaches (usually both). Vehicles on the major approach intending to take a left on the minor street must travel through the intersection and then execute a U-turn at the median opening downstream of the intersection. Drivers on the minor street intending to turn left must first turn right at the intersection then make a U-turn at the downstream median opening. Often, the median U-turns are signaled, but that is not necessarily required.
- Restricted Crossing U-Turn (RCUT) Intersection – RCUT designs are similar to MUT in that they both require U-turns downstream of the main intersection, but RCUT intersections also prohibit minor street crossing movements.

FHWA's [Alternative Intersections/Interchanges Informational Report](#) offers more detailed information on the designs and benefits of these and several other alternative designs.

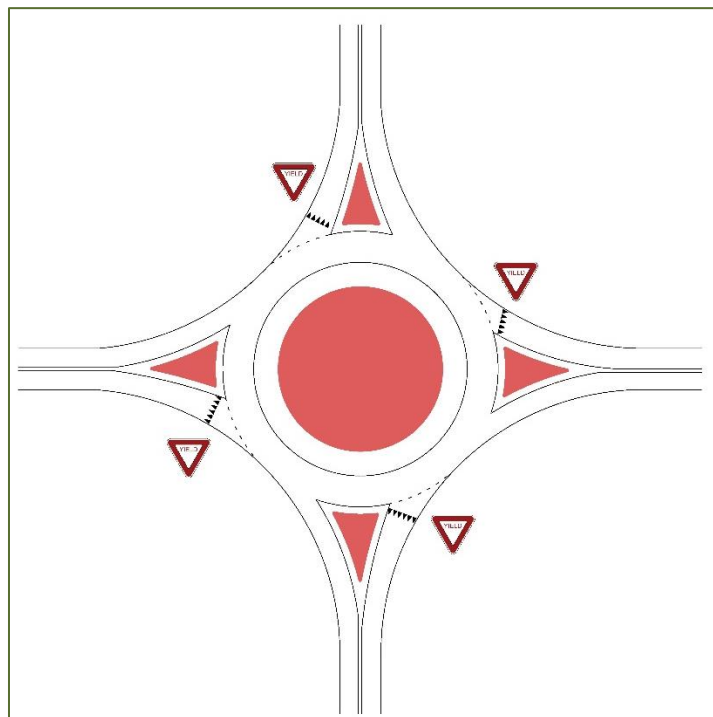


Figure 2-8: Roundabout

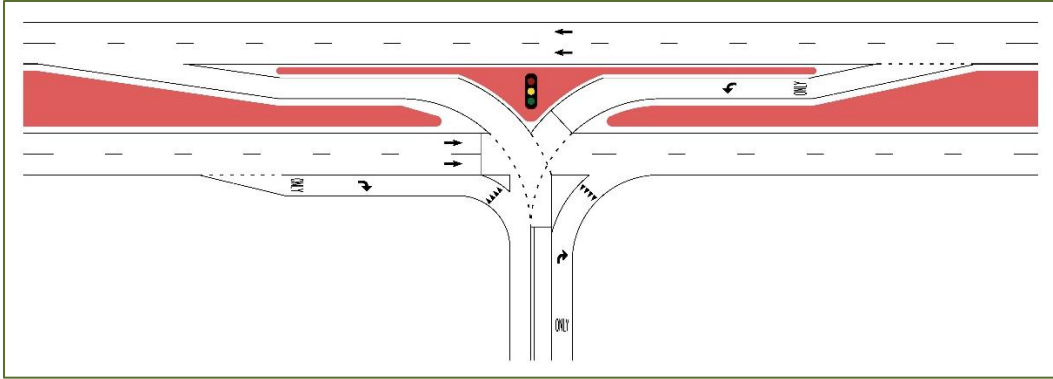


Figure 2-9: Continuous Green T-Intersection

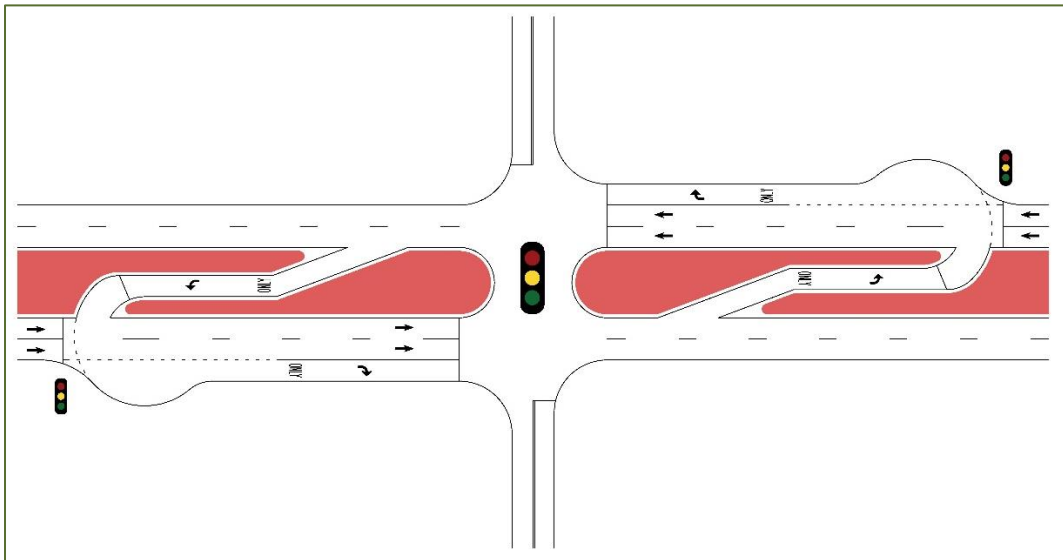


Figure 2-10: Median U-Turn Intersection

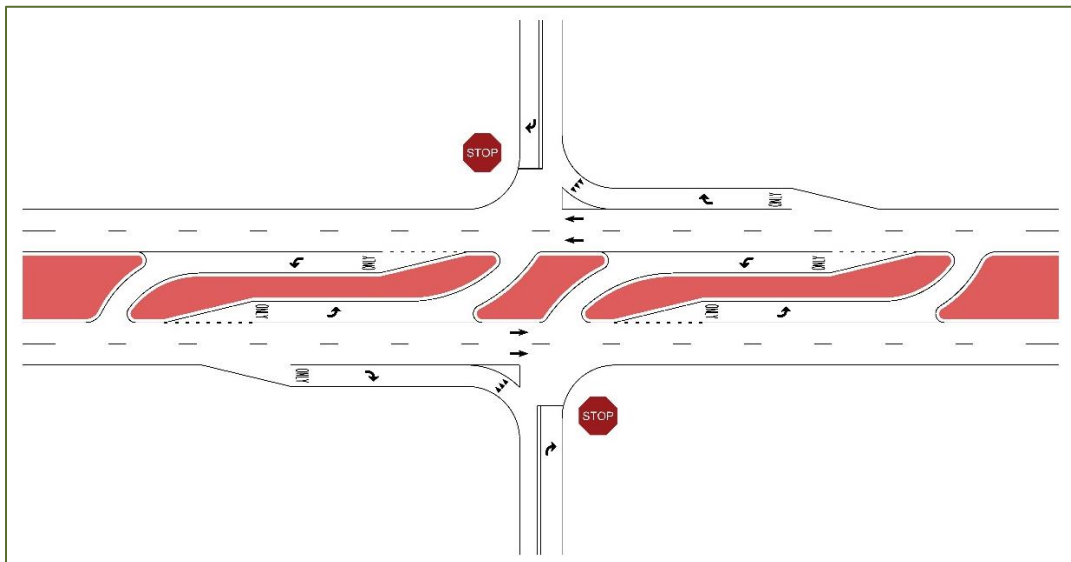


Figure 2-11: RCUT Intersection

Chapter 3

Design Guidelines

3.1 Connection Types

A roadway connection can be defined as the intersection of a public roadway and a private driveway or another public roadway. As discussed in Chapter 2, connection points create opportunities for traffic conflicts and crashes. For this reason, it is good access management practice to allow no more connections than necessary to provide an appropriate level of accessibility to and from the roadway network.

The Montgomery MPO defines two types of connections on its roadway network: full access and directional access. Both connection types are appropriate for different locations within the roadway network and serve different accessibility purposes. The connection types are described in the following sections.

3.1.1 Full Access Connections

Full access connections refer to intersections that allow all turning movements. Examples include the following:

- major road intersecting a major road
- minor road intersecting a major road
- interchange ramp intersecting a major road
- driveway to a commercial business intersecting an major road

These connections can be signalized or unsignalized. Full access connections are illustrated in Figure 3-1.

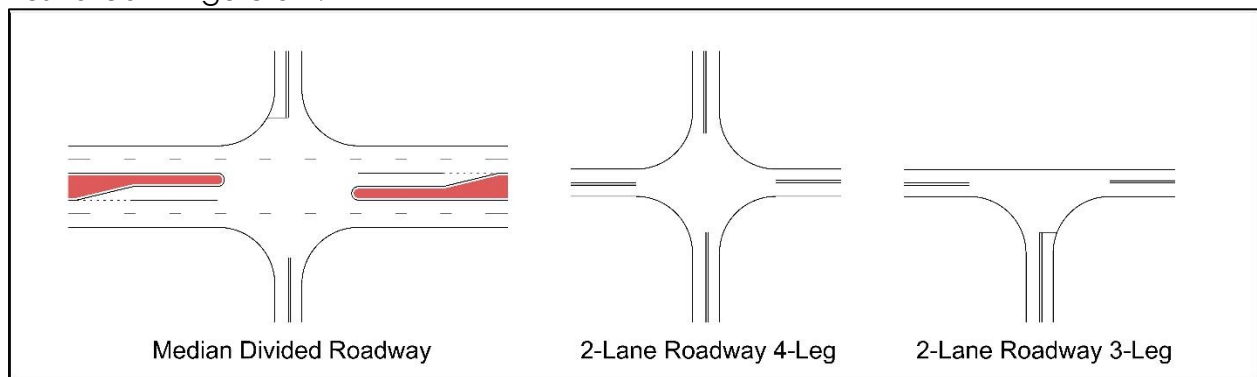


Figure 3-1: Full Access Connections

3.1.2 Directional Access Connections

Directional access connections are generally used to provide access to and from commercial and industrial land uses, but can also be used at major intersections, minor intersections, or interchanges. Directional connections provide access to and from the roadway with less impact on traffic safety and efficiency when compared to full access connections. Directional access connections commonly refer to:

- right-in access drives
- right-out access drives
- right-in/right-out access drives
- left-in/right-in/right-out access drives

Like full access connections, directional connections can also be signaled or unsignaled. Figure 3-2 presents graphical examples of different types of directional connections.

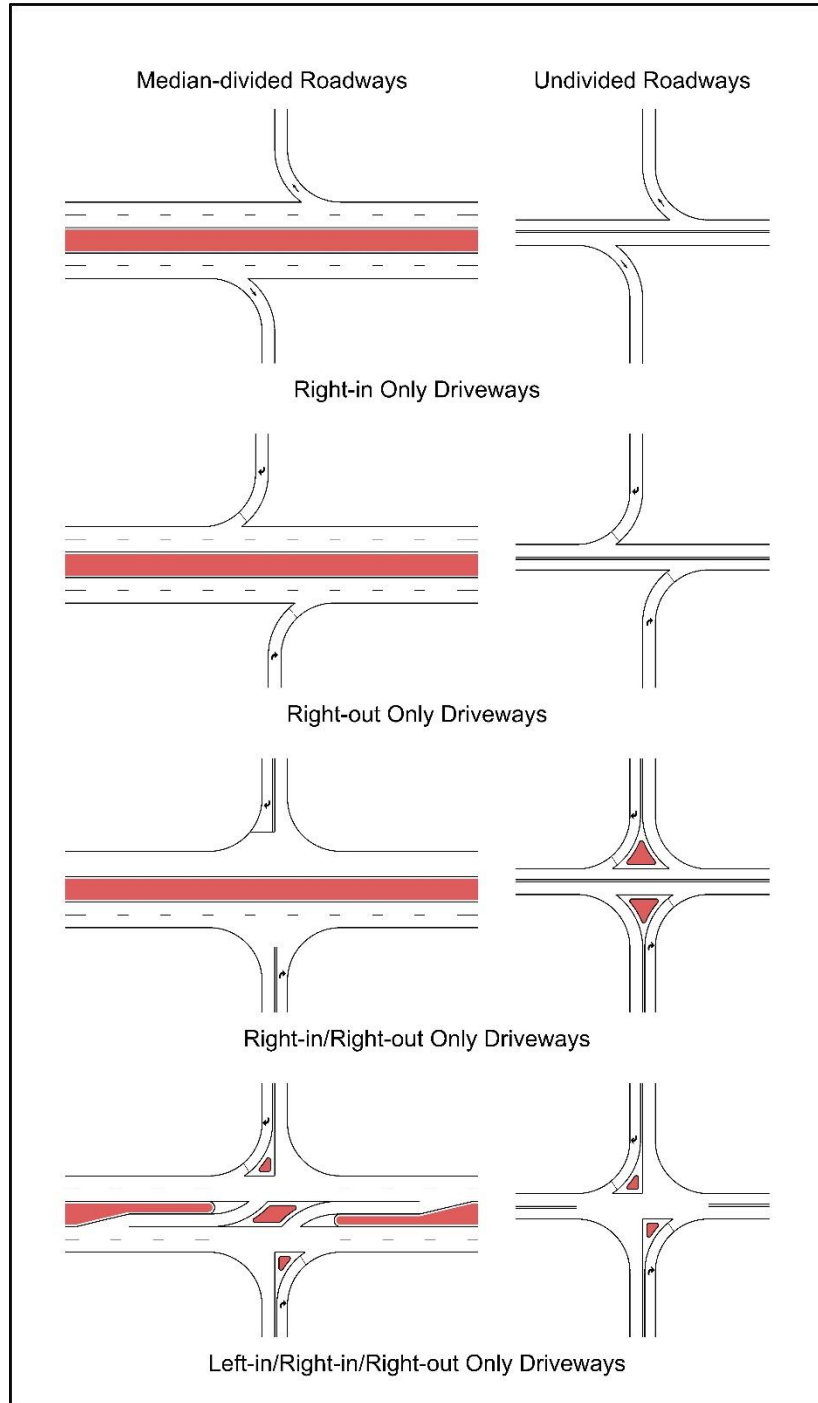


Figure 3-2: Directional Connections

3.2 Medians

Medians are the portion of a highway separating opposing traffic flows. Medians can be raised, depressed, or flush with the traveled way, as well as traversable or non-traversable.

3.2.1 Traversable Median

Traversable medians do not physically discourage or prevent vehicles from entering upon or crossing over it. The two-way left turn lane (TWLTL) is the most well-known type of traversable median.

3.2.2 Non-Traversable Median

Non-traversable medians separate traffic traveling in opposite directions and physically prevent crossing or turning movements. Non-traversable medians can include raised curb or depressed medians. They can be either grass-covered or hard-surface filled. Non-traversable medians are an effective access management tool to help restrict vehicles crossings at prohibited locations.

3.2.3 Median Openings

Median-divided roadways provide median openings to allow for crossing the opposing traffic lanes to access adjacent property, turn to and from public roadways, and to make a U-turn. Median openings should be strategically located to provide appropriate access to adjacent property and roadways while protecting the capacity and traffic operations of the mainline roadway. Figure 3-3 illustrates a few median examples. Spacing criteria for median openings is provided in the following section.

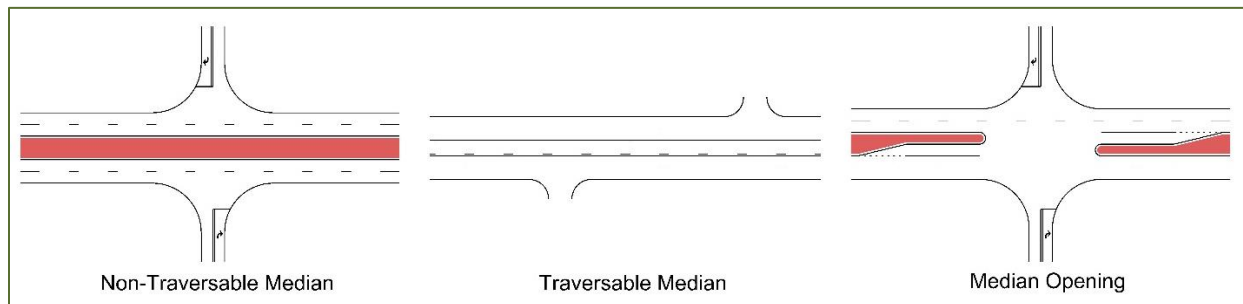


Figure 3-3: Medians

3.3 Spacing Criteria

The following sections provide spacing criteria guidance for common situations that permitting agencies.

3.3.1 Commercial/Industrial Driveway Spacing Requirements

The minimum driveway spacing criteria are based on the posted speed limit and the projected AADT (after the addition of the proposed development traffic). Existing AADT's can be found for select roadways on ALDOT's [Traffic Data website](#). The local government should be contacted to determine if recent counts were collected near the study area. If existing traffic volume data is not available or recent, then the necessary data should be collected.

As routes redevelop, there will be a desire by developers to have multiple driveways for certain land uses. The authorization of multiple driveways will be considered based on the amount of continuous parcel frontage. Municipalities should consider additional driveways only for parcels with frontage exceeding 660', subject to the roadway cross-section and median opening locations. Driveways with no corresponding median opening shall be limited to directional connections. Median consolidation may be required in conjunction with granting driveway access.

The spacing requirements for commercial/industrial driveways are summarized in Table 3-1. The spacing should be measured from edge of traveled way to edge of traveled way, as shown in Figure 3-4. There will be cases where the minimum spacing criteria is not feasible. Those cases should be discussed with the local government.

Table 3-1: Minimum Spacing Criteria

Posted Speed (MPH)	Min. Access Spacing (ft)	
	Projected AADT ≤5,000	Projected AADT >5,000
≤25	150	450
30 & 35	250	600
40 & 45	360	750
50	425	830
≥55	650	990

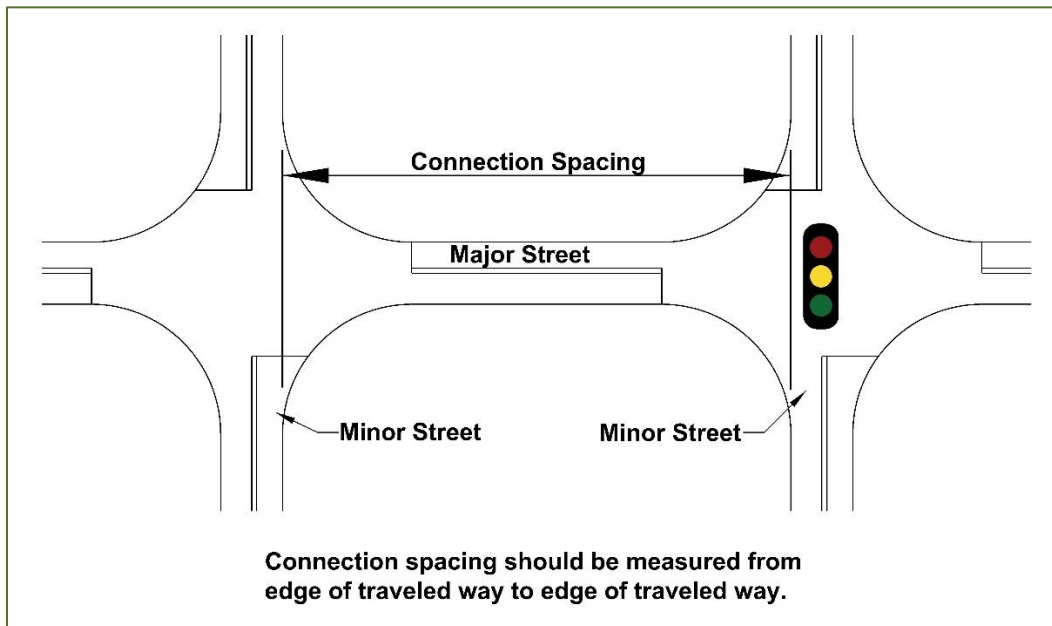


Figure 3-4: Measuring Connection Spacing

3.3.2 Corner Clearance

In some cases, parcel boundaries may require driveways near intersection corners. The required driveway corner clearance refers to the distance between an intersection and the nearest unsignalized access connection. It is desirable to maximize this distance to preserve traffic flow in the vicinity of intersections. The minimum spacing requirements for corner clearances are summarized in Table 3-2. The spacing should be measured from the edge of the traveled way on the side street to the edge of the traveled way on the proposed access, as shown in Figure 3-5. For requirements for full access spacing, see Table 3-1.

Table 3-2: Minimum Corner Clearance

Projected AADT	Min. Corner Clearance (ft)
≤1,000	75
1000 - 2,500	125
2,500 - 5,000	225
≥5,000	325

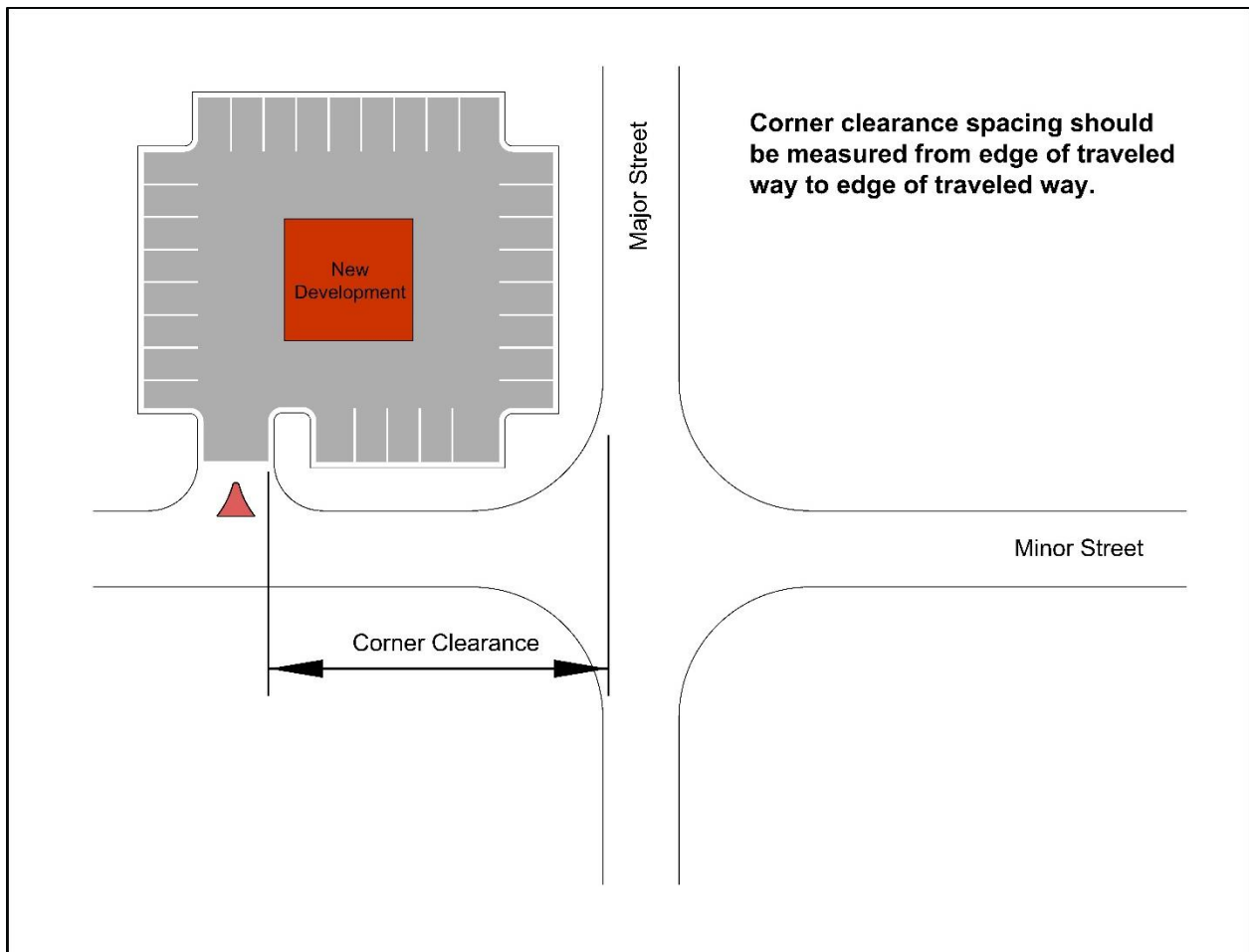


Figure 3-5: Corner Clearance

3.3.3 Accesses Near Interchanges

One of the most important access management challenges occurs in the immediate vicinity of interchanges. The appropriate level of access near an interchange is a function of the posted speed limit and the connection type. The spacing should be measured just as the connection spacing is measured – from edge of traveled way to edge of traveled way (as previously shown in Figure 3-4). Table 3-3 shows the minimum required spacing for the first access crossroad from the ramp. These spacing criteria does not supersede the denied access area around interchanges.

Table 3-3: Access Spacing Near Interchanges

Posted Speed (mph)	Spacing Dimension (ft)	
	First Directional Access	First Full Access
≤45	990	1,320
>45	990	2,640

3.3.4 Residential Driveway Spacing Requirements

A maximum of one access point or one connection per existing parcel for single-family residential homes is allowed. The local government may require alternative access configurations (e.g. shared-use accesses, service roads, backage roads, and frontage roads). The applicant should contact the local government for guidance on residential driveway location and configuration.

3.3.5 Traffic Signal Spacing Requirements

Appropriate traffic signal spacing is a key element in promoting efficient traffic signal operations. Signal spacing that is too close can hinder traffic progression and cause excessive queues at intersections. Traffic signals spaced as evenly as possible help to improve vehicle fuel efficiency, reduce vehicle emissions, and lower crash rates by reducing unnecessary stop-and-go traffic. Also, traffic signals should only be considered when warranted based on federal guidelines per the MUTCD. Properly spaced traffic signals allow access to and from the roadway while preserving safe and efficient traffic operations. Proposed traffic signals should meet the minimum requirements of Table 3-1 and require approval by the local government.

3.3.6 Roundabout Spacing

Accesses near roundabouts should meet the minimum connection spacing and corner clearance spacing required in Tables 3-1 and 3-2. No accesses are allowed within the splitter island of the roundabout.

3.4 Driveway Geometric Design

Driveway design is a critical component to the transportation system and essential to achieve efficient operations. Entry width, radius, offset, and throat length are the key components to driveway design. These driveway features are illustrated in Figure 3-6. The following sections outline required driveway design characteristics.

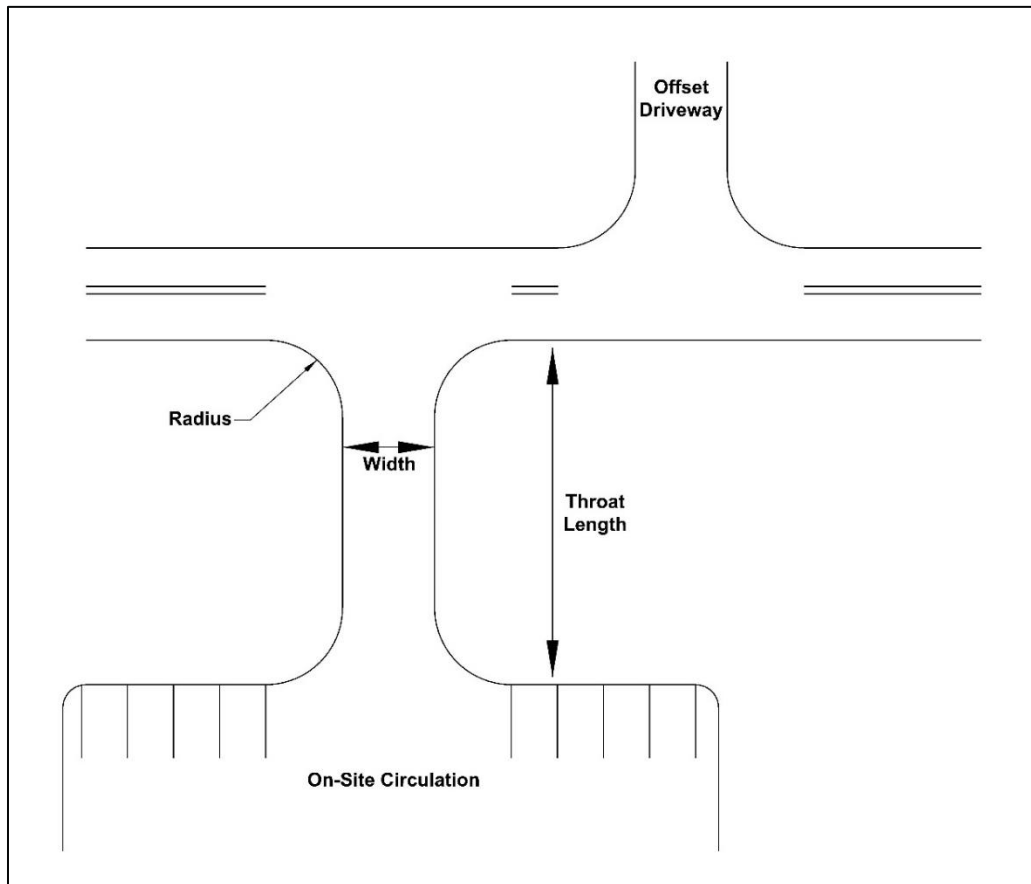


Figure 3-6: Driveway Features

3.4.1 Driveway Width & Radii

Inadequate driveway design creates conflicts that can be detrimental to safety and operations on the mainline. The driveway entry width is the most critical component of driveway design because it has to serve both right-turning and left-turning vehicles. For non-residential driveways, the width and radii should be sufficient to allow a vehicle to enter without having to slow down excessively, and the width should allow vehicles to enter and exit simultaneously.

Driveways serving large traffic generators or industrial facilities should be individually designed to handle the typical large truck that uses the access. In the case of median-divided driveways, care should be taken to limit the overall width of the intersection. A range of allowable driveway widths for different land use types is provided in Table 3-4.

Driveway radii should be designed to provide safe and easy vehicle movement for the largest vehicle that will regularly use the driveway. AASHTO vehicle turning paths should

be examined for land uses that generate a high volume of trucks. The selected design vehicle should maintain a 2' clearance from the traveled way, curb line, or median during a right turn maneuver. Table 3-4 summarizes the allowable radii ranges for various types of driveways based on the land use served.

Table 3-4: Minimum Driveway Design Standards

Driveway Type	Driveway Radius (ft)	Driveway Width (ft)
Single-Family Residential Lot	15 - 25	9 - 12
Non-Commercial Agriculture	20 - 40	16 - 20
Commercial/Office/Retail/Subdivision	25 - 50*	24 - 26*†
Industrial-Type Facility	40 - 75*	26 - 35*

*Should be individually designed to handle the typical large truck that uses the access connection

†One-way driveways can be less than 24 feet but must be at least 12 feet.

Any driveway designs falling outside the ranges provided in Table 3-4 must be approved by the local government. Additionally, where pedestrian and bicycle facilities are present, driveways shall be designed so that they can accommodate those facilities and so that those facilities are usable by individuals with disabilities. The [Alabama Statewide Bicycle and Pedestrian Plan](#) provides further details on bicycle and pedestrian facilities.

3.4.2 Driveway Offsets

Access connections on opposite sides of the roadway, if not lined up directly across from each other, can cause traffic operation issues due to overlapping left-turn movements (at locations with two-way left turn lanes or divided highways with short turn lane lengths) or jog maneuvers (on undivided roadways). A jog maneuver occurs when a vehicle makes one continuous movement between two driveways instead of two distinct turning movements. Accesses on opposite sides of the road should either be lined up directly across from each other or meet the spacing requirements laid out in Table 3-1.

3.5 Turn Lanes

Left turns at intersections with permissive left turn movements require turning vehicles to yield to oncoming traffic and wait for an acceptable gap to make the left turn maneuver. In cases where there is no exclusive left turn lane, these vehicles must slow down or stop in a through lane while awaiting an acceptable gap. These conditions increase the risk of a rear-end crash and may result in left-turning vehicles taking risks and accepting gaps in oncoming traffic that are too small, thus increasing the chance of a right-angle crash. For these reasons, an exclusive left turn lane may need to be provided.

Likewise, when a right-turning vehicle is approaching an intersection, they must decelerate to safely make their maneuver. If there is no exclusive right turn lane, then the slower-moving turning traffic will be mixed with and adversely impact the faster-moving through traffic.

Although there are clear safety and operational benefits of exclusive turn lanes, they may not be required or even feasible for all locations. For this reason, an analysis must be performed to determine whether or not an exclusive turn lane is warranted. The following

sections provide procedures for performing turn lane warrant analyses and describe the geometric requirements for turn lanes.

3.5.1 Turn Lane Warrants

Left turn lanes should be installed at any new commercial access unless a turn lane warrant analysis shows that one is not necessary. Turn lane warrant procedures are discussed in the following sections.

A turn lane is warranted when any of the following conditions are met:

- An engineering evaluation indicates insufficient stopping sight distance for traffic movements impacted by the turn.
- An evaluation of crash experience indicates that there have been five or more crashes within a 12-month period that could have been mitigated by the installation of a turn lane.
- An engineering evaluation of the impacts of heavy vehicles (percent trucks, grade effects, etc.) on turn operations and safety.
- An evaluation of applicable traffic volumes shows a turn lane to be warranted. A turn lane warrant analysis based on the procedures documented in [NCHRP Report 457](#) should be conducted and the results submitted to the local government with the permit application.

A left turn lane should also be considered if there is a connection on median divided roadways. This applies not only to new median openings and connections but also existing connections and median openings when there is a change of use resulting from a proposed development. A right turn lane should also be considered at major intersections based on engineering judgment in conjunction with the following:

- corridor-specific access management plans
- roadway widening plans
- roadway resurfacing projects

3.5.2 Turn Lane Geometric Design

The following sections describe the geometric requirements (storage length, taper dimensions, and width) for exclusive turn lanes.

3.5.2.1 Turn Lane Lengths

Single turn lanes should provide space for turning vehicles to decelerate as well as storage for turning vehicles to queue. As stated in AASHTO's *Policy on Geometric Design of Highways and Streets*, "The length of the auxiliary lanes for turning vehicles consists of three components: (1) entering taper, (2) deceleration length, and (3) storage length. Desirably the total length of the auxiliary lane should be the sum of the length for these three components. Common practice, however, is to accept a moderate amount of deceleration within the through lanes and to consider taper length as a part of the deceleration within the through lanes."

The various geometric design elements of a turn lane are illustrated in Figure 3-7. The minimum turn lane length requirements are provided in Table 4-6. These values were derived from AASHTO's *A Policy on Geometric Design of Highways and Streets* and account for a 10 MPH speed reduction in the through lane before entering the turn lane.

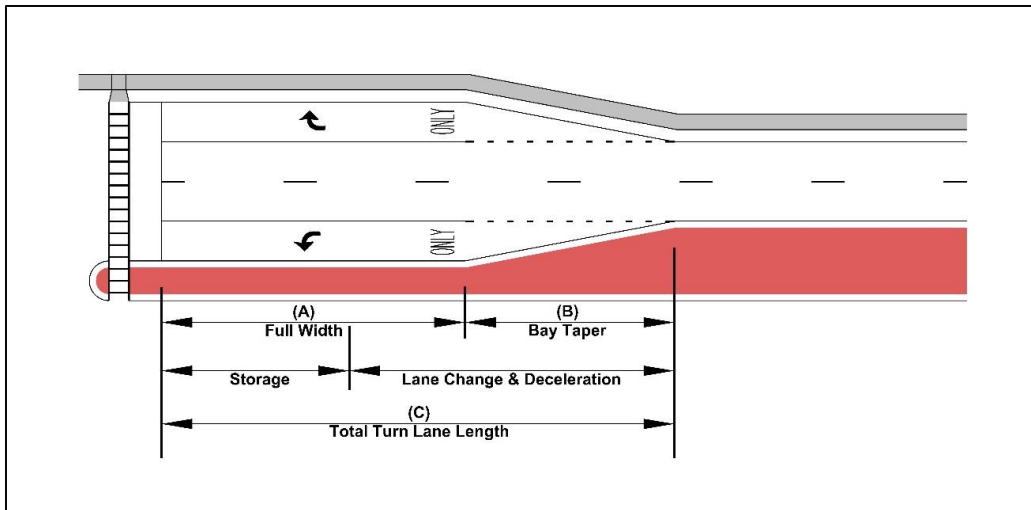


Figure 3-7: Turn Lane Length Components

Table 3-5: Turn Lane Length Minimums

Posted Speed (MPH)	Full Width Length*	Bay Taper Length	Total Length*
	(ft) (A)	(ft) (B)	(ft) (C)
25	100	100	200
30	125	100	225
35	155	120	275
40	185	140	325
45	215	160	375
50	245	180	425
55	295	180	475
60	320	180	500
65	370	180	550

*Does not include storage requirements. Lengths are based on allowed 10 MPH deceleration in the through lane.

3.5.2.2 Turn Lane Tapers

Taper lengths are provided to approximate the path drivers follow when entering a turn lane. A straight-line taper is recommended for any proposed turn lanes. The taper length requirements are based on the posted speed limit and range from 100' to 180'.

3.5.2.3 Turn Lane Storage

Turn lanes shall provide sufficient storage length to accommodate the number of vehicles likely to accumulate during specific intervals within periods of peak traffic. The minimum turn lane lengths provided in Table 3-5 do not include storage length. Those minimum lengths would need to be increased depending on the percentage of trucks, intersection control type, traffic volumes, and/or posted speed limit.

For left turn lanes at signalized intersections, the storage length depends upon signal cycle length, signal phasing, and the arrival/departure rate of turning vehicles. The required storage length shall be based upon queueing analysis performed with traffic analysis software. For all turn lane storage lengths, special care should be given to accommodate the truck storage requirements of the turn lane (where applicable).

3.5.2.4 Dual Left Turn Lanes

Certain situations may warrant dual left turn lanes. When the left-turning volume exceeds 250 vehicles per hour, capacity analysis should be performed to determine whether a dual left turn lane is warranted. In some cases, lower volumes may warrant dual left turn lanes to maintain or improve capacity and/or operational efficiency. For example, the addition of dual left turn lanes typically results in a higher percentage of green time in a signal cycle being available to through traffic for the major street. Such special cases also require capacity analysis to be performed.

Minimum taper lengths shown in Table 3-5 apply to dual left turn lanes. Storage requirements for dual left turns require a detailed capacity analysis using an agency-approved traffic model. Where dual left turns are provided, a minimum median width of 30' is recommended (two 12' lanes, 2' offset, and a 4' divider).

3.5.2.5 Shifting Taper Lengths

When a left turn lane is constructed on an undivided roadway, an adequate transition length must be provided for the through lanes to allow for a safe shift for the through vehicles. The shifting taper length is based on the posted speed limit and width of offset, as shown in Table 3-6. The typical widening width is 12' if widening to one side or 6' if widening symmetrically. Figures 3-8 and 3-9 illustrate the shifting taper lengths with widening on just one side and widening symmetrically, respectively.

Table 3-6: Shifting Taper Length

Posted Speed (mph)	Shifting Taper Length (ft)
≤ 40	$WS^2 / 60$
≥ 45	WS

Where:
 W = Width of Offset (ft)
 S = Posted Speed Limit

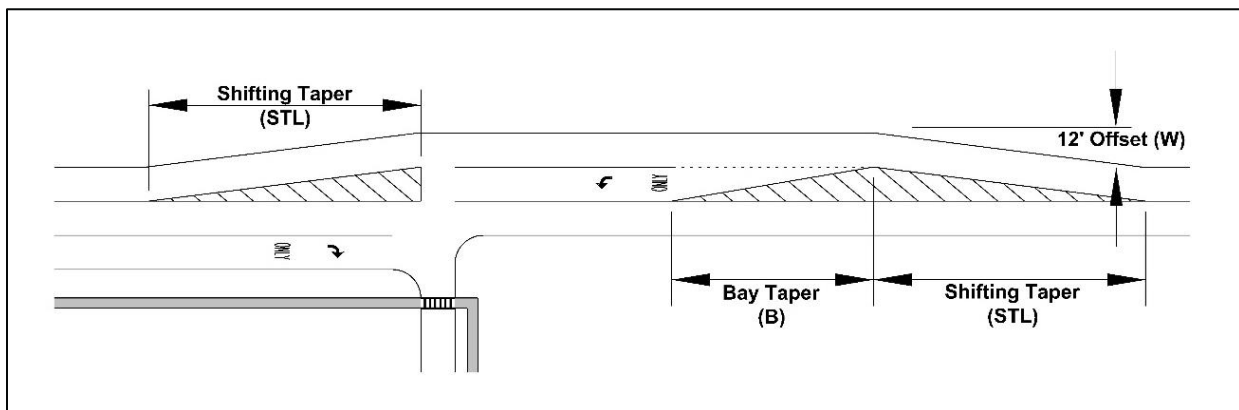


Figure 3-8: Shifting Taper Length – Widening on One Side

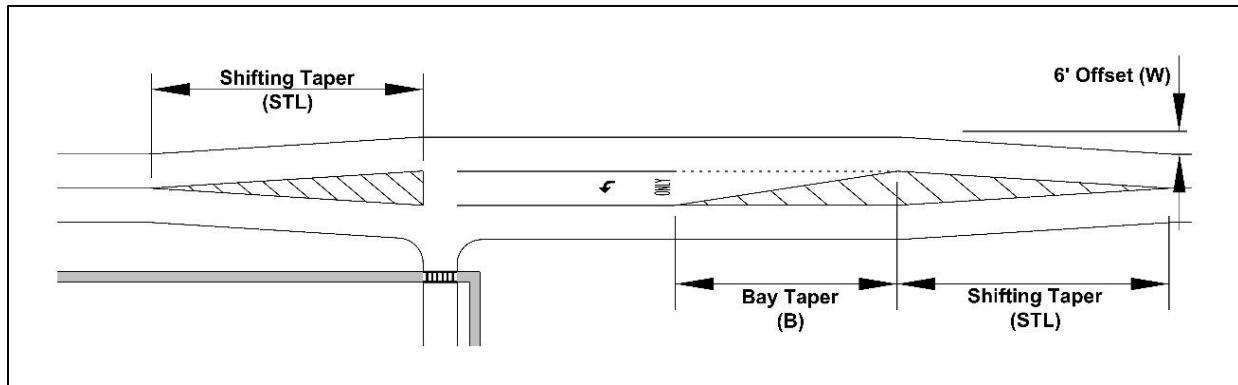


Figure 3-9: Shifting Taper Length – Symmetrical Widening

3.5.2.6 Left Turn Bypass Lanes

Left turn bypass lanes provide another option for separating turning vehicles from through vehicles. Because left turning vehicles need to decelerate or stop in the through lane, bypass lanes are not as safe as exclusive left turn lanes; however, bypass lanes are preferable to no left turn treatment at all. Figure 3-10 shows a conceptual bypass lane.

Bypass lanes should only be considered at three-leg intersections on two-lane roads when cost or right-of-way constraints limit the ability to construct turn lanes. Bypass lanes shall not be used at four-leg intersections.

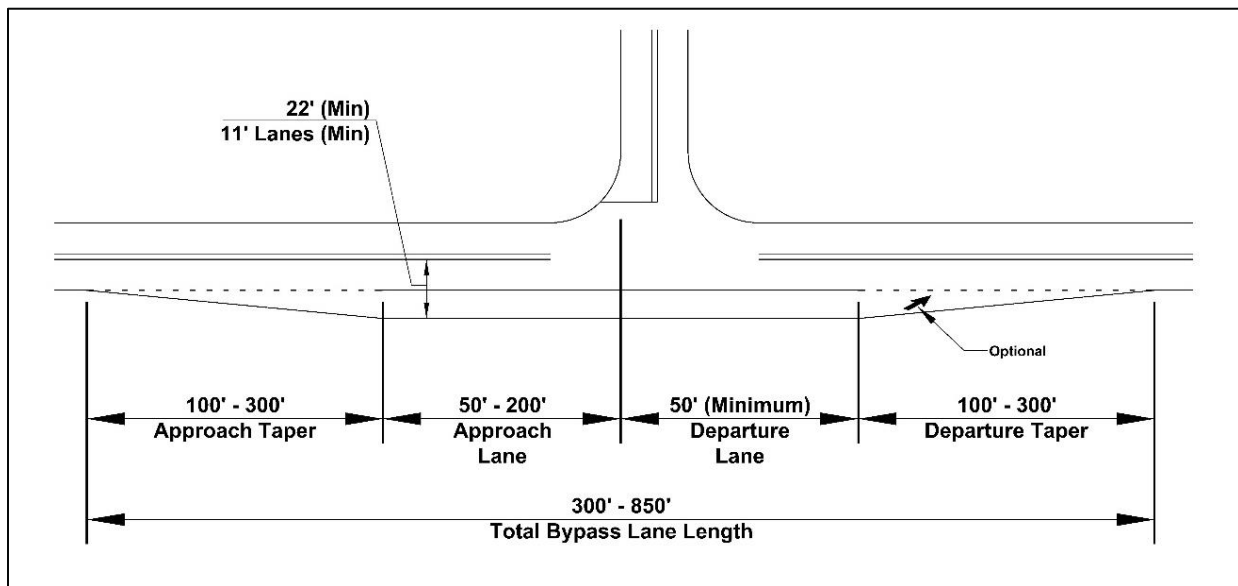


Figure 3-10: Left Turn Bypass Lane

3.5.2.7 Channelization Design

When channelized islands are provided at the termini of right turn lanes, consideration should be given to the angle at which the right turn lane joins the intersecting road. “Smart channel” designs at the termini of right turn lanes help to widen drivers’ cone of vision towards both pedestrians and vehicular traffic on the intersecting road, which improves the safety for both.

Critical components of a "smart channel" design are illustrated in Figure 3-11. The angle at which the turn lane intersects the cross street should be approximately 70°.

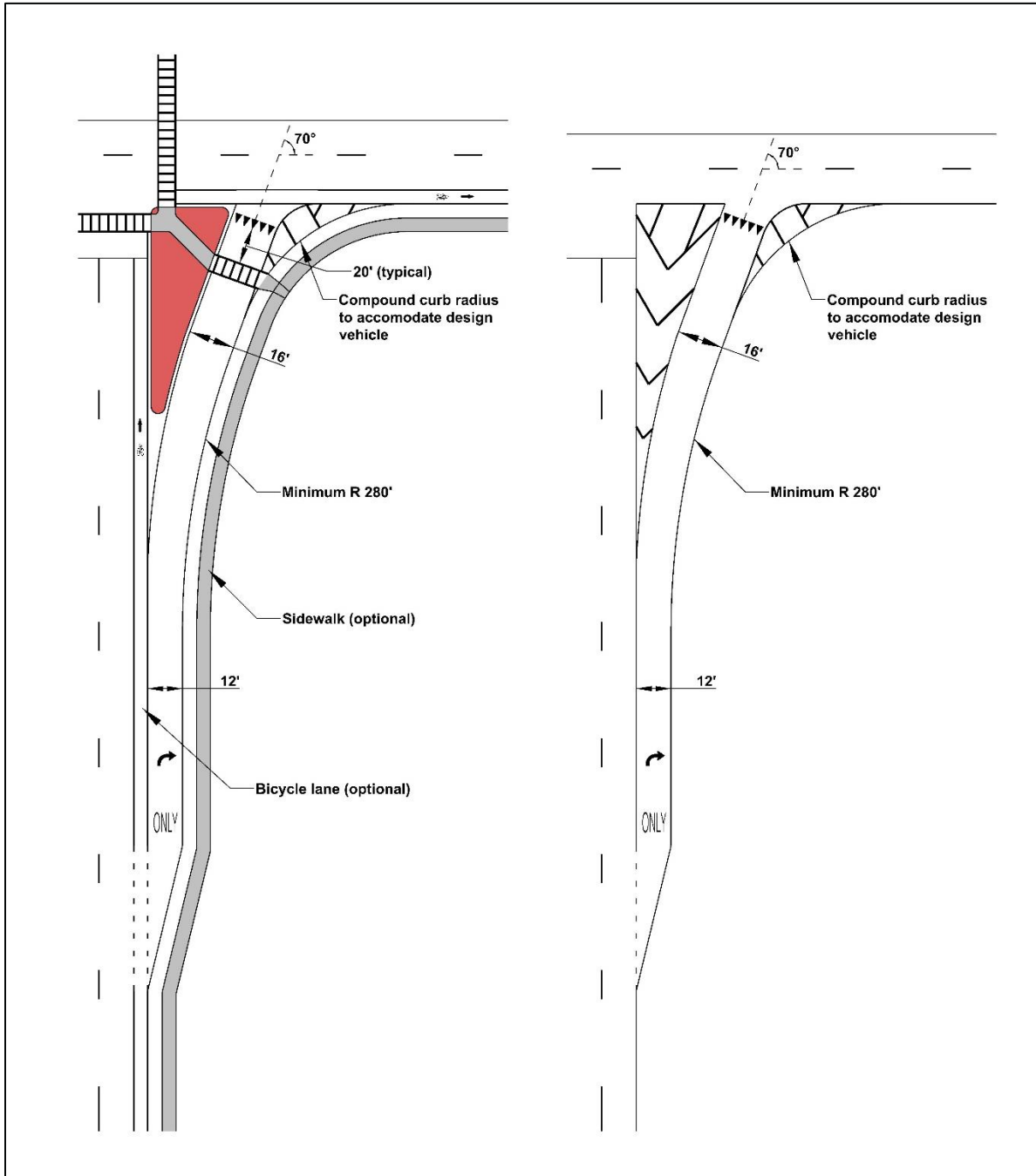


Figure 3-11: Smart Channel Design (Source: ALDOT)

3.6 Bicycle, Pedestrian, and Transit Considerations

A new development might result in an increase in bicycle and pedestrian traffic. In those cases, the existing bicycle and pedestrian facilities should be evaluated, and recommendations should be made to handle the increased volumes. If the development is in a college town or other area with transit operations, then consideration should be given to the need for a transit stop adjacent to the development property.

3.7 Sight Distance

When reviewing proposed access locations, consideration should be given to the sight distance at the decision point for stopped vehicles exiting the proposed development. AASHTO's *A Policy on Geometric Design of Highways and Streets* provides recommendations on the appropriate sight distance for different conditions. Figure 3-12 shows how sight distance should be measured for left turns and right turns from the driveway stop line. Table 3-7 shows the minimum required sight distance for these two conditions.

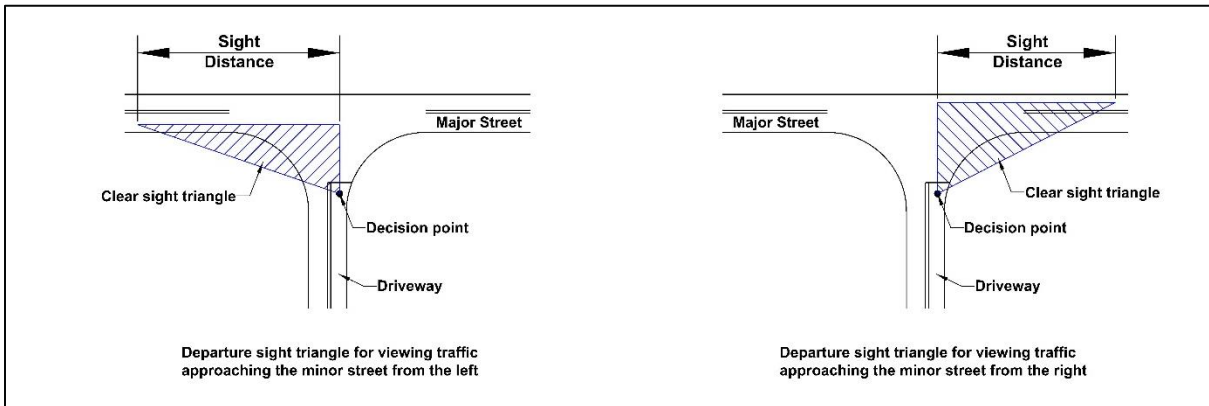


Figure 3-12: Sight Distance Measurement

Table 3-7: Intersection Sight Distance

Posted Speed (MPH)	Intersection Sight Distance for Passenger Cars (ft)	
	Left Turn from Stop	Right Turn from Stop
15	170	145
20	225	195
25	280	240
30	335	290
35	390	335
40	445	385
45	500	430
50	555	480
55	610	530
60	665	575
65	720	625

Chapter 4

Access Management Plan Development & Implementation

4.1 Plan Development Process

Access management plans are versatile tools that can be used to prevent future access issues and provide solutions to existing problems. These plans are usually conceptual and help guide access decisions during development reviews and roadway improvement projects. The following are typical steps taken during the development of the of a corridor access management plan:

1. **Select a corridor.** Corridors with recurrent congestion, high traffic volumes, and/or high crash rates are good candidates for access management.
2. **Form an advisory group.** This could include cities, counties, the Montgomery MPO, ALDOT, and representatives of key stakeholders and interest groups. They would be responsible for coordinating with constituents, bringing concerns to the group for discussion, and endorsing and helping to implement the plan.
3. **Define the study area.** Logical boundaries may be determined on the basis of traffic considerations (e.g. roadway geometry, congestion, or high-crash areas), land use and environmental characteristics, and social considerations such as neighborhood boundaries.
4. **Evaluate the existing and future conditions.** Traffic data (vehicle, pedestrian, and bike volumes, vehicle classifications, historical volume growth, vehicle speeds and speed limits, crashes, etc.) should be collected at appropriate locations and analysis should be performed where necessary. The analysis could include signal warrants, turn lane warrants, and crash analysis. Capacity analysis should be performed at critical intersections to identify any deficiencies. Land uses (existing and future) should be evaluated for access needs. A public information meeting would be beneficial at this time to let the public know about the upcoming plan and to solicit input from the regular users of the roadway.
5. **Identify vision and strategies.** With a diverse advisory group, there are likely to be competing interests and agendas for the plan. A common vision with supporting goals and strategies should be established.
6. **Prepare the access management plan.** The plan should include recommendations on driveway consolidations and relocations, signal locations, medians, median openings, turn lanes, on-street parking, and alternative intersection designs, at a minimum. A list of access management retrofit techniques are provided in Appendix B. The plan should be reviewed in the field and another public information meeting should be held to obtain feedback. After comments are addressed, the plan should be finalized.
7. **Implement and monitor the plan.** Members of the advisory group should adopt the access management plan and develop new policies or ordinances that help

support its implementation. A sample access management resolution is provided in Appendix C. See the following section for implementation methods.

4.2 Implementation Methods and Funding Opportunities

Once an access management plan is finalized and adopted, municipalities can use it to help protect the safety and operations of their roadway corridors. Access management projects along long corridors do not typically get constructed all at the same time; rather, the project is often broken down into smaller segments. Corridor plans are typically implemented through a combination of regulations, intergovernmental or public-private agreements, and roadway improvement projects. Local municipalities can require developers to finance some or all of the access management recommendations near their proposed development as a condition of the development approval. Another opportunity to incorporate some of the access management recommendations is during resurfacing projects. This approach would be more cost-efficient than having a standalone access management project.

The Alabama Transportation Assistance Program (ATAP) recently released the [Alabama Transportation Funding Guide](#) that summarizes the applicable, currently available funding opportunities for local governments. The following is a list of potential, ALDOT-administered funding sources and a description of how they could be used for access management purposes:

1. Surface Transportation Program (STP) – This could fund projects along corridors with high levels of congestion.
2. Highway Safety Improvement Plan (HSIP) – This could fund improvement projects at intersections or segments with a number of fatalities or serious injuries that were identified during crash analysis effort.
3. Transportation Alternative Set-Aside Program (TAP) – This could pay for portions of access management plan related to non-motorized users (sidewalks, bike lanes, trails, etc.)
4. Alabama Transportation Rehabilitation and Improvement Program – II (ATRIP II) – This is used for projects of local interest that benefit the state-maintained highway system. This could be used where a local corridor access management plan includes an intersection with a state-maintained roadway.
5. Rebuild Alabama Act Annual Grant Program (RAA) – This provides funding for construction activities for projects of local interest and would apply to most improvement projects that are recommended in the access management plan.
6. High Risk Rural Roads Program (HRRR) – This can only be used for roadways classified as rural major collectors, rural minor collectors, or rural local roads with crash rates above the statewide average. These rural roadway types are not typically considered for access management improvements, but there could be unique situations where this funding program would be appropriate.

Most of these funding sources are for construction activities only and would require that there be an access management plan already in place. For developing the actual access management plans, local governments could seek to partner with other organizations.

Chapter 5

Access Permit Process

5.1 Access Permit

The local governments within the Montgomery MPO should use access permits as their primary tool in controlling access to their roadway systems. The access permit is a legal document that grants approval to construct and operate a driveway or other access of a certain design at a specified location for specific purposes. Local governments should always require an access permit for the construction of any new point of access or other modification of any existing driveway within roadway right-of-way when the work is being done by an external person or agency.

The local government may grant access as requested, require design modifications, or deny the access. A sample permit access request form is provided in Appendix D.

5.2 Access Permit Application Steps

The following steps should be taken during the access permit process:

1. **Initial inquiry and determination of permit requirements** – The permittee should familiarize themselves with this document and obtain a copy of any pertinent regulations of the local government. The permittee should contact the local government to inform them of the development plans and discuss what will be required as part of the permit application. The local government may request a preliminary site plan or survey plat at this time. For smaller developments or single-family residences, the access permit alone may be all that is required by the local government. A traffic impact study (TIS) may be required for larger developments.
2. **Permit submittal** – When the applicant has compiled all the necessary information, it should be submitted to the municipality for review.
3. **Permit review and issuance** – The permit and supporting documents should be reviewed completely and in a timely manner by the municipality. The municipality should formally communicate the decision (approved, denied, or revisions required) to the applicant.
4. **Permit issuance** – If the permit is approved, then the local government should establish the conditions of the permit, construction requirements, and use. The local government should issue the access permit and allow construction to begin.
5. **Field inspection** – The local government should conduct field inspections during construction to confirm that the work is being done in accordance with the permit.

5.3 Traffic Impact Studies

A traffic impact study (TIS) may be required by the local government to adequately assess the impact of the proposed development which may affect traffic operations on the existing and/or planned roadway system. The primary objectives of a TIS are to:

- Identify the traffic impacts a proposed development and/or project may have on the highway system; and,

- Determine any improvements to the roadway system needed for mitigation of traffic, safety, and operational impacts associated with a proposed development and/or project.

Upon receipt of a TIS, the local government will review the study data (sources, methods, and findings) and will respond with written comments.

The local government reserves the right to seek additional information or clarification on the TIS or commission its own independent study or review. The local government must approve the TIS before a permit application will be approved.

5.3.1 Trip Generation

A TIS is encouraged for any development requiring an access permit along a roadway in the jurisdiction of the local government. However, some developments generate low volumes of traffic and have a minor or negligible impact on the roadway system. Where the traffic volumes being generated by the development are more than 100 vehicles per hour (entering plus exiting vehicles), a TIS is required, unless otherwise indicated by the local government. Table 5-1 provides trip generation rates for common land uses. These rates were extricated from ITE's *Trip Generation*, 10th Edition. Generation rates from a newer edition may be used, if available. Additionally, traffic volume data from a local, similar land use may be used if available and with prior approval from the local government.

To estimate the total trip generation for a proposed development, the average rate should be multiplied by the independent variable (e.g. dwelling units, square footage, etc.). Even if the 100 vehicle per hour threshold is not met, the local government may still require a TIS at their discretion.

Table 5-1: Average Trip Generation Rates

Land Use	ITE Lane Use Code	Average Trip Generation Rate (PM Peak Hour of Adjacent Street Traffic)	Per	Entering/Exiting Distribution
Residential				
Single Family Detached Housing	210	0.99	Dwelling Unit	63% in, 37% out
Multi-Family Housing	220	0.56	Dwelling Unit	63% in, 37% out
Off-Campus Student Apartment	225	0.25	Dwelling Unit	50% in, 50% out
Lodging				
Hotel	310	0.60	Rooms	51% in, 49% out
Motel	320	0.38	Rooms	54% in, 46% out
Office				
General Office Building	710	1.15	1,000 SF GFA	16% in, 84% out
Medical/Dental Office	720	3.46	1,000 SF GFA	28% in, 72% out
Retail/Service				
Shopping Center/Retail	820	3.81	1,000 SF GFA	48% in, 52% out
Supermarket	850	9.24	1,000 SF GFA	51% in, 49% out
Home Improvement Superstore	862	2.33	1,000 SF GFA	49% in, 51% out
Pharmacy/Drugstore with Drive Thru	881	10.29	1,000 SF GFA	50% in, 50% out
Bank	911	12.13	1,000 SF GFA	44% in, 56% out
Sit-Down Restaurant	932	9.77	1,000 SF GFA	62% in, 38% out
Fast-Food Restaurant with Drive Thru	934	32.67	1,000 SF GFA	52% in, 48% out
Coffe/Donut Shop with Drive Thru	937	43.38	1,000 SF GFA	50% in, 50% out
Gasoline/Service Station with Conveince Market	945	88.35	1,000 SF GFA	51% in, 49% out
Institutional				
Elementary School	520	0.17	Students	48% in, 52% out
Middle/Junior High School	522	0.17	Students	49% in, 51% out
High School	530	0.14	Students	48% in, 52% out
Church	560	0.49	1,000 SF GFA	45% in, 55% out
Day Care Center	565	0.79	Students	47% in, 53% out
Industrial/Agricultural				
General Light Industrial	110	0.63	1,000 SF GFA	13% in, 87% out
Industrial Park	130	0.40	1,000 SF GFA	21% in, 79% out
Manufacturing	140	0.67	1,000 SF GFA	31% in, 69% out

5.3.2 Traffic Impact Study Components

After it is determined that a TIS is required for a development, the permit applicant shall have a meeting or conference call with the local government to determine the required components of the study. Figure 5-1 shows typical components of a TIS.

<ol style="list-style-type: none">1. Executive Summary2. Purpose<ul style="list-style-type: none">• Overview of Development• Analysis Scenarios3. Existing Traffic Conditions<ul style="list-style-type: none">• Site Description• Study Area• Roadway Characteristics• Site Accessibility• Existing Traffic Data• Existing Traffic Conditions Analysis4. Future "No Build" Traffic Conditions (as applicable)<ul style="list-style-type: none">• Future Roadway Improvements• Background Traffic Growth• Future "No Build" Traffic Volumes• Future "No Build" Traffic Conditions Analysis5. Future "Build" Traffic Conditions<ul style="list-style-type: none">• Trip Generation• Trip Distribution• Trip Assignment• Future "Build" Traffic Volumes• Future "Build" Traffic Conditions Analysis• Traffic Signal Warrant Analysis (as applicable)• Turn Lane Warrant analysis (as applicable)6. Conclusions/Recommendations7. Appendices<ul style="list-style-type: none">• Proposed Site Layout• Traffic Count Data• Existing Capacity Analysis• Signal Warrant Analysis (as applicable)• Future "No Build" Capacity Analysis (as applicable)• Future "Build" Capacity Analysis

Figure 5-1: TIS Typical Outline

5.4 Inter-Agency Coordination

Developments are often constructed adjacent to or near state-maintained roadways without having a direct access to them. If these developments generate a large number of vehicular trips, then the traffic operations on the state-maintained roadways can be affected. Because ALDOT does not review or provide permits for these developments, their construction and subsequent trip generation can result in inadequate roadway infrastructure (e.g. no turn lanes) on the state-maintained roadways. This can lead to unnecessary delays and crashes. See Figure 5-2.

If it is determined that a traffic impact study is required based on the trip generation, then the initial scoping discussion should include an evaluation of the required study area and the need for other agencies' involvement. If it is expected that the traffic impact will extend into another governing agency's jurisdiction, the developer and local government should also coordinate with the adjacent authority.

It is through a cooperative relationship between ALDOT and local governments that the safety and operational benefits of access management can be fully realized on all roads in Alabama.

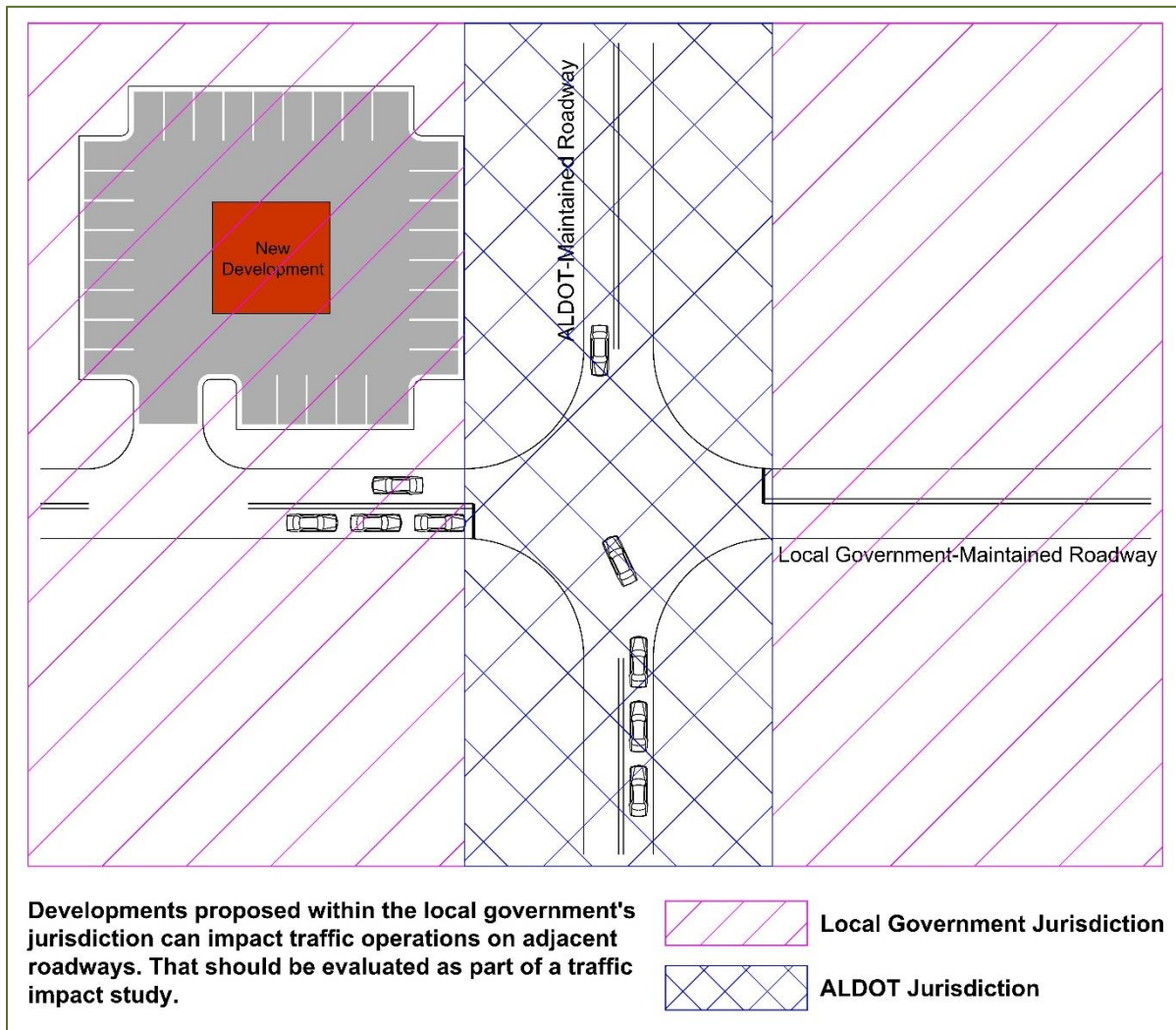


Figure 5-2: Inter-Agency Coordination

5.5 Appeals and Variance Procedures

For special circumstances where it is infeasible to meet the minimum access management criteria set out in this policy document, the applicant shall submit a detailed description and explanation of variation to the reviewing agency. The statement shall address both the constraining site conditions and the serviceability and safety of the roadway(s) to which the application applies. Proposed variations will be evaluated according to the following criteria (including but not limited to):

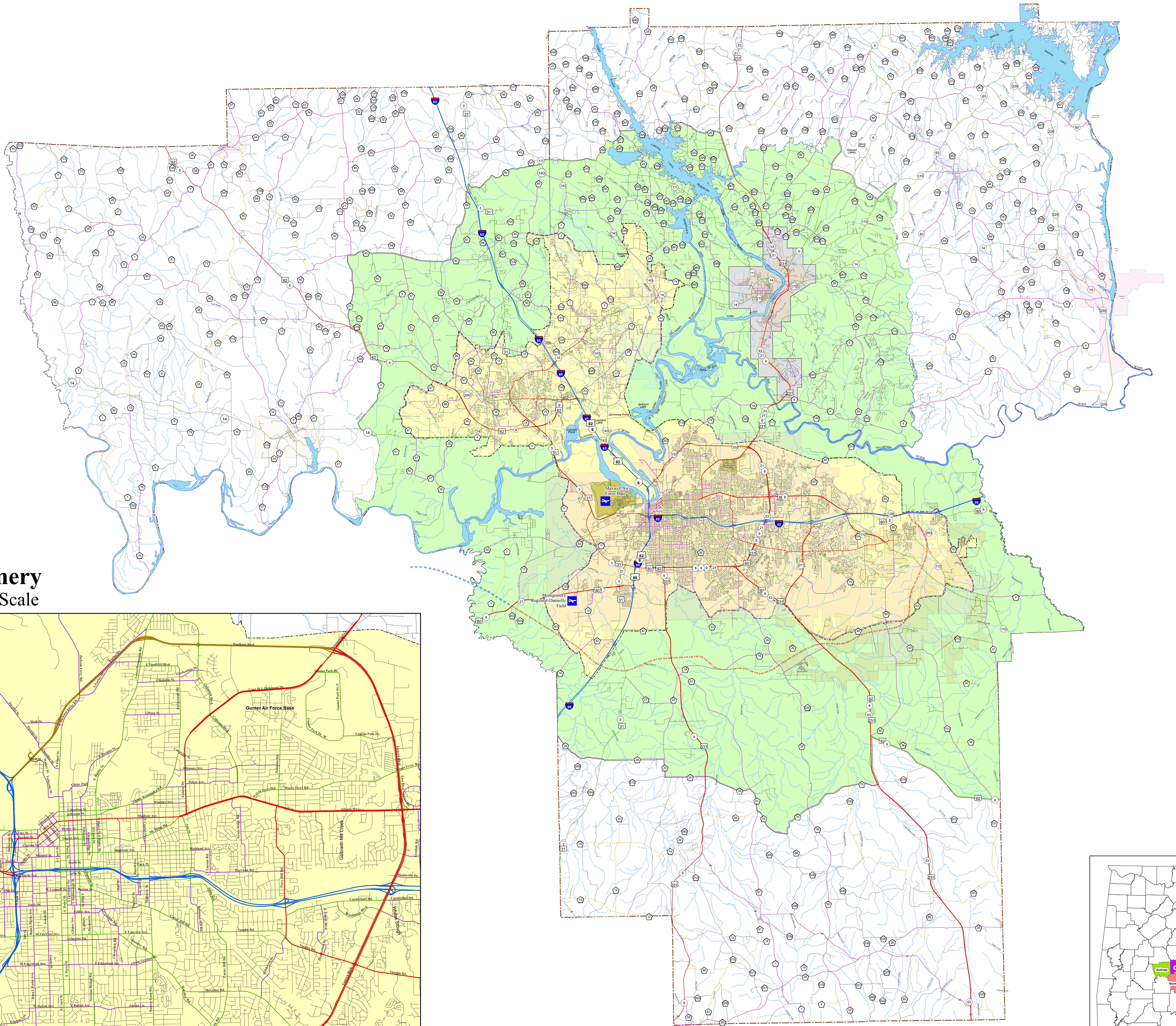
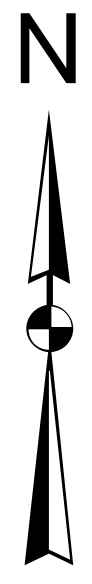
- Denial of the requested variations will result in loss of reasonable access to the site.
- The requested variations are reasonably necessary for the convenience and welfare of the public.
- All reasonable alternatives that meet access requirements have been evaluated and determined to be infeasible.
- Reasonable alternative access cannot be provided.

The applicant must submit written justification for the requested variation including any associated traffic impact studies deemed applicable by the applicant or as required by the reviewing agency. Restrictions and conditions on the scope of the permit will be imposed as required to keep potential hazards to a minimum. The permit may contain specific terms and conditions providing for the expiration of the variation if in the future the grounds for the variation no longer exist.

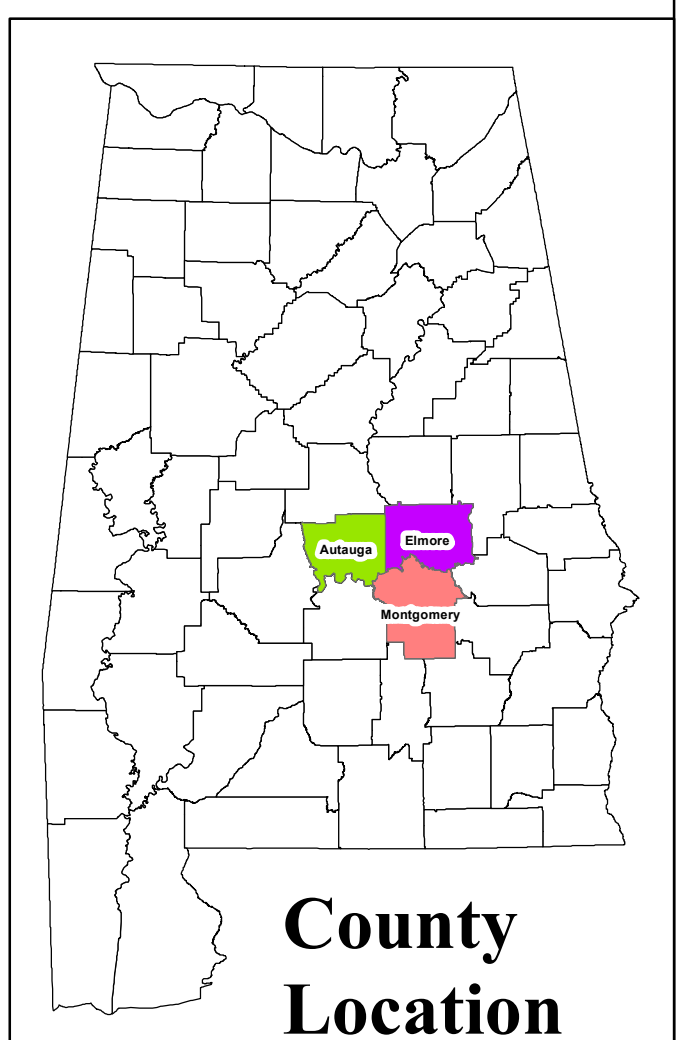
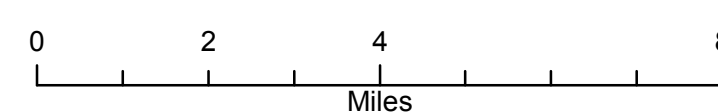
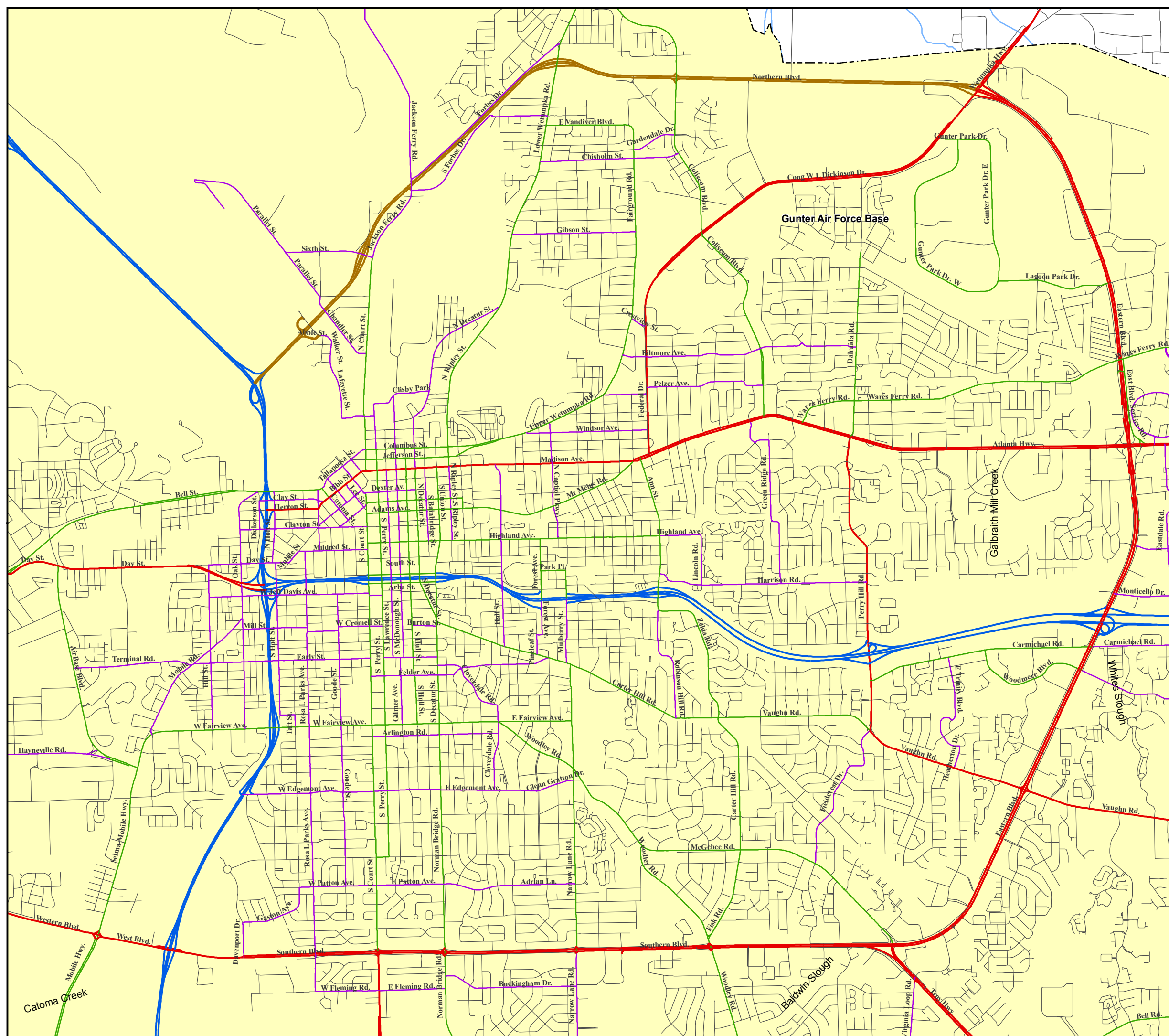
References

1. Alabama Department of Transportation. *Access Management Manual*. 2014. Montgomery, AL.
2. American Association of State Highway Transportation Officials. 7th Edition. 2018. *A Policy on Geometric Design of Highways and Streets*. Washington D.C.
3. Federal Highway Administration. *Alternative Intersections/Interchanges: Informational Report (AIR)*. 2010. Washington D.C.
4. Federal Highway Administration. *Manual on Uniform Traffic Control Devices*. 2009. Washington D.C.
5. Institute of Transportation Engineers. *Trip Generation Manual*. 10th Edition. Washington D.C.
6. Transportation Research Board. *Access Management Manual*. 2nd Edition. 2014. Washington D.C.
7. Transportation Research Board. *Access Management Application Guidelines*. 2016. Washington D.C.
8. U.S. Department of Transportation. *Analysis of Crossing Path Crashes*. 2001. Washington D.C.

Appendix A
Montgomery MPO
Functional Classification Map



Montgomery
Inset not to Scale



County Location

CERTIFICATION

The Highway Functional Classification and Federal Aid Urban Area Boundary depicted hereon are based on the data from the cooperative, comprehensive and continuing transportation planning process and have been presented to appropriate local officials for their approval.

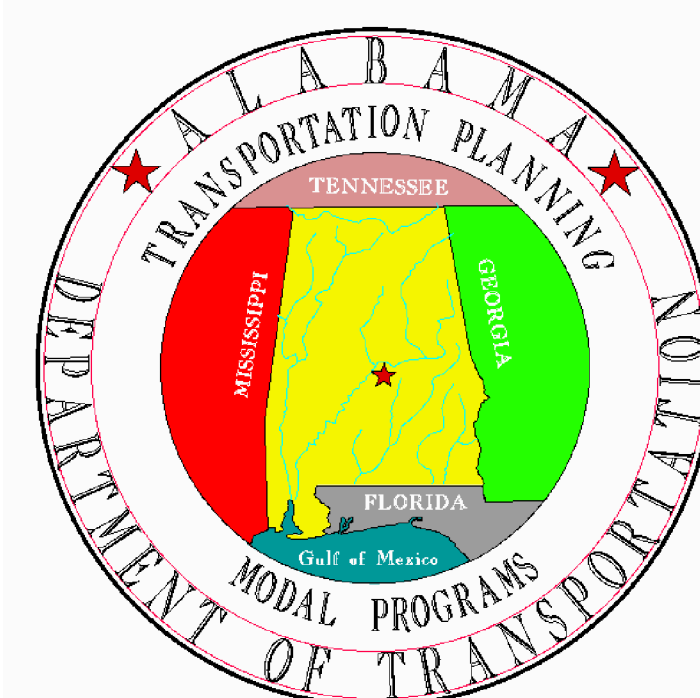
Chairperson Metropolitan Planning Organization	_____	Date	_____
Director Alabama Department of Transportation	_____	Date	_____
Division Administrator Federal Highway Administration	_____	Date	_____

Approved : 3/31/2014

REVISIONS

Description	Date	FHWA	Comments

Montgomery MPO
2010



Legend

- | | | |
|------------------------|------------------------|---------------------------|
| HFC 2010 FHWA | Proposed HFC | 2010 Adjusted MPO |
| Interstate - 1 | 1 - Interstate | 2010 Adjusted MPA |
| Expressway - 2 | 2 - Freeway/Expressway | 2010 Small Urban Adjusted |
| Principal Arterial - 3 | 3 - Principal Arterial | City Limits |
| Minor Arterial - 4 | 4 - Minor Arterial | National Atlas Airport |
| Major Collector - 5 | 5 - Major Collector | Department of Defense |
| Minor Collector - 6 | 6 - Minor Collector | Lakes - Rivers |
| Local - 7 | | Streams |
-
- | | |
|--|-------------------------|
| | Interstate Route Shield |
| | US Route Shield |
| | State Route Shield |
| | County Route Shield |

Appendix B

Access Management Retrofit Techniques

Retrofit Techniques

Strategy: Limit the Number of Conflict Points

1. Install median barrier with no direct left-turn access
2. Install raised median divider with left-turn deceleration lanes
3. Install one-way operations on the highway
4. Install traffic signal at high-volume driveways
5. Channelize median openings to prevent left-turn ingress and/or egress maneuvers
6. Widen right through lane to limit right-turn encroachment onto the adjacent lane to the left
7. Install channelizing islands to prevent left-turn deceleration lane vehicles from returning to the through lanes
8. Install physical barrier to prevent uncontrolled access along property frontages
9. Install median channelization to control the merge of left-turn egress vehicles
10. Offset opposing driveways
11. Locate driveway opposite a three-leg intersection or driveway and install traffic signals where warranted
12. Install two one-way driveways in lieu of one two-way driveway
13. Install two two-way driveways with limited turns in lieu of one standard two-way driveway
14. Install two one-way driveways in lieu of two two-way driveways
15. Install two two-way driveways with limited turns in lieu of two standard two-way driveways
16. Install driveway channelizing island to prevent left-turn maneuvers
17. Install driveway channelizing island to prevent driveway encroachment conflicts
18. Install channelizing island to prevent right-turn deceleration lane vehicles from returning to the through lanes
19. Install channelizing island to control the merge area of right-turn egress vehicles
20. Regulate the maximum width of driveways

Retrofit Techniques

Strategy: Separate Base Conflict Areas

1. Regulate minimum spacing of driveways
2. Regulate minimum corner clearance
3. Regulate minimum property clearance
4. Optimize driveway spacing in the permit authorization stage
5. Regulate maximum number of driveways per property frontage
6. Consolidate access for adjacent properties
7. Require highway damages for extra driveways
8. Purchase abutting properties
9. Deny access to small frontage
10. Consolidate existing access whenever separate parcels are assembled under one purpose, plan, entity, or usage
11. Designate the number of driveways regardless of future subdivision of that property
12. Require access on collector street (when available) in lieu of arterial access

Strategy: Limit Speed Adjustment Problems

1. Install traffic signals to slow highway speeds and meter traffic for larger gaps
2. Restrict parking on the roadway next to driveways to increase driveway turning speeds
3. Install visual cues of the driveway
4. Improve driveway sight distance
5. Regulate minimum sight distance
6. Optimize sight distance in the permit authorization stage
7. Increase the effective approach width of the driveway (horizontal geometrics)
8. Improve the driveway profile (vertical geometrics)
9. Require driveway paving
10. Regulate driveway construction (performance bond) and maintenance
11. Install right-turn acceleration lane
12. Install channelizing islands to prevent driveway vehicles from backing onto the arterial
13. Install channelizing islands to move ingress merge point laterally away from the arterial
14. Move sidewalk-driveway crossing laterally away from the arterial.

Retrofit Techniques

Strategy: Remove Turning Vehicles from Through Lanes

1. Install two-way left-turn lane
2. Install continuous left-turn lane
3. Install alternating left-turn lane
4. Install isolated median and deceleration lane to shadow and store left-turning vehicles
5. Install left-turn deceleration lane in lieu of right-angle crossover
6. Install median storage for left-turn egress vehicles
7. Increase storage capacity of existing left-turn deceleration lane
8. Increase the turning speed of right-angle median crossovers by increasing the effective approach width
9. Install continuous right-turn lane
10. Construct a local service road
11. Construct a bypass road
12. Reroute through traffic
13. Install supplementary one-way right-turn driveways to divided highway
14. Install supplementary access on collector street when available
15. Install additional driveway when total driveway demand exceeds capacity
16. Install right-turn deceleration lane
17. Install additional exit lane on driveway
18. Encourage connections between adjacent properties (even when each has arterial access)
19. Require two-way driveway operation where internal circulation is not available

Appendix C

Sample Access Management Resolution

SAMPLE
RESOLUTION _____
ACCESS PERMITS

WHEREAS, heretofore the _____ did, for the protection of the public welfare, the protection of its public roads, and for the purposes therein stated, adopt Resolution _____; and

WHEREAS, the _____ has and does hereby find and determine that in order to further protect the traveling public in _____ and the public rights-of- ways therein and to protect the general welfare, health, and safety of its citizens and the traveling public using the public highways, roads, rights-of-ways and highway system within _____, the aforesaid Resolution should be supplemented as hereinafter provided; and

WHEREAS, it is the responsibility of the _____ to ensure proper design, construction, maintenance, and operation of its streets, roads, utilities, driveways, highways, bridges, points of access thereto, and other associated user activities connecting to, using, and/or occurring within these public rights-of-ways, and

WHEREAS, the _____ has and does hereby find that in order to protect and provide for the general welfare and safety of the traveling public and to protect the public highway and road system within _____, it is necessary to provide criteria and conditions which must be met by any person, firm, corporation, or entity seeking to access or connect roads, streets, or highways, or any part thereof, to any _____ public road, highway, highway system, or any part thereof, and to prohibit any access or connection to the _____ highways, streets, roads, or the highway system, which do not meet with and conform to proper engineering design and which do not have the approval of the _____ Engineer or other designee of the _____:

IT IS, THEREFORE HEREBY RESOLVED AND, SEPARATELY AND SEVERALLY, ORDAINED AND ORDERED AS FOLLOWS:

1. No person, firm, corporation, or other entity, public or private, shall construct or cause to be constructed or allow any highway, driveway, road, alley, street, or other roadway, or any aspect or part thereof, to connect to or otherwise access or allow motor vehicle traffic on or onto any _____ maintained public alley, road, street, or highway right-of-way, or any part thereof, without first applying for and obtaining an Access Permit from the _____, acting by and through the _____ Engineer or other designee.

2. All access and Access Permits to _____ maintained roads shall be subject to approval by the _____ Engineer. No Access Permit will be granted or approved which does not properly address drainage, sight distance, and other safety criteria including proper lane widths, guardrail, front and back slopes, right-of-way encroachments, or pavement build-up to support anticipated future traffic on the public highway and highway system at affected points, as established and determined to be appropriate by the _____ Engineer

and the _____.

3. Compliance with all requirements of the Access Permit are the responsibility of the property owner or developer or entity applying for same, except in the case of driveways for individual single family residential properties in which case the _____ Highway Department may provide labor for installation of driveway pipes as long as all materials are paid for by the owner and are contained within the public right-of-way. Subdivisions of real property and all other property owners, developers, and other entities, adjacent to, accessing, or along or connecting to existing County roads, must also comply with Access Permit requirements at the owner's expense.

4. All subdivisions of real property and all developments, along, adjacent to, or accessing existing paved or unpaved _____ public roads, and any person or entity seeking to connect a highway, street, alley, or road or other public or private way, thereto, shall be required to improve and upgrade such existing public road and connecting roads, and associated drainage facilities, to the extent required by the _____ Engineer and/or the _____. These improvements may include, but are not limited to, the construction of additional lanes to increase capacity, left turn lanes, deceleration lanes, traffic signals, guardrail, clear zones, or other improvements deemed necessary by the _____ Engineer or as determined by the _____. Existing highways, streets, and roads may be required to be upgraded in order to provide for future anticipated traffic demand and/or traffic volume increases.

5. Existing drainage structures including culverts, bridges, and ditches, may be required to be upgraded or replaced as determined advisable by the _____ Engineer or as required by the _____.

6. Any utility installation that is required to serve the subdivision or development or which must be relocated as a result of the required roadway or drainage improvement is the responsibility of the owner or developer thereof. Utility installation or relocation must be performed in accordance with the requirements of the _____ Engineer. All costs associated with the installation or relocation of utilities must be borne by the developer or owner.

7. Additional right-of-way may be required by _____ in order to be able to properly construct the required roadway and drainage improvements or utilities. The developer or traffic generator or applicant for an Access Permit is not necessarily entitled to an exclusive use of any excess capacity of the existing roadway or any right-of-way that may be available and suitable for construction or any right-of-way in excess of that which is necessary to construct improvements required by the _____ Engineer or as required by the _____. The developer, owner, or applicant for an Access Permit is responsible for all costs associated with acquiring additional right-of-way.

8. Design and construction plans which show all of the proposed public improvements must be submitted to the _____ Engineer for review and approval. Improvements which are required in support of a development which is under the jurisdiction

and authority of the _____ Planning Commission must submit plans as a part of their application to the _____. All other plans should be submitted directly to the _____ Highway Department and the _____ Engineer. All such plans must bear the signature and seal of a professional engineer licensed to practice in the State of Alabama.

9. Prior to approval, an estimate of all costs of the proposed improvements shall be submitted by applicant to the _____ Highway Department for review and approval. Upon approval by the _____ Engineer, a bond in form and substance as approved by the _____, with an acceptable surety, in the amount not less than 125% of the approved cost, must be made and posted by the Access Permit applicant with the _____ Development Services bonding the proper and timely completion of the improvements specified. Construction of any public improvement or any construction in the right-of-way must not commence until written approval has been granted by the _____ Engineer.

10. If construction is not substantially commenced within one year from date of issuance of an Access Permit, or if once commenced applicant fails to continuously and satisfactorily work toward completion of the project according to the approved construction plans, the application and approval thereof will be void and application for an Access Permit must be then resubmitted. Any resubmitted application for an Access Permit and approval or rejection thereof would take into consideration any additional improvements or change in construction or design based on conditions which the County Engineer then deems necessary.

11. No building permits will be issued by the _____ without access approval from the _____ Highway Department in cases where the driveway or roadway providing ingress and egress accesses or connects to a _____ maintained public road.

12. Regardless of any provisions contained herein to the contrary, an individual seeking access for the purpose of ingress and egress to only one single family residence shall be required to obtain an Access Permit to be issued by the County Engineer allowing same, but shall not be required to present engineering studies and detailed construction plans unless the County Engineer determines that such is necessary due to particular safety, engineering, or other concerns associated with that specific point of intended access.

13. In the event any person or entity shall gain, establish or allow access to or otherwise connect or allow the connection of any public or private highway, street, alley or road or other public or private way or facility to any _____ highway or any part of the highway system being operated or maintained by _____, in violation of any part of this ordinance or resolution or without first obtaining an Access Permit as herein provided, and without the express written permission of the _____, the _____ acting through the County Engineer shall have the additional right to place impassable barricades between the traveled portion of the County road or right of way and the point of unpermitted access, thus preventing entry onto the _____ highway system and ingress and egress thereto.

14. Any person, firm, corporation, or entity who or which violates any part or portion of this Ordinance and/or Resolution or otherwise connects or allows the connection to any _____ public road or right of way of any road, street, highway, alleyway, or other easement or right-of-way, or any other public or private way or thoroughfare designed for or allowing the traversing or use of motor vehicles in violation of the above and foregoing requirements, or any portion, section, or aspect thereof without first obtaining a written Access Permit to access the same as provided herein, shall, in addition to all other remedies available to _____, including but not limited to injunction and assessment of damages, be subject to and liable for the payment of civil penalties and reimbursement to _____ in an amount equal to all costs or damages incurred by _____, all costs and expenses incurred by _____, the _____ Highway Department or the _____ Engineer in order to bring said access point and use of the _____ public road system into compliance with the provisions hereof and the costs, including, but not being limited to, the cost of design, construction and installation of all improvements necessary to comply with the requirements herein made, and for the cost of physically preventing ingress and egress to and from the _____ public highway system. Nothing contained herein shall, however, be interpreted to limit _____ to any one or more available legal remedies, and the provisions herein providing for remedies shall be cumulative to all other remedies available now or in the future.

15. The requirements hereof shall be cumulative to any other legally imposed conditions or requirements provided by law or by _____ or the _____ Engineer.

16. The provisions of this Resolution and/or Ordinance are severable. If any portion hereof shall be declared invalid by any court of competent jurisdiction, such declaration shall not affect the remaining portions hereof.

17. The provisions hereof shall become effective immediately upon the adoption by the _____, and all municipalities in _____ shall be advised of the adoption hereof and be requested to withhold any and all permits for developments accessing _____ public highways and roads until such Access Permits have been approved and issued by _____ acting by and through the _____ Engineer or other designee of the _____.

Appendix D

Sample Access Request Form

ACCESS PERMIT SAMPLE

Maintaining Agency

Address

Phone # and/or email address

Date: _____

Applicant Name

Contractor Name (if different)

Mailing Address

Mailing Address

City State Zip

City State Zip

() - () -
Phone Fax

() - () -
Phone Fax

E-Mail Address

Property Information

Address

Landowner Name (Print)

Type of Access Requested

- Residential
- Multi – Family Residential
- Commercial
- Agricultural
- Other: _____

A sketch showing the location of requested access on property, including dimensions from nearest features, may be required along with this application.

Requested access location shall be marked with flagging prior to application being turned in for approval.

Please allow 2 weeks turnaround time for the application to be processed.

By signing below, the applicant agrees that they have seen and understand the Montgomery MPO Access Management Policy and the attached drawing, and they agree that the driveway grade will be constructed and maintained in accordance.

Signature of Applicant

Signature of Landowner (if different from Applicant)

FOR MAINTAINING AGENCY USE ONLY

Driveway pipe required: YES or NO If yes, size: _____

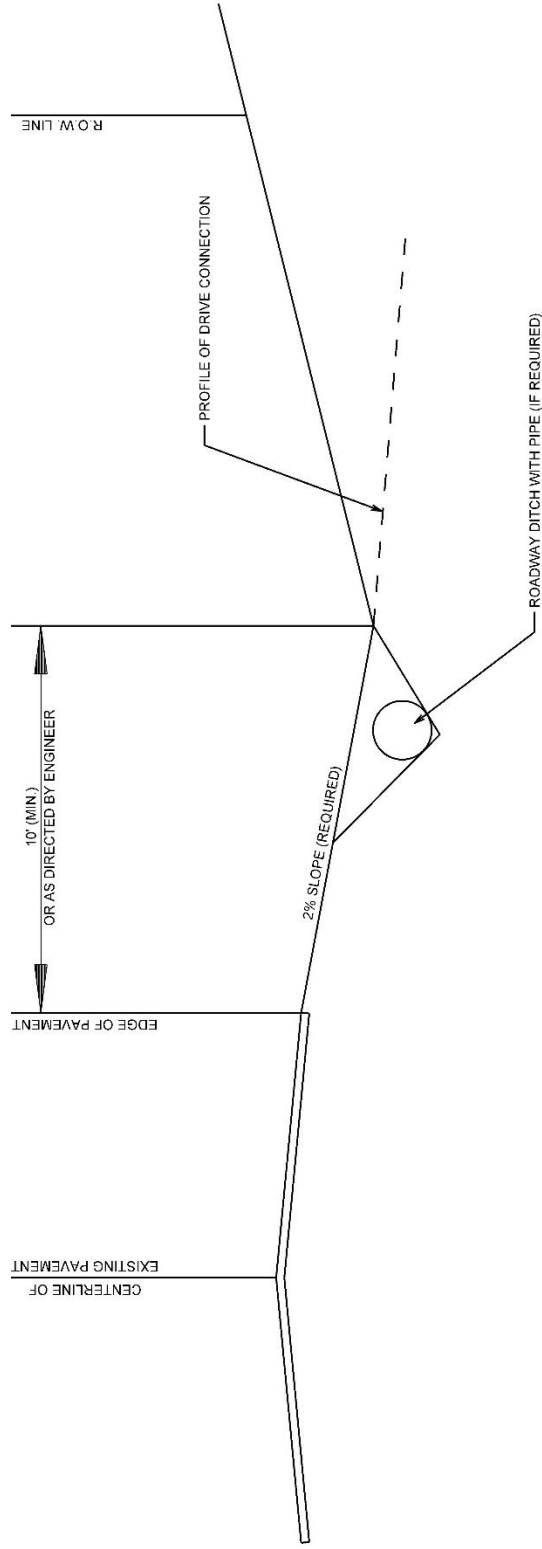
Adequate sight distance: YES or NO

Permit Approved By Maintaining Agency

Date

Permit Number

TYPICAL PROFILE REQUIRED FOR DRIVEWAY CONNECTION
MAINTAINING AGENCY



NOTES

1. MAINTAINING AGENCY CAN ONLY PERFORM WORK ON RIGHT OF WAY AND WORK WILL BE RESTRICTED TO ACCESS REQUIREMENT AS DETERMINED BY ENGINEER.
2. ALL WATER MUST DRAIN AWAY FROM ROADWAY.
3. ANY INSTALLATION THAT WILL NOT COMPLY WITH THIS DRAWING MUST BE PRE-APPROVED BY THE MAINTAINING AGENCY ENGINEER.