

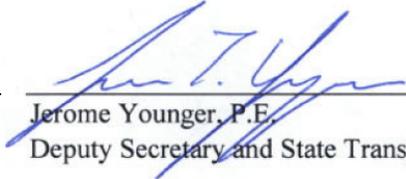
KDOT Access Management Policy

January 2013



Certification

Pursuant to the authority and responsibility granted to the Kansas Department of Transportation by the laws of the State of Kansas as set forth generally and principally, but not exclusively, in K.S.A. 68-169, 68-404, 68-413b, and 68-1901, and pursuant to the exercise of police power for the protection of the public's health, safety and welfare; I, Jerome Younger, Deputy Secretary and State Transportation Engineer for the Kansas Department of Transportation, do hereby certify that I have examined and approved the contents of the ***Kansas Department of Transportation Access Management Policy***. I hereby declare that the Kansas Department of Transportation officially adopts this revised ***Access Management Policy*** for the State Highway System effective January 31, 2013, which replaces the previous *Corridor Management Policy*, dated January 13, 2003. This policy is intended to apply to new points of ingress and egress to the Kansas State Highway System as well as to changes in existing ingress and egress whenever practical and to serve as guidelines for the issuance of associated Highway Permits for ingress and egress.



Jerome Younger, P.E.
Deputy Secretary and State Transportation Engineer

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KDOT Access Management Unit Mission Statement



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“To manage state highway access and create transportation corridors that reasonably balance safety, efficiency and economic activity.”

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How to use the KDOT Access Management Policy

The *KDOT Access Management Policy* combines—in one place—

- A description of access management and its purpose and benefits
- KDOT’s goals and organizational structure to address access management needs
- Relationships with local and regional planning and coordination with others
- Technical information and criteria for the location and design of access
- The application process for a Highway Access Permit
- Provisions for constructing and maintaining access

The policy is not intended to be a “cookbook” for the general public, but rather is a resource to be applied by professionals and implemented with the exercise of good engineering judgment.

Acronyms and Definitions

Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in Section 8.1 of Chapter 8. Italicized terms signify terms defined in Section 8.2 of Chapter 8.

Introduction

Chapter 1 describes the function and purpose of the *KDOT Access Management Policy* (“Policy”), how it was developed, and the roles of KDOT’s Access Management Unit (“AMU”), the Access Management Advisory Committee, and KDOT’s District and Area offices. It includes KDOT’s access management mission statement and explains the four core areas and three goals of the Access Management Unit.

What is access management

Chapter 2 provides an overview of *access management*. It includes a discussion of the safety, efficiency, and economic activity benefits access management can generate and provides case examples from Kansas and around the country.

Access planning

Chapter 3 describes the importance of local and regional planning for *access management* and the planning instruments KDOT uses for access planning in cooperation with our local partners.

Transportation engineering

Chapter 4 discusses location and design of access points. It also covers topics related to access, such as medians, turn lanes, drainage, parking, bus turn-outs, mailbox turnouts, and more.

Access permitting

Chapter 5 explains the process of applying for and obtaining an approved *Highway Access Permit*. This permit is required to construct a new *access point* or modify an existing access point on a *state highway*. The chapter provides instructions to apply for the permit and describes KDOT’s approval process.

Coordination and awareness

Chapter 6 describes how the KDOT AMU coordinates internally and externally with local stakeholders to implement good access management practices across Kansas. It also covers KDOT’s outreach efforts to *local public authorities* and planning and engineering organizations to raise awareness regarding the benefits of *access management*.

Construction and maintenance of access

Chapter 7 defines the provisions needed to construct an *access point* pursuant to a *Highway Access Permit*, obtain acceptance from KDOT, and maintain the access point.

Appendices

Chapter 8 contains contact information, District Access Management Plan Maps, District Access Control Maps, KDOT maintenance areas, and KDOT access management forms.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. Italicized terms signify terms defined in section 8.2 of Chapter 8.

Chapter 1

Introduction

Maintaining and improving the balance among safety and efficiency of Kansas highways along with economic activity throughout the state is an important goal of the *Kansas Department of Transportation* (KDOT). This *Access Management Policy* (Policy) describes tools and procedures to apply location and design criteria to obtain a reasonable balance among access to properties abutting *state highways*, any future or proposed corridors, or any *City Connecting Links* and the safety and efficiency of these routes. The Policy is designed as a guide to be used by KDOT employees and external transportation partners as they plan for access to *state highways*.

The Policy applies to all routes on the *state highway system* and *city connecting links*, which for the purposes of this Policy, are together considered to be *state highways*.



1.1 Purpose of the *KDOT Access Management Policy*

Each *access point*, or driveway, along a highway introduces potential for conflict and friction within the highway network. Appropriate management and design of access is intended to reduce conflict and friction which can improve safety and reduce delay, respectively. Safety and efficiency on the state highway system supports mobility for economic activity and vital communities.

The Federal Highway Administration (FHWA) identified corridor access management as one of the nine proven safety countermeasures that played a major role in decreasing the national highway fatality rate in 2007–2010. FHWA encourages corridor access management because of its effectiveness at improving highway safety.¹

¹ U.S. Department of Transportation, Federal Highway Administration. Tony Furst, Acting Associate Administrator for Safety, Memorandum. “Action: Promoting the Implementation of Proven Safety Countermeasures.” January 12, 2012.

This Policy describes the agency’s approach to *access management*, promote the use of proper access management techniques and criteria, and explain the application process for a *Highway Access Permit*. The techniques and criteria described within this Policy provide reasonable access for abutting landowners while preserving the flow of traffic, and can be applied by KDOT and its transportation partners.

1.2 How the policy was developed

The Policy was generated through a process of technical evaluation and meaningful interaction with transportation stakeholders. Specifically, to create this Policy, KDOT’s *Access Management Unit* (AMU) did the following:

- Collected and analyzed current and emerging *access management* best practices from transportation departments and research agencies within Kansas and across the country.
- Studied and evaluated policy and process framework practices within Kansas and across the country to select the most appropriate framework to support KDOT’s operations.
- Evaluated access and engineering criteria, the KDOT *Route Access Control Designations*, and the KDOT *Route Classification System* to identify a system and criteria for access decision making in Kansas which leads to a reasonable balance among safety, efficiency, and economic activity.
- Obtained input and feedback from internal and external stakeholders on what has been effective in the past, what could be improved upon, and ultimately to validate that this updated policy meets the majority of their needs.
- Identified tools to increase awareness about the benefits of access management, coordinate effective access management within communities, and support the effective implementation of this Policy.

1.3 Access management at KDOT

The AMU administers the Policy to provide for consistent decision-making related to access to state highways. The AMU provides coordination and awareness regarding access within KDOT and with transportation partners, transportation planning expertise with an emphasis on land-use and community planning, assistance with the application of transportation engineering criteria in the Policy and oversees the *access permitting process* in order to achieve the AMU’s mission (Figure 1-1).

Figure 1-1. KDOT Access Management Unit mission statement



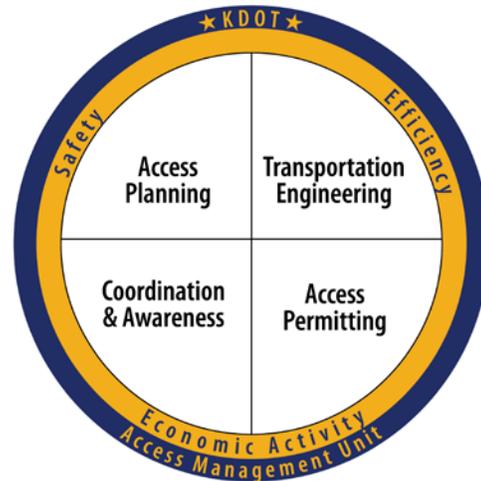
1.4 Access Management Unit goals and core areas

The goal of KDOT and the AMU is to achieve a reasonable balance of **safety**, **efficiency**, and **economic activity**.

There are four general disciplines, or core areas, shown in Figure 1-2, that must work together to create well-managed access. These core areas are the focus of the AMU and consist of **access planning**, **transportation engineering**, **access permitting**, and **coordination and awareness**.

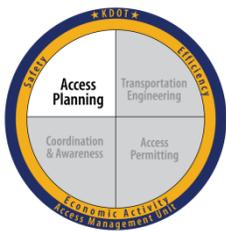
These core areas are equal components that create a foundation used to achieve a reasonable balance of safety, efficiency and economic activity.

Figure 1-2. KDOT Access Management Unit goals and core areas logo



Source: KDOT Access Management Unit

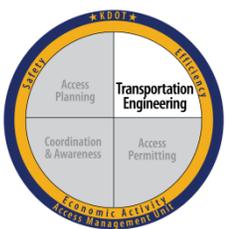
1.4.1 Access planning



Nationwide, there are countless examples of corridors where access decisions have been made incrementally as growth and development occur without due consideration for the area’s future. The end result is often an over-accessed corridor that is undesirable for motorists and pedestrians. The contrast to this is a well-managed corridor that provides safety features for vehicles, bicycles, and pedestrians with efficient traffic flow that supports economic activity. Access planning facilitates a well-managed corridor.

The AMU, in cooperation with *District Engineers* and *Area Engineers*, attempts to engage transportation stakeholders in planning future access points to state highways and retrofitting existing connections that may not meet current criteria. These planning efforts also encourage development of a complementary road network, such as frontage/backage roads and sidewalks, to reduce demand for direct highway access and encourage a wide-range of travel options. In this way, planning supports the creation of a transportation environment that provides safety, efficiency and is attractive to business investment while being livable and sustainable.

1.4.2 Transportation engineering

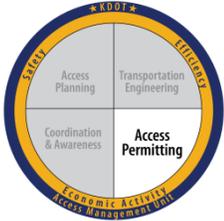


KDOT works to preserve safety and efficiency of traffic flow by applying principles of access management and sound transportation engineering when making access decisions. When access is requested, the agency will consider existing access, alternatives to direct highway access, and engineering factors pertaining to safety and efficiency before making a decision.

The engineering focus also includes assessing development impacts on the highway system by requiring and reviewing *traffic impact studies* (TIS). These investigations can be abridged or comprehensive and may include a traffic simulation modeling component.

As part of the access decision-making process, the AMU frequently coordinates with KDOT’s design and traffic engineers along with *District* and *Area* personnel. Other personnel, both internal and external, are also contacted on an as-needed basis.

1.4.3 Access permitting

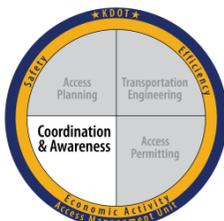


Access to the highway system is administered by KDOT through a permitting process. A landowner wanting new or changed access to a *state highway* must apply and be approved for a *Highway Access Permit*. The purpose of the permitting process is to evaluate applications for highway access in a consistent and fair manner with attention given to both property owners and the travelling public.

A Highway Access Permit is a legal agreement that creates a license for the right and privilege to use the *right-of-way* (R/W) for a specified purpose. Once issued, a permit specifies the following:

- Location and design of the access.
- The number of days within which the property owner must complete construction of the access.
- The type of use for which access is granted.
- Any conditions or limitations that have been imposed by KDOT.

1.4.4 Coordination and awareness



Highway access affects motorists, pedestrians, and bicyclists. KDOT therefore takes an active role in increasing awareness about *access management* with its transportation partners. The agency envisions that the heightened awareness of access management derived from this Policy and its associated educational outreach will result in better transportation decision-making that, in turn, results in a balance of safety, efficiency and economic activity throughout Kansas.

In addition to raising awareness, KDOT also strives to promote stakeholder coordination as part of the access decision-making process. Access decisions affect a wide range of stakeholders, both public and private, and, therefore, it is critical that productive channels of communication always remain open. Local governments are even encouraged to contact the AMU as a resource for local access issues.

1.5 Access Management Advisory Committee and KDOT’s District and Area offices

The KDOT Access Management Advisory Committee (Committee) was established as a standing committee to serve in an advisory role regarding access management issues. The Committee is primarily comprised of senior KDOT managers and is chaired by the Highway Access Manager. The Committee facilitates uniformity in the statewide implementation of the Policy and provides technical support and expertise to the AMU. The Committee meets on an as-needed basis at the request of the Highway Access Manager.

1.5.1 KDOT Districts and Areas

KDOT has divided the State of Kansas into six *Districts* for maintenance and administrative purposes. Each District is administered by a *District Engineer*. This is a senior manager position within KDOT and all Highway Access Permits are approved by the District Engineer or his/her designee.



Each District is further divided into three to six *Areas* for maintenance and administrative purposes. Each Area is administered by an *Area Engineer*. The access permitting process is initiated at the *Area office* and the *Area Permit Coordinator* is the first point of contact for questions or concerns about the highway access permitting process. All Highway Access Permits are reviewed by the Area Engineer or his/her designee before being forwarded to the District office for action.

Contact information for each Area office can be found in Chapter 8.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. Italicized terms signify terms defined in section 8.2 of Chapter 8.

Chapter 2

What is access management

The *Transportation Research Board (TRB) Access Management Manual* defines access management as “the systematic control of the location, spacing, design, and operations of driveways, median openings, interchanges, and street connections to a roadway.”

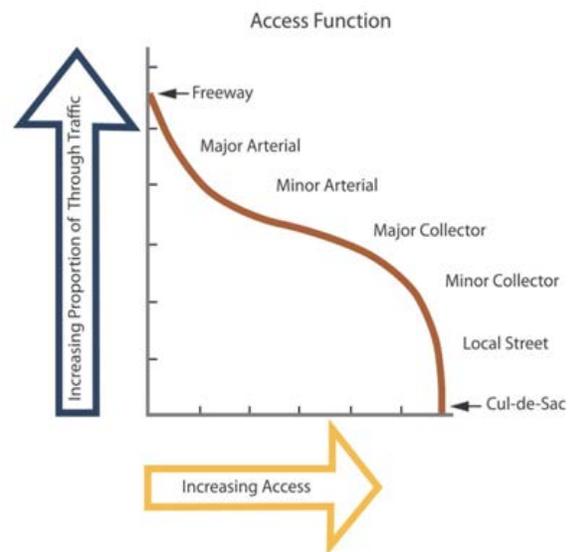
Managing access is important because each access along a roadway, whether a driveway or intersection, introduces potential for conflict and friction within the traffic stream. *Access management* also helps protect public investments in transportation by preserving safety and efficiency of traffic flow, thus reducing the need for costly and potentially invasive improvements.

Access management balances traffic safety and efficiency with reasonable property access along the wide range of roadway types (interstate, arterial, collector, and residential roadways). Figure 2-1 shows that as the amount of through traffic increases, access decreases. For example, freeways, whose primary function is to serve through traffic, have limited access—typically only occurring at grade-separated interchanges. On the other end of the spectrum are cul-de-sacs, which have no through traffic, but every lot has access to the roadway.

Common access-related features that will enhance safety and efficiency on the street system are

- Driveways or side streets properly spaced in proximity to major intersections.
- Driveways or side streets spaced far enough apart that one does not affect the other.
- Presence of left- and right-turn lanes, when appropriate, to store turning vehicles and remove them from through traffic.

Figure 2-1. Access related to road function



Source: *Conceptual Roadway Functional Hierarchy, 2003 TRB Access Management Manual*

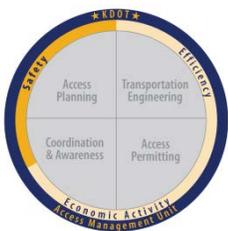
- Proper deceleration distance within left- or right-turn lanes.
- Traffic signals spaced to allow progression along a corridor.

In order to manage access on Kansas highways, the AMU focuses on four core areas (access planning, transportation engineering, access permitting, and coordination and awareness) as the center of its business practice. By focusing on implementing these four core areas, the benefits or goals of access management are achievable—safety, efficiency, and economic activity.

2.1 Benefits of access management

Managing access on roadways improves safety, efficiency, and economic activity. Motorists benefit from fewer decision points and traffic conflicts. Pedestrians benefit by crossing vehicle paths less often due to fewer driveways. Businesses benefit from a more efficient road system, which expands their market areas. The maintaining agency (state, city or county) benefits from being able to maintain safety and efficiency on the highway system while supporting economic activity.

2.2 Safety



A compelling benefit of access management is safety. National research consistently shows that about 40 percent of all crashes are access related.² The percentage is even higher in urban areas because there are more access points along urban roadways. As the number of access points along a roadway increases so do the number of conflict points. Conflict points occur where the paths of two or more roadway users cross. Each conflict point is a potential accident; conflict points can occur for any travel mode or between travel modes, such as when a vehicle crosses a pedestrian sidewalk.

The most likely cause of accidental death in the country is traffic crashes. Each day nationwide there are approximately 15,000 crashes and an average of 90 fatalities and 6,000 injuries which involve vehicles, bicycles, and pedestrians. The FHWA captured national data which showed that areas where access management policies were implemented experienced

- A 5 to 23 percent reduction in all crashes along two-lane rural highways.
- A 25 to 31 percent reduction in severe (injury/fatal) crashes along urban/suburban arterials.³

² National Highway Traffic Safety Administration, *Traffic Safety Facts 2009 (Early Edition)*

³ FHWA-SA-12-006, *Proven Safety Countermeasures: Corridor Access Management*

Figure 2-2 and Figure 2-3 identify vehicular conflict points and Figure 2-4 and Figure 2-5 identify pedestrian conflict points at sample intersections. These graphics compare the number of conflict points at intersections with and without access management techniques. These illustrate that well-employed access management, depicted in Figure 2-3 and Figure 2-5, reduces the number of conflict points at the sample intersections.

Figure 2-2. Vehicle conflict points at an intersection (without access management)

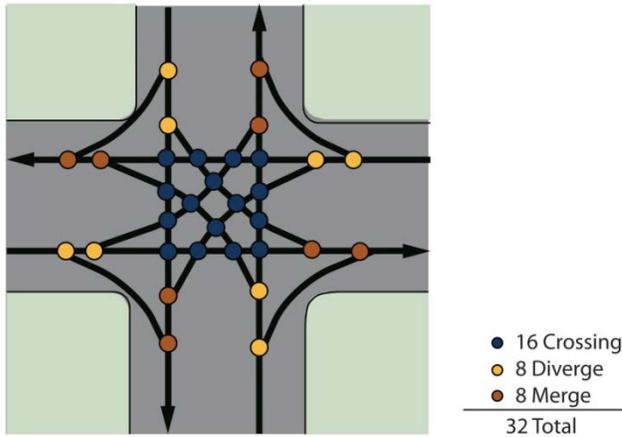


Figure 2-3. Vehicle conflict points in a directional median opening (managed access)

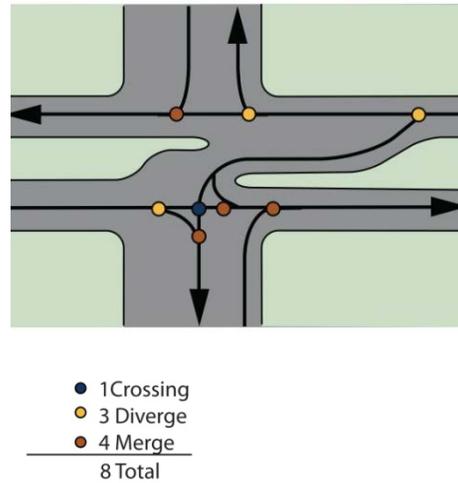


Figure 2-4. Pedestrian-vehicle and bicycle-vehicle conflict points at an intersection (without access management)

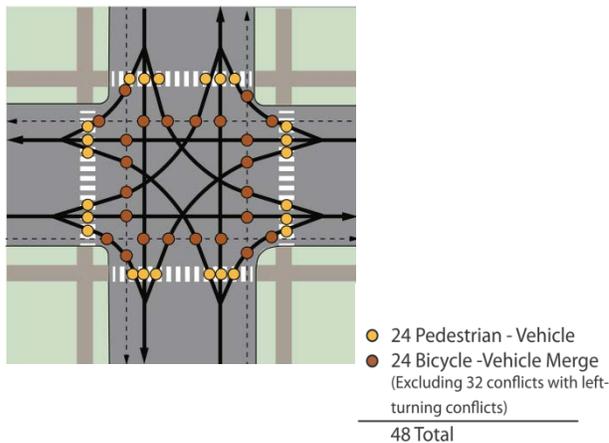
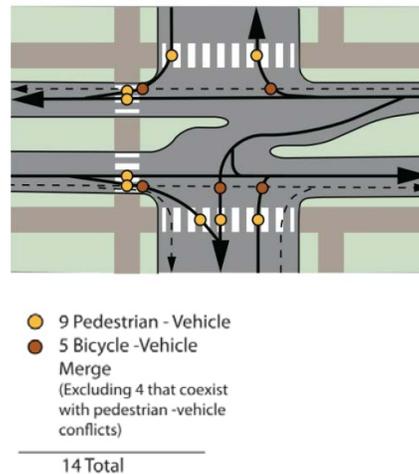
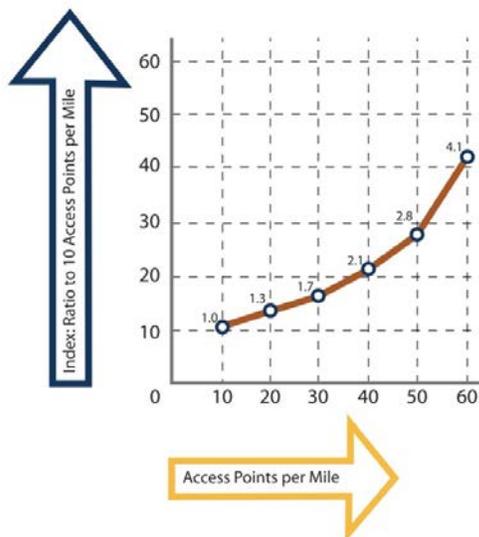


Figure 2-5. Pedestrian-vehicle and bicycle-vehicle conflict points in a directional median opening (managed access)



National research consistently concludes that as the number of access points increases, the number of crashes increase. Figure 2-6 shows the relative increase in crash rates as the total driveway density increases. Increasing the number of access points from 20 to 50 per mile will double the crash rate (crash ratio increases from 1.3 to 2.8).⁴

Figure 2-6. Ratio of crash rate vs. access points per mile



Access management relies heavily on the spacing between access points. The spacing recommended depends on the situation surrounding each access. Factors such as adjacent land use, highway speed, ingress and egress traffic, desirable left- and right-turn lane lengths, sight distance, and future plans are used to determine access spacing. Chapter 4, Transportation engineering, provides criteria for Kansas access spacing. In general, more space between each access creates a safer and more efficient highway.

Source: *Impacts of Access Management Techniques*, NCHRP 420, TRB 1999

⁴ Gluck, J., H.S. Levinson, and V. Stover. *Impacts of Access Management Techniques*, NCHRP Report 420, Washington, D.C.: TRB 1999.

2.2.1 Crashes at intersections—Kansas statistics

As shown in Table 2-1, an analysis of vehicle crashes in 2009 shows that nearly one in three crashes was in an *intersection* or was intersection-related. For fatal crashes, one in five was in an intersection or was intersection-related. While the statewide and intersection crash rates are lower than the national average (see Table 2-2), the AMU utilizes access management techniques to further improve intersection safety and decrease crash rates.

Table 2-1. Kansas intersection crash statistics in 2009

| | Kansas Statewide Statistics | | Intersection-Related ⁵ | |
|----------------------|-----------------------------|--------------------|-----------------------------------|--------------------|
| | Number of Crashes | % of Total Crashes | Number of Crashes | % of Total Crashes |
| Fatality | 348 | 0.6% | 72 | 21% |
| Injury | 13,925 | 22.8% | 5,657 | 41% |
| Property damage only | 46,900 | 76.7 % | 13,434 | 29% |
| Total | 61,173 | 100.0% | 19,163 | 31% |

Source: Kansas Department of Transportation, Accident Statics 2009

Table 2-2. National intersection crash statistics in 2009

| | National Statistics | | Intersection-Related (National Statistics) | |
|----------------------|---------------------|--------------------|--|--------------------|
| | Number of Crashes | % of Total Crashes | Number of Crashes | % of Total Crashes |
| Fatality | 30,797 | 0.6% | 6,770 | 22 % |
| Injury | 1,517,000 | 27.6% | 699,000 | 46% |
| Property damage only | 3,957,000 | 71.8% | 1,504,000 | 38% |
| Total | 5,505,000 | 100.0% | 2,209,770 | 40% |

Source: National Highway Traffic Safety Administration, Traffic Safety Facts 2009

⁵ Intersection-related includes accidents where the reporting officer marked the accident location code as either intersection or intersection-related.

2.2.2 National access management success—case studies

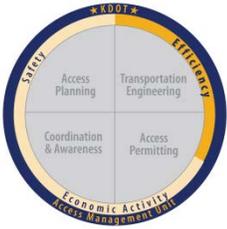
Other states with experience implementing access management strategies along selected corridors have documented the resulting benefits. Table 2-3 lists the benefits of selected corridor access management treatments from across the country. In all cases, the access management techniques decreased the crash rate, especially at *intersections*. The techniques used varied by location and were appropriate for that roadway.

Table 2-3. Benefits reported in selected case studies

| Case Study | | Reported Benefits | |
|--|--|---|--|
| Location | Description of Improvements | Speed | Safety |
| Arapahoe Road Denver, CO Parker Road, Denver, CO (5.2 miles) | Access-managed roads with physical medians, limited turns, and 1/2-mile traffic signal spacing | 40 mph in PM peak hour on both roadways, compared with 15 to 20 mph on non-access-managed arterials | Crash rate declined by 70% on Arapahoe and by 45% on Parker compared with other non-access-managed arterials |
| Oakland Park Boulevard, Ft. Lauderdale, FL (2.2 miles) | Physical median extended across 17 unsignalized driveways | 30% less delay | Crash rate declined about 10%, injury rate declined 28%, and 30% fewer mid-block median maneuvers after improvements |
| Jimmy Carter Boulevard Atlanta, GA (3.0 miles) | Two-way left-turn lanes on 4-lane road replaced by physical median, 6 through lanes, and protected left-turn lanes | Speeds reportedly increased | 32% drop in crashes with raised medians and 40% drop in crash rate with interim New Jersey barrier median |
| Memorial Drive Atlanta, GA (4.3 miles) | Two-way left-turn lanes on 6-lane road replaced by physical median; 6 through lanes, and protected left-turn lanes | | 40% drop in crashes and 37% drop in overall crash rate; 64% drop in left-turn crash rate |
| Route 47 Vineland, NJ (1.8 mile) | 4 narrow lanes replaced by 2 through lanes plus protected left-turn lane | PM peak hour speeds declined from 35 to 32 mph | 39% decline in total crashes and 86% decline in left-turn crashes |
| Route 130 New Jersey (4.3 miles) | Median openings closed and left-turn lanes installed | | 45% decline in crash rate |

Source: TRB Access Management Manual (2003) (modified)

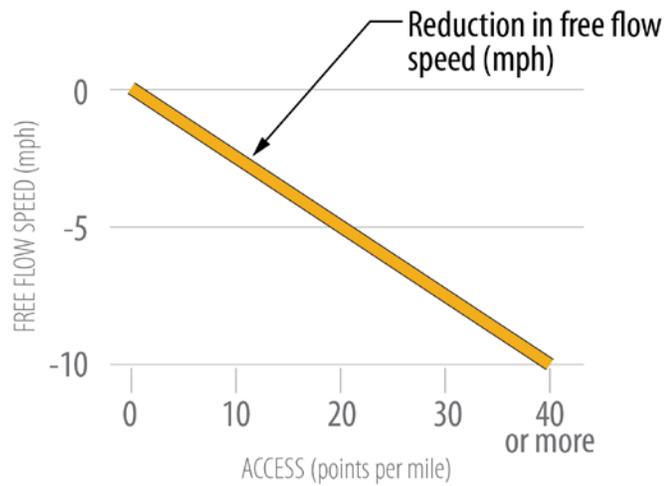
2.3 Efficiency



An efficient highway allows motorists to travel at a reliable speed, without encountering reoccurring congestion, and reach their destinations in a time that meets their expectations. Application of access management techniques preserves the public’s investment in the state highway system by extending the useful life of the facility; it is an efficient use of the taxpayers’ money. The AMU’s attention to the goal of efficiency on the state highway system results in improved safety for motorists and enhanced economic activity for Kansas.

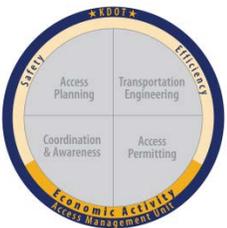
High numbers of access points per mile, with other variables remaining constant, reduce through-travel speeds and reduce efficiency of the highway (Figure 2-7). Access points create opportunities for motorists to enter and exit the highway. The entering and exiting turn movements create potential for conflict, which increases the potential for collisions, and increases the “friction” in the flow of traffic. Limiting the number of access points per mile by implementing access management strategies, allows motorists to reach their destination with less delay.

Figure 2-7. Travel speed vs. access density (local roads)



Source: Highway Capacity Manual 2010, Volume 2, Uninterrupted Flow, Exhibits 14-11 and 15-8, Transportation Research Board, 2010.

2.4 Economic activity



Access management promotes safe and efficient transportation corridors, which in turn support economic activity. The potential for improved economic development along a highway can occur when people and goods move effectively within a transportation network. When the network is safe, connected, efficient, and meets travelers’ needs economic activity can flourish. Access management supports economic activity by preserving the efficiency of the highway network and facilitating safe highway design.

Economic activity is encouraged by:

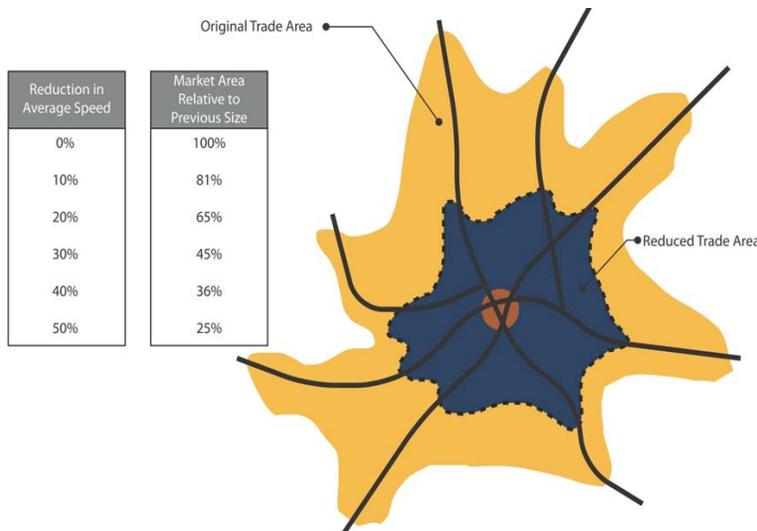
- More reliable travel times for personal and professional travels.
- Safe connections within the network.
- Efficiently reaching a destination of choice, rather than what is closest.

2.4.1 Access management and retail

Retail businesses have traditionally believed that more access is better. Retailers worry that if it is hard for a potential customer to get to them, the customer will go elsewhere. As a result, retailers prefer to have access from a major arterial rather than a local street, with two driveways rather than one. When access management calls for fewer driveways, retail businesses can feel threatened. However, research has shown that access management can improve a site’s accessibility.

Several studies have shown that the number of *driveways* to a site has minor influence on a customer’s decision to shop, especially when compared to the total travel time required to get to the site. Instead, factors such as the customer base, otherwise known as market area, are critical to business success. Market areas are determined by travel time and income levels. Although the average size of market area varies by business type, market area decreases as travel time increases. If a customer has to spend excess time traveling along a congested corridor to and from a specific business, the customer will find a similar business with shorter travel time. This relationship is illustrated in Figure 2-8. A reduction in the average travel speed of 30 percent will result in more than a 45-percent reduction in market area. As customer travel time increases due to lower speeds,

Figure 2-8. Affect of travel speed reduction on market area



Source: Florida Department of Transportation

congestion, and traffic signal delays, the retail market area shrinks.

Access management strategies assist retail businesses by decreasing customer travel time, making travel to and from the business convenient, and increasing roadway capacity.

The primary objective of access management is to locate the access points so they will provide access without reducing arterial performance. In Lenexa, Kansas, the 87th Street

Project between Pflumm Road and US 69 implemented access management through the corridor. Prior to the project, the 87th Street corridor was congested and difficult to navigate—many shoppers avoided the area because of it. The 87th Street Project implemented access management techniques such as raised medians; left-in, right-in, and right-out intersections; and consolidated access points. Businesses in the corridor were tentative about such changes and worried they would result in the loss of more customers. Today, those businesses are thriving and new businesses have developed along the corridor. Travelers surveyed remark about the ease of travel through the corridor and lack of congestion. Customers are drawn to shop in the area because it is easy to access a wide range of businesses. Access management techniques improved the economic vitality of the corridor by improving traffic flow and accessibility for customers.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. Italicized terms signify terms defined in section 8.2 of Chapter 8.

Chapter 3

Access planning



Access planning is one of the four core areas of the KDOT *Access Management Unit* (AMU). Access planning proactively identifies transportation areas or *corridors* with significant growth potential and implements tools to manage access and the increased traffic caused by future development. Appropriately located and designed highway access and other improvements, coordinated with anticipated development and land use changes, can avoid future conflicts and system deficiencies. Multiple stakeholders can benefit from planned transportation environ-

ments. For example, developers benefit from reduced uncertainty and risk which allows for more accurate access cost estimation. Similarly, cities and counties benefit by having a coordinated strategy in place as development occurs along a transportation facility. This sends the message that a community is “open for business” and strives to create a good transportation environment that provides both safety and efficiency and, as a result, is supportive of economic activity.

KDOT uses a variety of planning instruments to coordinate with cities and counties to achieve good access planning for the state. In addition, there are many actions local agencies can take to further access planning on local road networks.

The AMU, in cooperation with *District Engineers* and *Area Engineers*, engages a wide variety of transportation partners to create access plans that meet current and projected future needs of roadway users. The plans address future connections to *state highways* and the retrofit of existing access points that may not meet current criteria. Access plans also consider future capacity needs along a roadway and encourage development of a complementary road network, such as frontage/backage (reverse frontage) roads and sidewalks, to reduce demand for direct highway access and encourage a wide-range of travel options. Access planning supports the creation of a transportation environment that is livable, sustainable, and attractive to business investment.

3.1 KDOT access planning

KDOT supports planning for areas or *corridors* with significant growth potential. KDOT staff members work with cities, counties, *metropolitan planning organizations* (MPO), and other local stakeholders to identify potential developments and formalize plans to coordinate land use changes, transportation improvements, and future access. These planning processes are collaborative with local transportation partners providing input and feedback so communities, land owners, and developers are treated equitably and transportation needs are met. Collaboration leads to better planning.

All six KDOT *Districts* have a *District Access Management Plan* that identifies growth corridors or areas that need access planning to preserve capacity and functional integrity. Plan summaries and maps for all six Districts are included in Chapter 8. The maps show the classifications of state routes and highlight planned corridors and areas where development is anticipated or currently occurring. Recognition of such growth corridors provides a base for discussions with local officials to plan coordinated development and highway access.

3.1.1 Access planning instruments

As outlined in Kansas Statutes Annotated (K.S.A.) 68-169, the *Secretary of Transportation* is authorized to enter into written agreements with cities and counties to establish planned corridors and administer *District Access Management Plans*. To meet the needs of transportation partners and the diverse Kansas highway network, KDOT currently uses four types of access planning instruments (or documents) each with different levels of complexity and analysis as shown in Table 3-1.

Table 3-1. Summary of planning instruments by complexity

| Instrument Type | Complexity |
|-----------------------------------|--------------|
| Memorandum of Understanding (MOU) | Basic |
| Access management plan | Intermediate |
| Area transportation plan | Complex |
| Corridor management plan | Complex |

The planning process associated with these instruments involves varying degrees of engineering analyses and consideration of land-use and development impacts. The goal is to balance mobility and accessibility. In addition, these processes include

collaboration with local government, consultation with affected transportation stakeholders, and public involvement. Extensive public involvement generally accompanies more complex plans. (This can include multiple public meetings, multiple briefings of public officials, a project website, and social media applications to help distribute information.) These planning instruments are often developed by a consultant familiar with access management and qualified to prepare transportation plans.

Each planning instrument constitutes a commitment of the local partners and KDOT to consider the provisions and recommendations of the planning document. The *access management plans*, *area transportation plans*, and *corridor management plans* include *interlocal cooperation agreements* signed by local officials stating support for the plan and willingness to consider its provisions and recommendations as part of the decision-making process.

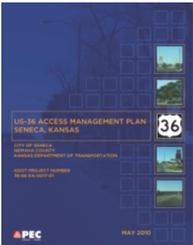
The following sections describe each planning instrument in greater detail.

3.1.1.a Memorandum of Understanding

A *Memorandum of Understanding* (MOU) between KDOT and local governments for a corridor or area is the most basic form of planned access. Before highway conditions change or moderate growth occurs along a *state highway*, KDOT and local partners may develop an MOU to outline expectations and access management guidelines for a growing area. MOUs may be initiated by local governments or KDOT. KDOT *District, Area*, and AMU staffs work with local personnel to draft the MOU for review and approval by local elected officials and KDOT Executive Staff. KDOT began developing MOUs for *access management* in the 1990s, and they are still a viable option for managing access today. However, when appropriate, KDOT staff may initiate more comprehensive access management agreements with local communities, such as an *access management plan*.

3.1.1.b Access management plan

An *access management plan* provides more detailed analysis of a *corridor* or area than an MOU. This type of plan is initiated by KDOT or local government in and around smaller communities experiencing moderate growth. The focus is to provide guidance in developing areas and identify retrofits in developed areas with existing access-related issues.



These plans have a strong engineering focus and also consider land-use and development impacts but to a lesser degree than more complex planning instruments. Public and stakeholder involvement and an evaluation of future roadway capacity needs are also incorporated into the planning process. A consultant familiar with access management develops these plans and it can take as long as 12 months to complete.

Example: US-36 Access Management Plan, Seneca, Kansas (www.ksdot.org/accessmanagement)

3.1.1.c Area transportation plan

An *area transportation plan* is initiated when KDOT or local officials identify significant growth potential that could negatively impact the operation of an important highway junction, such as an interchange or intersection. These plans set forth an overall land-use and access management strategy and identify various transportation improvements to keep traffic moving safely and efficiently as development occurs.



An Area transportation plan is complex and takes approximately 12 to 18 months to complete. It includes comprehensive engineering analyses and heightened consideration of land-use and development impacts. These plans often include market research and economic forecasting within the study area along with robust public and stakeholder involvement. Future capacity needs are also evaluated as part of the planning process. A multidisciplinary team of consultants develops these plans and it normally takes 12 to 18 months to complete.

Example: K-10 and 6th Street (US-40) interchange in Lawrence, Kansas (www.ksdot.org/accessmanagement)

3.1.1.d Corridor management plan



A *corridor management plan* is initiated when KDOT or local officials identify a highway corridor with significant growth potential. These plans set forth an overall land-use and access management strategy and identify various transportation improvements to keep traffic moving safely and efficiently as development occurs.

Example: US-24 Corridor, Pottawatomie County, Manhattan, Kansas (www.ksdot.org/accessmanagement)

A *corridor management plan* is complex, addresses a *corridor* several miles long, and usually affects multiple local and county jurisdictions. It includes comprehensive engineering analyses and heightened consideration of land-use and development impacts. These plans often include market research and economic forecasting within the study corridor and robust public and stakeholder involvement. Future capacity needs are also evaluated as part of the planning process. A multidisciplinary team of consultants develops these plans and it normally takes 12 to 18 months to complete.

3.1.2 Implementation of KDOT access planning instruments

There are a variety of traditional and alternative funding sources, strategies, and mechanisms for implementing geometric improvements identified in a KDOT access planning instrument. Two resources providing information on implementation strategies and funding sources are described below.

3.1.2.a Tool Box of Implementation Strategies

KDOT's *Tool Box of Implementation Strategies* offers information on corridor preservation strategies, access management strategies, financing strategies, and interlocal cooperation agreements that are generally included in *access management plans*, *area transportation plans*, and *corridor management plans*.

3.1.2.b KDOT Access Management Construction Project Program

The *KDOT Access Management Construction Project Program* is designed to assist our local partners in implementing the recommendations of a KDOT corridor management plan, KDOT access management plan, KDOT area transportation plan, or KDOT MOU. Agencies eligible to participate in the program will have an executed agreement as part of a plan and a project that implements the recommendations of the plan. Examples of funded projects are included in Chapter 8.

The program functions as a state reimbursement program. The local agencies will be required to enter into a contract with KDOT in which the local agency will agree to let the project and pay the contractor as work is performed. KDOT will reimburse the local agency for eligible expenses.

Since access management projects have no KDOT construction oversight, the local agency will be responsible for obtaining a KDOT *Highway Access Permit* or a *Highway Use of Right of Way Permit* when work will occur on state *right-of-way* (R/W). Cities and counties awarded a project under the Access Management Construction Project Program will need to follow the Access Management Construction Project Guidelines through project development. The guidelines can be found on the KDOT website at www.ksdot.org/accessmanagement.

3.2 Local access management strategies

KDOT is focused on managing the state's highways, but the same planning techniques and tools can be adopted and applied at local levels to manage local roads. Local governments can use policies and regulations, establish procedures, or do formal planning to create the benefits of access management in their communities. Local planning, zoning, and regulation of land uses in relation to highway access support the safety, efficiency and the economic vitality of the area.

3.2.1 Local policies, regulations, and procedures

Access strategies can be applied through local policies and procedures when development and redevelopment occurs. Rather than determining criteria on an ad hoc basis as development is proposed, policies made in advance regarding development and its associated impacts offer a systematic approach which treats development in the community fairly and equitably. Supportive policies and procedures provide for the systematic achievement of long-range goals and provide justification and guidance for decisions.

Local governments (i.e., cities and counties) may use a variety of techniques to manage site and subdivision development and, with that, access location and design. The following are actions that local governments can consider to influence development:

- Update zoning and subdivision ordinances to address access management on local streets.
- Cooperate in regional corridor/area and access management plans.
- Create overlay districts (zoning, development) for key corridors.
- Adopt a classification system for the local system.
- Adopt traffic impact study requirements.
- Adopt safety and roadway design criteria for local roadways.
- Review the public street network for connectivity.
- Discourage subdivisions that create safety problems on streets, such as flag-shaped lots.
- Set minimum criteria for subdivision lot design, such as minimum frontage on a public roadway.
- Set lot width-to-depth ratios.
- Require reverse frontage roads (backage roads) for business districts.
- Establish minimum corner clearances for corner property access.
- Create setback criteria for each class of street.
- Provide site design criteria, such as details for parking lots and internal circulation.
- Set criteria for drive-through queues.
- Establish entering (intersection) sight distance criteria.

- Set criteria for driveway design.
- Community planning and connectivity studies to address routine circulation needs.

Local governments should consult with their legal counsel when deciding which of these strategies is appropriate in their community.

3.2.2 Local land use planning

Land use management is primarily a local function in Kansas. Access planning can manage the impact new development has on road systems and is most effective when included in the site design and approval process at local levels. Transportation impacts and costs should be considered in this process.

Municipalities are encouraged to submit plats, development proposals, and site plans to the appropriate KDOT *Area office* for review before a plan is approved locally. The Area office reviews and forwards the plans to the AMU for review by KDOT planning and engineering staff. The KDOT review facilitates the sharing of expertise among the participants and allow state highway system concerns to be a part of the decision process.

KDOT’s access planning instruments, described in Section 3.1, can facilitate local decision-making by providing a guiding vision and a coordinated strategy to create transportation environments that are safer, more efficient, and more supportive of economic activity.

3.2.3 Setbacks from roadway

Another objective of access planning is to prevent development from encroaching on potential future highway R/W needed for access modifications or transportation improvements. To meet this objective, local governments can establish building setbacks, sometimes referred to as setback lines, along major thoroughfares. A building setback is the distance recommended (or in some cases required) between the boundaries of a roadway and the nearest building.

Setbacks should be consistent with local plans and the overall context in which the roadway is located, as state highways often traverse a variety of contexts ranging from undeveloped areas to central business districts. To help determine appropriate building setbacks for developments along state highways, KDOT has developed recommended setbacks which are shown in Table 3-2. These are **recommendations only**; setbacks are set in local ordinances, and local regulations govern when a conflict exists.

Information used to determine building setback guidelines for developments along Kansas state highways are included in Chapter 8. When considering setbacks, it is beneficial to consider the future build-out width of the roadway to prevent development too close to future roadways. Samples of common future build-out widths by road type and potential impacts are included in Chapter 8.

Building setbacks near interchanges or intersections with planned interchanges are developed on a case-by-case basis in coordination with KDOT District and Area Engineers, KDOT Road Design, and the city or county. Some of the criteria considered include the current and future footprint of the interchange, accesses off side roads, and allowable access distance from the interchange ramp.

Formal adoption of setbacks should be instituted in consultation with experienced planning professionals and legal counsel. Additional information regarding setbacks can be found in KDOT's *Tool Box of Implementation Strategies*.

3.2.3.a Wind Turbine Setbacks

Wind turbines installed adjacent to KDOT R/W should be set back from the highway R/W a distance one and one-half times the tip height. The tip height is calculated by adding the tower height and length of a blade.

For information on electrical tower, cellular tower, or other utility setbacks refer to the KDOT Department of Construction and Maintenance, (785) 296-3576, or consult the KDOT Utility Accommodation Policy.

3.3 Land use acquisition and management of access rights

Another method of managing the land use-transportation relationship is to control *access rights* and rights-of-way of state highways through land ownership. KDOT is authorized by statute to manage access to state roads and rights-of-way. KDOT can do this by acquiring *access rights* from property owners or by managing access rights, depending on the circumstances.

3.3.1 Acquisition of access rights

To completely preclude access to an abutting highway, KDOT can purchase access rights from property owners adjacent to highways so that the property owner cannot obtain future access to the highway within those boundaries. This is typically done along freeways and other controlled-access routes of regional significance. Access rights are acquired at all but a few openings as determined by KDOT. These openings connect to places such as an interchange or a major intersection. On rare occasion, there may be an access opening along an expressway that is not an interchange or major intersection. This is usually in an isolated location where the property has no other local or county road nearby.

KDOT may also acquire access rights near interchanges, along the local cross road of a state highway, and other important intersections to protect key areas from disruption and safety problems that can be created by access points close to intersections.

KDOT's acquisition of R/W is handled on a case-by-case basis and is usually initiated by KDOT.

3.3.2 Management of access rights

Where access rights are not owned by KDOT, *access* to the state highway is controlled under the general powers and duties and the police power of the *Secretary of Transportation*. Property owners wanting to construct or alter a *driveway* that connects to a state highway must first obtain a *Highway Access Permit* from KDOT. Property owners have the responsibility for installing and operating the access in accordance with the approved permit. Access design is discussed in Chapter 4, and permitting is discussed in Chapter 5.

Table 3-2. Building setback guidelines¹

| Route Access Control Designations ² | Description | Land use ³ | Area Type ² | | |
|--|---|------------------------|------------------------|------------------|----------------------------------|
| | | | Undeveloped (feet) | Developed (feet) | Central Business District (feet) |
| Full access control ⁴ | Existing or future freeway | Non-commercial | 150 | 100 | N/A |
| | | Commercial/ industrial | 200 | 150 | N/A |
| Partial access control—1 | Expressways or two-lane highways on four-lane R/W with an upgrade to a freeway | Non-commercial | 150 | 100 | N/A |
| | | Commercial/ industrial | 200 | 150 | N/A |
| Partial access control—2 ⁵ | Expressways or major urban streets, but not intended to become a future freeway | Non-commercial | 110 to 205 | 80 | 10 |
| | | Commercial/ industrial | 125 to 230 | 100 | 10 |
| Partial access control—3 | Arterial highways within or approaching an urban area or rural highways likely to remain two-lane | Non-commercial | 50 | 30 | 10 |
| | | Commercial/ industrial | 70 | 50 | 10 |
| No access control | Undeveloped rural highways that should remain two-lane | Non-commercial | 50 | 30 | 10 |
| | | Commercial/ industrial | 70 | 50 | 10 |

¹ Building setbacks are measured from the existing R/W line to the face of the structure. Setbacks for commercial/industrial land use may need additional space for parking between the structure and the highway.

² Route access control designations and area type are defined in Chapter 4.

³ Non-commercial land use includes residential, special-use, and emergency facilities; commercial or industrial land use includes commercial, industrial, institutional, recreational, local roads and other land uses.

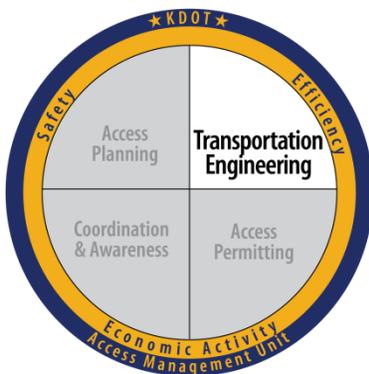
⁴ New direct highway access is allowed only on an interim basis per the stipulations in the Highway Access Permit. The interim connection will be closed and removed at such time that permanent access (connection to a frontage road or by another available means) becomes available.

⁵ Future R/W needs should be considered. Future R/W could consume setback space depending on the alignment of the future roadway.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. *Italicized terms signify terms defined in section 8.2 of Chapter 8.*

Chapter 4

Transportation engineering



When access is requested, KDOT considers items such as the location and type of existing access, alternatives to direct highway access, and engineering factors pertaining to safety and efficient traffic flow before making any decisions.

As part of the access decision-making process, the KDOT *Access Management Unit* (AMU) frequently coordinates with KDOT’s Bureau of Design, Bureau of Transportation Safety and Technology, and *District* and *Area* personnel. Other personnel, both internal and external, are also contacted on an as-needed basis.

The transportation engineering focus also includes assessing development impacts on the highway system by requiring and reviewing *traffic impact studies* (TIS) for specified developments (see Chapter 5, Access Permitting—Section 5.4, Supporting Documentation). These investigations can be basic or comprehensive and may include a traffic simulation modeling component to help assess the impact the proposed access will have on the *state highway system*.

4.1 KDOT route classification system

To better manage and address the diversity of more than 10,000 miles of Kansas *State Highways*, KDOT has developed a *Route Classification System* based on daily traffic, route continuity, access to major cities, trip length, and route spacing. The system is divided into five classes: A through E. First developed in 1988, KDOT uses the Route Classification System to help make decisions regarding future roadway improvements, maintenance, and other items. KDOT also uses route classification to make decisions regarding access. For the purposes of this Access Management Policy (Policy), the route classification has been further defined to address the *access management* of each route.

4.1.1 Route classification (A through E)

KDOT’s *route classifications* are based on the *roadway* types, significance to the national and regional highway network, traffic volumes, and posted speed limits (Table 4-1). For example, the A route classification, the highest classification, is composed of all Interstate routes, which typically have the highest transportation function, Interstate travel, highest traffic volumes, and the highest speeds. The E route classification, the lowest classification, is composed of minor state routes that typically have a lesser transportation function—that is, moving traffic within a relatively small area or region and carrying smaller traffic volumes at reduced speeds when compared to the Interstate System. These designations do not preclude the purchase of *access control* at spot locations along state highways.

Table 4-1. KDOT Route Classification System (definition and description)

| Class | Definition and Description |
|---------|--|
| Class A | The Interstate System, including the Kansas Turnpike —Class A routes are interstates. They are fully access-controlled routes that permit high-speed travel. They are important arteries with high truck volumes. Examples include I-70 and I-35. Statewide, Class A routes average 21,700 vehicles per day. They make up just 8 percent of the highway system but carry more than 40 percent of the daily travel. |
| Class B | Routes that serve as the most important statewide and interstate corridors for travel —Class B routes are non-Interstate routes with limited access, high-speed travel, long distance truck traffic, and statewide significance. The routes serve distinct trip movements since they are widely spaced throughout the State. On major sections of the routes, traffic volumes are relatively constant. A significant number of out-of-state vehicles use Class B routes, and trips on the routes are typically very long. Examples include US-50, US-36, and US-400. These routes average 5,100 vehicles per day. |
| Class C | Defined as arterials, routes that are closely integrated with Class A and B routes in service to all parts of the State —Major locations that are not on Class A or B routes are connected by a Class C route. Trip lengths are usually long. Class C routes are for regional travel and connect to higher-speed, limited-access roads. US-77 and K-10 are examples. The average number of vehicles per day on these routes is 3,800. |
| Class D | Routes that provide access to arterials and serve small urban areas not on a Class A, B, or C route —The routes are important for intercounty movement. Class D routes provide intercounty transport and connect to higher-speed roadways. They may have speed restrictions because of the number of local road intersections. Examples are US-50B (business route), K-16, and K-25. On average, these routes are traveled by 1,800 vehicles per day. |
| Class E | Primarily for local service only, routes typified by very short trips —Class E routes are frequently used on a daily basis, sometimes several times a day, to connect rural residents with other routes or to provide access to small towns in the area. Class E routes are for short trips. They typically connect small towns to nearby higher speed routes. They carry low traffic volumes and few trucks. K-76 and K-245 are examples. The average number of vehicles per day on these routes statewide is 800. |

Source: Kansas Long Range Transportation Plan (2008)

For the purposes of this Policy, KDOT uses an Access Route Classification System to guide decisions regarding access to State Highways. The access route class used for making access decisions is the same as KDOT's Route Classification System unless the route is part of the National Highway System (NHS) or a designated planned area/corridor (depicted on the District Access Management Plan maps in Chapter 8), in which case it will be upgraded to a Class B. If a frontage road is within KDOT ROW, the Access Route Classification designation is Class E.

Each of KDOT's six *Districts* has a map annotating the *Access Route Classification System* on highways within the District. Additional resolution is provided in each of the *Area* maps within a District which also annotate the Access Route Classification for highways in the Area. Each map shows all Class A through E routes, NHS routes, and any planned areas and corridors. The District/Area maps are located in Chapter 8.

4.1.2 Access type (1 through 6)

KDOT's access types are based on the volume of traffic using the access and land use. The access type is a factor in considering whether access will be allowable. For access route classifications B through E, there are six access types that need to be considered. The access types are based on low, medium, and high traffic volumes and surrounding land uses (i.e., residential, agricultural, commercial, industrial). For example, access type 1 is low volume, under 49 vehicles per day, and can be residential, such as a duplex. Access type 6 is high volume, over 500 vehicles per day, and is commonly commercial, such as a shopping center. Table 4-2 provides a summary of the six access types. Figure 4-1 through Figure 4-7 are images of example access in Kansas by type and show access in developed and undeveloped areas.

Table 4-2. Access types

| Type | Traffic Volume | Use |
|------|--|--|
| 1 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | <ul style="list-style-type: none"> • Non-commercial: farm, agriculture, field, timber, cultivated, pasture, other. • Residential: duplex, single family residential/home, apartment building containing five or fewer dwelling units, other. |
| 2 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Special-use—city water treatment plant, microwave station, pipeline checkpoint, telephone repeater stations, utilities (electric, gas, telephone, and water) check/maintenance stations, Corps of Engineers dike roads, other. |
| 3 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Emergency facility—fire station, paramedic facility. |
| 4 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Commercial—small business, cemetery, nursing home, other. |
| 5 | Medium volume 50–499 vehicles per day or less than 50 vehicles per peak hour of the highway (in/out bound traffic count) | Commercial, industrial, institutional, recreational, local road connections, including joint-use/shared access, other. |
| 6 | High volume 500 or more vehicles per day, or 50 or more vehicles per peak hour of the highway(in/out bound traffic count) | Commercial, industrial, institutional, recreational, local road connections, including joint-use/shared access, other. |

Figure 4-1. Type 1 access—undeveloped residential



Figure 4-2. Type 1 access—developed residential



Figure 4-3. Type 2 access—undeveloped utility



Figure 4-4. Type 3 access—undeveloped emergency



Figure 4-5. Type 4 access—developed low-volume commercial



Figure 4-6. Type 5 access—developed medium-volume commercial



Figure 4-7. Type 6 access—undeveloped high-volume commercial



4.1.3 Area type

In addition to access route classification and access type, the *area type* is an important factor in making decisions regarding the placement of access along state highways. KDOT has three distinct area types:

- **Central business district (CBD)**—An officially or unofficially designated area throughout which there is a relative concentration of established businesses and commercial services, usually characterized by limited access, on-street parking, and higher volumes of pedestrian/bicycle traffic (Figure 4-8).
- **Developed**—An area is considered developed if it meets at least one of following three criteria: (1) is within the corporate limits of a municipality regardless of posted speed limit, (2) the street or highway abutting the area has a speed limit of 40 miles per hour or less, or (3) at least 50 percent of the frontages abutting the highway have been developed with residences, businesses, and/or industry for a distance of a quarter of a mile or more (Figure 4-9).
- **Undeveloped**—The type for all locations not included under the developed or central business district definitions (Figure 4-10).

Figure 4-8. Central business district (CBD)



Figure 4-9. Developed (commercial)



Figure 4-10. Undeveloped



4.2 Route access control designations and maps

Route access control designations identify existing and planned access control classifications on state highways to assist KDOT in determining the appropriate *access control* for highway improvements and access management. These designations are illustrated on maps and represent KDOT’s access control vision of the highway system. These maps are not to be confused with the District Access Management Plan maps discussed in Chapter 3,—Section 3.1.1., KDOT’s policy is to use the *Route Access Control Designations* and maps for making decisions regarding highway improvement projects (scoping and design) and access management of state highways under the *Highway Access Permit* process. Definitions for each designation are given in the following sections (see Table 4-3 for abbreviated definitions) and the maps are displayed in Chapter 8. These designations and maps do not preclude the purchase of *access control* at spot locations along state highways.

Table 4-3. Route access control designations

| Route Access Control Designation Types | Definition |
|--|---|
| Full access control | This classification addresses all current and future freeway sections. Access to the highway is only permitted via grade-separated interchanges. |
| Partial access control 1 | This classification applies to highways that may be built as expressways or as two-lane highways on four-lane rights-of-way. It allows for upgrading sections or the entire facility to full access control, if necessary. New access will be limited to public roads only. |
| Partial access control 2 | This classification applies to highways that may be built as expressways or major urban streets but are not intended to allow for future upgrade to a freeway. Projects may allow for future interchanges at selected locations. New access will be limited to public roads only. |
| Partial access control 3 | This classification applies to arterial highways within or approaching an urban area or rural highways that are likely to remain two-lane for the foreseeable future. |
| No access control (none) | This classification applies to undeveloped rural highways that should remain two-lane and where there is minimal potential for future development. Access spacing criteria in Section 4.3.2 apply. |

4.2.1 Full access control

This classification addresses all current and future *freeway* sections. Access to the highway is only permitted via grade-separated *interchanges* (Figure 4-11). Access control will be extended down intersecting roadways so that adjacent side road *intersections* do not interfere with interchange operations. Guidelines for interchange spacing can be found in KDOT *Standard Operating Manual* (SOM) 1.12.2.

Figure 4-11. Full access control—I-435 and 95th in Lenexa, Kansas



- Desirable interchange spacing will be a minimum of 4 miles apart in rural areas and 2 miles apart in urban areas.
- Access control along the intersecting roadway ideally will extend one-half mile from the ramp intersection to the nearest full movement side road intersection or *access point*. If a traffic study shows that the distance on the side road from an on- or off-ramp to a full-movement intersection should be more or less than one-half mile, this information should be taken into consideration before a final decision is made.
- All new bypasses should have full access control.
- Examples include I-70, I-35, I-135, portions of US-69, US-59 between Lawrence and Ottawa, US-400 SW Dodge City Bypass, and US-36 in Doniphan County.

4.2.2 Partial access control 1

This classification applies to highways that may be built as *expressways* or as two-lane highways on four-lane rights-of-way (Figure 4-12). It allows for upgrading sections or the entire facility to full access control, if necessary. Partial access control 1, the highest degree of partial access control, requires the initial design of the highway to accommodate future improvements with adequate *right-of-way* (R/W) and access control for future lanes, interchanges, and *grade separations*. This design may require one of three approaches for side roads that would not have access to a future fully access-controlled roadway section—closing very low traffic county road intersections; constructing some county road intersections as right-in, right-out; or constructing grade separations. Access control must extend along intersecting roads to prevent adjacent side road intersections from interfering with the operation of a future *interchange* or major highway intersection. This classification of partial access control applies primarily to highways classified as B and C routes.

Figure 4-12. Partial access control 1—US-75, north of 62nd Street, Shawnee County



- New access will be limited to public roads only.
- Intersections will have a minimum spacing of 2 miles and a desirable spacing of 4 miles.
- In rural areas, consideration should be given to widening the *median* at intersections from 60 feet to 150 feet to accommodate storage of larger vehicles.
- Direct access points may exist; however, the route is intended for ultimate upgrade to full *freeway* criteria. In such cases, *interim access* may be permitted where a property would otherwise be *landlocked*. When interim access is permitted, the access permit will clearly state that the connection is interim and will identify the terms and conditions of its use and the conditions of the permanent access connection. The permit will also clearly state that the interim connection will be closed and removed at such time that permanent access (connection to a *frontage road* or by another available means) becomes available.

- Existing lawful connections and *median openings* are not required to meet the access management criteria. Existing access management features will usually be allowed to remain in place but should be brought into conformance with access management policies when significant changes occur or as changes to the roadway design allow. As part of design projects, existing *access points* between intersections should be removed or relocated when practical.
- Access control along the intersecting roadway should ideally extend one-half mile to the nearest full-movement side road intersection or access point. If a traffic study shows that the distance on the side road from an on- or off-ramp to a full-movement intersection should be more or less than one-half mile, this information should be taken into consideration before a final decision is made.
- Examples include US-75 north of Topeka, US-400 in Southeast Kansas, US-81 in Cloud and Republic County, and K-96 between Hutchinson and Wichita.

4.2.3 *Partial access control 2*

This classification applies to highways that may be built as *expressways* or major urban streets which are not intended to allow for future upgrade to a *freeway* (Figure 4-13). Projects may allow for future interchanges at selected locations. Access control must extend down intersecting roads to prevent side road intersections from interfering with the operation of the highway intersection. This classification applies to B and C routes and may apply to some D routes within and approaching growing urban areas.

Figure 4-13. Partial access control 2—US-50 between Hutchinson and Newton, Kansas



- New access will be limited to public roads only.
- Intersections will have a minimum spacing of 1 mile.
- In rural areas, consideration should be given to widening the median at intersections.

- Direct access points may exist; however, the route is intended to remain an expressway with future interchanges at select locations. In such cases, interim access may be permitted where a property would otherwise be landlocked. When interim access is permitted, the access permit will clearly state that the connection is interim and will identify the terms and conditions of its use and the conditions of the permanent access connection. The permit will also clearly state that the interim connection is subject to closure at such time that permanent access (connection to a frontage road or by another available means) becomes available.
- Existing lawful connections and median openings are not required to meet the access management criteria. Existing access management features will usually be allowed to remain in place but should be brought into conformance with access management policies when changes to the property serving the access occur. As part of design projects, existing access points should be evaluated to determine if access improvements are practical.
- When passing lanes are present or added, access should be limited or even eliminated within the limits of the passing lanes. Public roads and private drives may need to be closed to minimize *conflicts* if other reasonable means of access are available.
- Access control along the intersecting roadway should ideally extend one-half mile to the nearest full-movement side road intersection or access point. If a traffic study shows that the distance on the side road from an on- or off-ramp to a full-movement intersection should be more or less than one-half mile, this information should be taken into consideration before a final decision is made.
- Examples include US-24 west of Topeka, US-50 between Emporia and Newton, US-56 between Lyons and Great Bend, and US-83 in Logan County.

4.2.4 Partial access control 3

This classification applies to *arterial* highways within or approaching an urban area or rural highways that are likely to remain two-lane for the foreseeable future (Figure 4-14). Access control should be extended along intersecting roads to prevent side road intersections from interfering with the operation of the highway intersection. This category of partial access control applies to mostly Class C and D routes. It is assumed that public roads will intersect with the highway on a 1-mile grid system.

Figure 4-14. Partial access control 3—US-73 north of Leavenworth, Kansas



- Access points may either be public roads or private entrances and should be kept to a minimum. New private direct access to the state highway should not be permitted when the property has other reasonable access or an opportunity to obtain alternate access to a lower function roadway.
- Existing access spacing should be preserved or spacing from this Policy should be used, whichever is greater.
- Existing lawful connections and median openings are not required to meet the access management criteria. Existing access management features will usually be allowed to remain in place but should be brought into conformance with access management policy when significant change occurs or as changes to the roadway design allow. As part of design projects, existing access points between intersections should be removed or relocated. Remaining highway frontage should be access controlled.
- When passing lanes are present or added, access should be limited or even eliminated within the limits of the passing lanes. Public roads and private drives may need to be closed to minimize conflicts if other reasonable means of access are available.
- Access control should extend along intersecting public roads to the first adjacent full movement access point (one-half mile is desirable).
- Examples include US-36 from Norton to Seneca, US-183 from I-70 north to the Nebraska Stateline, US-73 from Leavenworth to Hiawatha, US-166 from Ark City to just west of Baxter Springs, and US-281 from Great Bend to Pratt.

4.2.5 **No access control**

This classification applies to undeveloped rural highways that should remain two-lane and where there is minimal potential for future development (Class D and E routes in rural areas) (Figure 4-15). It is assumed that public roads will intersect with the highway on a 1-mile grid system.

- Access points may either be public roads or private entrances and should be minimized. Private direct access to the state highway is allowed if reasonable access cannot be obtained via a public roadway.
- Access *spacing criteria* is applicable to this classification.

Figure 4-15. No access control—K-192 in Leavenworth County



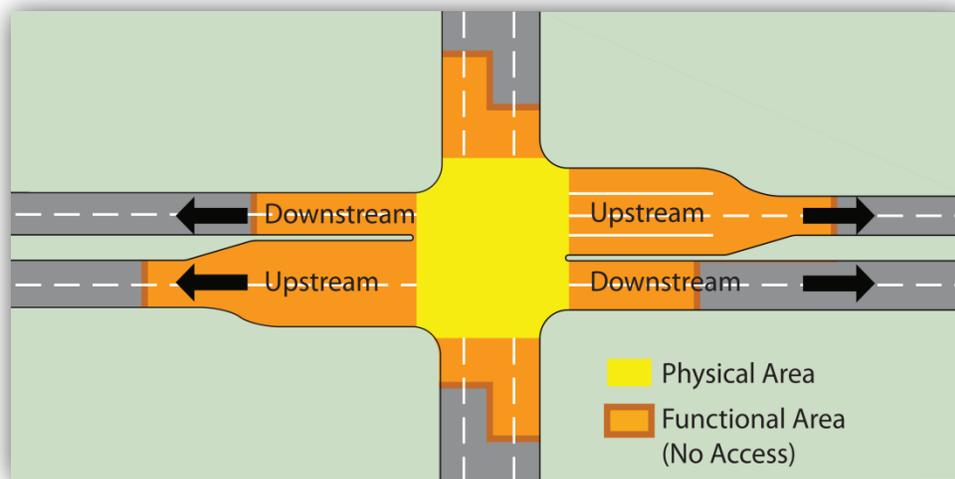
- Examples include K-4 from US-83 to Topeka, K-96 from the Colorado Stateline to US-183, K-27, K-99 from Oklahoma Stateline to US-54, and K-63 from US-24 to the Nebraska Stateline.

4.3 Intersection/access point location considerations

4.3.1 Intersection influence area and access windows

The intersection influence area includes both the *physical area* and the *functional area* of an intersection. *Physical area* is the area connecting the outer *radius* of each *approach* including the center of the intersection which contains both crossing and turning *conflict points*. *Functional area* is the area approaching and leaving each leg of the intersection which should be free of access. The functional area extends beyond the physical intersection boundaries in both the *upstream* and *downstream* traffic flow directions and includes the limits of any *auxiliary lanes*. The intersection influence area has two components—upstream functional distance and downstream functional distance—as shown in Figure 4-16.

Figure 4-16. Comparison of physical and functional areas of an intersection



An *access window* is the space available for an access between existing intersections or *access points*. The preferable access location is within the access window where it will have the least interference to a roadway and provide the most benefit and flexibility to the property. To determine an access window, the surrounding influence areas are first defined. Access points should not be located within the functional area of an intersection or in the influence area of an adjacent access point. The influence area for an access point is calculated in the same way as an intersection. The area remaining along the roadway outside the influence area is the access window.

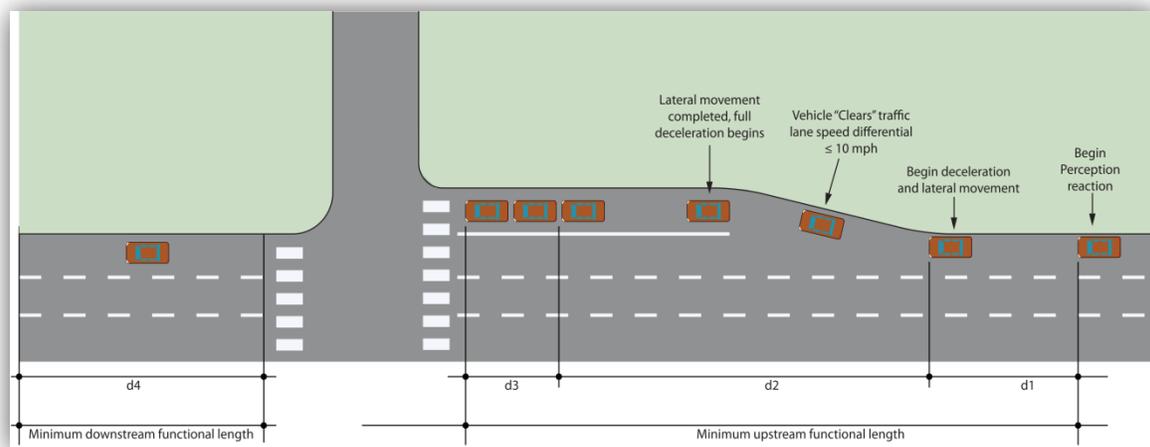
4.3.1.a Intersection influence area

The upstream functional distance has three elements, all of which are illustrated in Figure 4-17:

- d1 = distance traveled during perception-reaction time
- d2 = distance traveled during deceleration when coming to a stop
- d3 = the actual queue *storage length*
- d4 = downstream functional distance

Each element of the functional area must be calculated for all lanes (through, right and left) and the largest distance should be selected to establish the intersection influence area and determine the access window.

Figure 4-17. Upstream functional intersection area



Source: FHWA *Signalized Intersections: Informational Guide*

Driver perception-reaction time is the time it takes a driver to perceive a change in roadway conditions and begin to react to the situation. Perception-reaction distances (d1) are based on the posted speed and whether the intersection is in an undeveloped or developed/CBD area (Table 4-4). Usually, drivers anticipate access points and other roadway users in developed/CBD areas; therefore the perception-reaction time is shorter, so the distance can be shorter.

Table 4-4. Distance travelled during driver’s perception-reaction (d1), lateral movement and deceleration (d2), and downstream functional distance (d4)

| Speed (mph) | d1— Undeveloped ¹ (feet) | d1— Developed/CBD ¹ (feet) | d2— Deceleration ² (feet) | d4— Undeveloped ³ (feet) | d4— Developed/CBD ³ (feet) |
|-------------|-------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|
| 20 | 75 | 45 | 70 | 155 | 85 |
| 25 | 95 | 55 | 115 | 155 | 120 |
| 30 | 110 | 65 | 160 | 200 | 155 |
| 35 | 130 | 80 | 220 | 250 | 195 |
| 40 | 145 | 90 | 275 | 305 | 245 |
| 45 | 165 | 100 | 350 | 360 | 295 |
| 50 | 185 | 110 | 425 | 425 | 355 |
| 55 | 205 | 125 | 515 | 495 | 415 |
| 60 | 220 | 135 | 605 | 570 | 480 |
| 65 | 240 | 145 | 715 | 645 | 550 |
| 70 | 255 | 155 | 820 | 730 | 625 |

¹Source d1: Modified version of TRB, Access Management Manual, 2003, Table 8-3, p. 133

²Source d2: Modified version of TRB, Access Management Manual, 2003, Table 10-2, p. 172

³Source d4: Modified versions of AASHTO’s A Policy on Geometric Design of Highways and Streets, Table 3-2 (2011)

When there is not a lateral shift for through traffic (i.e., no dedicated *turn lane*), the distance traveled during deceleration (d2) may be calculated using the formula:

$$d2=1.075 V^2/a$$

Where:

V = posted speed limit (mph)

a = deceleration rate, assumed to be 11.2 ft/s² unless otherwise noted (Table 4-4)

- **Storage:** The actual queue *storage length* (d3) for an *unsignalized* intersection is based on the number of vehicles likely to arrive in an average 2-minute period within the *peak hour* of the highway.

The storage length can be determined by the following steps:

1. Estimate the number of vehicles in each lane (through, right and left) during the peak hour for STOP controlled intersections.
2. Divide the answer to step1 by 30.
3. Multiply the answer to step 2 by the vehicle length. Each passenger vehicle is assumed to occupy 25 feet of storage space. If a heavy truck volume is present, use the adjusted vehicle lengths shown in Table 4-5.

Table 4-5. Queue storage length adjustments for heavy trucks

| Percent Trucks (%) | Average Storage Length per Vehicle (Feet) |
|--------------------|---|
| ≤ 5 | 25 |
| 6 ≤ 10 | 30 |
| 11 ≤ 15 | 32 |
| 16 ≤ 20 | 35 |
| > 20 | 38 |

Source: Adapted from V. Stover and F. Koepke, Transportation and Land Development (2nd Edition), Institute of Transportation Engineers, 2002.

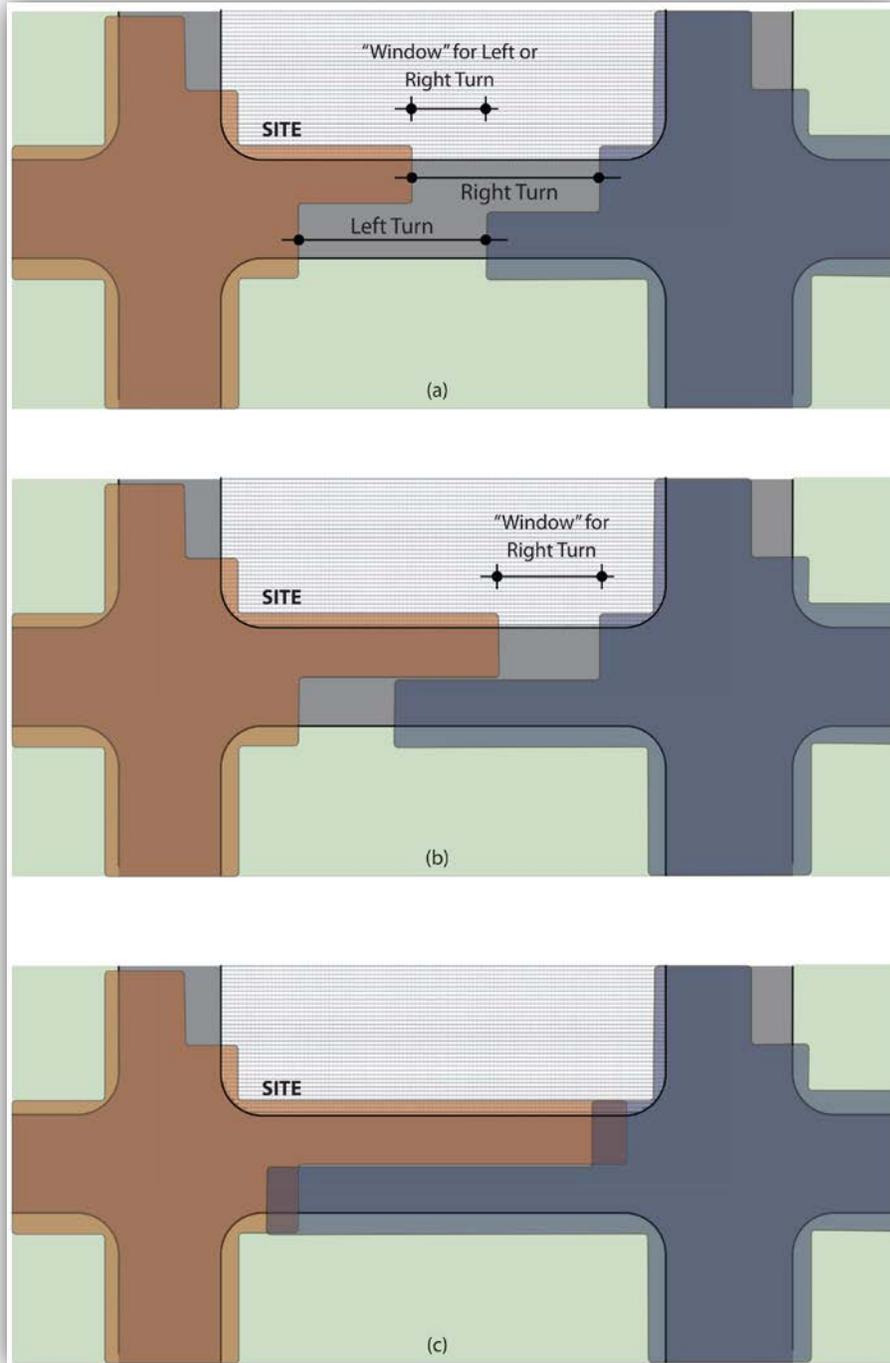
- At *signalized* intersections, d_3 depends on the signal cycle length, signal phasing arrangement, and the rate of arrivals and departures of turning vehicles. The storage is based on 2 times the 95th percentile back of queue as determined by traffic modeling software, such as Synchro.
- All peak-hour turning counts are projected design year traffic volumes (typically 20 years). The minimum storage length is 50 feet (based on a minimum of storing two vehicles) and should be adjusted to account for high truck traffic.
- For the downstream functional area (d_4), the downstream functional distance should be the *stopping sight distance* (SSD) based on the posted speed limit of the roadway. By using the SSD, motorists will be able to pass through the intersection before having to consider a possible conflict at a subsequent access point.

4.3.1.b Access window

Figure 4-18 provides three examples of intersection influence areas and potential *access windows*. Based on the intersection influence area calculated for each of the three examples, a variety of access windows are available. In the diagrams, the brown areas are influence areas of the left intersection, and the blue areas are influence areas of the right intersection. Figure 4-18(a) illustrates intersection influence areas that do not cross, which leaves an access window for left and right turns. Figure 4-18(b) illustrates influence areas on opposite sides of the roadway, which leaves an access window for right-in, right-out maneuvers only. Figure 4-18(c) illustrates influence areas that overlap, which leaves no access window between the two intersections.

The applicant (or designee) should calculate the influence area for intersections adjacent to a proposed new access, in order to determine if the intersection influence areas overlap or if there is an *access window* available for this access. It is KDOT’s preference not to locate access within the influence area of an intersection.

Figure 4-18. Schematic of access window for direct drive access



Source: TRB, Access Management Manual, 2003, Figure 8-15. P. 135

Note: (a) Window for left and right turns; (b) window for right turns only; (c) no window

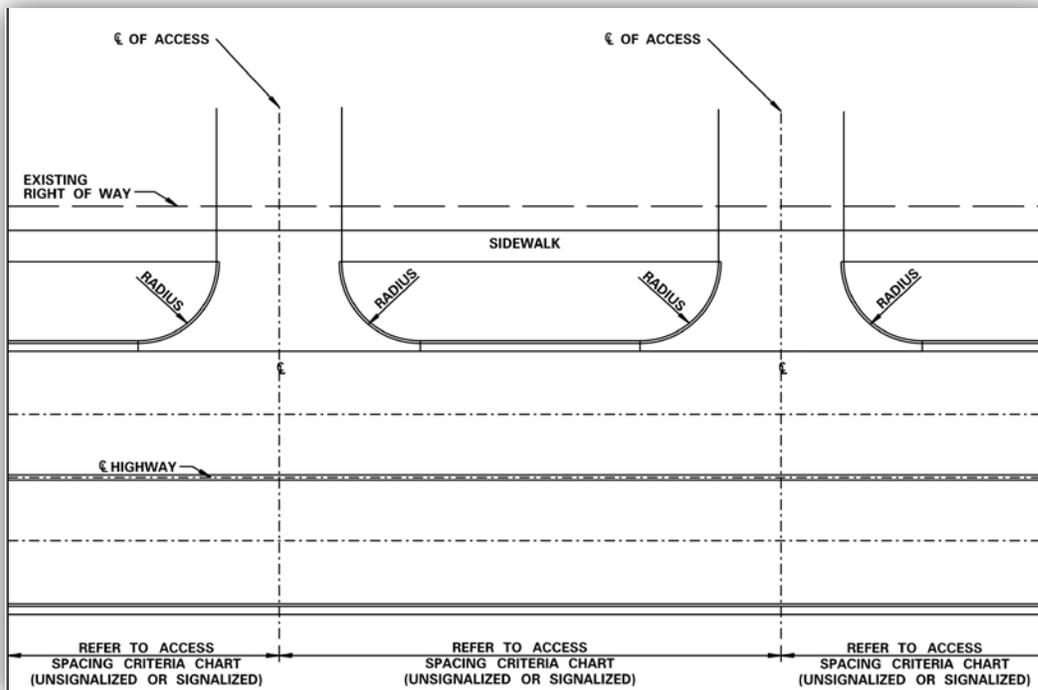
4.3.2 Access spacing—unsignalized and signalized

Access spacing is at the heart of access management. Well-planned access spacing considers factors such as roadway speed, vehicle volumes, and driver expectations to provide a reasonable amount of space for drivers to assess the situation, decide a course of action, and adjust the vehicle’s path if necessary. KDOT uses access route classification, area type, access type, and posted speed limit to characterize spacing requirements because these categories consider roadway speed, vehicle volumes, and driver expectation.

This Policy focuses on spacing for unsignalized access points (which represent the majority of access points along state highways). Information for signalized intersection spacing also is provided in order to maximize efficient traffic flow along state highway corridors by planning for major intersections where traffic signals may be placed in the future. Access spacing is measured from centerline of access to centerline of access as depicted in Figure 4-19. **KDOT follows the criteria for unsignalized and signalized access spacing as presented in Table 4-6 and Table 4-7.**

Intersection influence areas must also be considered when locating an access point. Access may be located in areas outside the intersection influence area provided the location of the proposed access meets the specified criteria for unsignalized access spacing. Guidance on intersection influence areas is found in Section 4.3.1.

Figure 4-19. Access spacing measured centerline to centerline of access (unsignalized/signalized)



4.3.2.a Unsignalized access spacing

Unsignalized access spacing is based on *access route classification* and (undeveloped, developed, or CBD) and posted speed limit. Based on KDOT’s *access spacing criteria* for unsignalized accesses (Table 4-6), roadways which have a higher access route classifications, higher speeds, and are less developed will have longer spacing requirements than similar locations where these factors are inverse. The distances given are measured from the centerline of one access to the centerline of another access. At intersections where the unsignalized access may become signalized in the future, the access spacing in Table 4-7 should be used to optimize *signal spacing*, thus allowing traffic to progress through a signalized corridor with limited delay.

Table 4-6. Unsignalized access spacing criteria

| Access Route Classification | Area Type | Posted Speed Limit (mph) | | | | | | | | | | |
|-----------------------------|-------------|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| | | (Distance in feet) | | | | | | | | | | |
| B | Undeveloped | | | | 350 | 420 | 515 | 610 | 720 | 825 | 955 | 1075 |
| | Developed | 115 | 170 | 225 | 295 | 365 | 450 | 535 | 640 | 740 | | |
| | CBD | 85 | 120 | 155 | 205 | | | | | | | |
| C and D | Undeveloped | | | | 255 | 300 | 365 | 425 | 500 | 570 | 650 | 730 |
| | Developed | 85 | 120 | 155 | 200 | 245 | 300 | 350 | 420 | 485 | | |
| | CBD | 65 | 90 | 125 | 165 | | | | | | | |
| E | Undeveloped | | | | 190 | 230 | 285 | 335 | 400 | 460 | 535 | 605 |
| | Developed | 65 | 95 | 125 | 165 | 200 | 250 | 295 | 360 | 420 | | |
| | CBD | 40 | 65 | 90 | 125 | | | | | | | |

If a traffic study indicates that the access point is within the intersection influence area of another access point, the distances between access points should be extended.

If a traffic study indicates that the access point is within the taper, deceleration, or storage length of a turn lane, the access point should be relocated outside the turn lane area.

Table 4-7. Signalized intersection spacing criteria for various speeds and cycle lengths

| Cycle Length (seconds) | Posted Speed Limit (mph) | | | | | | | | |
|------------------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
| | (Distance in feet) | | | | | | | | |
| 60 | 1,100 | 1,320 | 1,540 | 1,760 | 1,980 | 2,200 | 2,420 | 2,640 | 2,860 |
| 70 | 1,280 | 1,540 | 1,800 | 2,060 | 2,310 | 2,590 | 2,830 | 3,090 | 3,350 |
| 80 | 1,470 | 1,760 | 2,060 | 2,350 | 2,640 | 2,940 | 3,230 | 3,520 | 3,810 |
| 90 | 1,650 | 1,980 | 2,310 | 2,640 | 2,970 | 3,300 | 3,630 | 3,960 | 4,290 |
| 100 | 1,840 | 2,200 | 2,570 | 2,940 | 3,300 | 3,670 | 4,040 | 4,410 | 4,780 |
| 110 | 2,020 | 2,420 | 2,830 | 3,230 | 3,630 | 4,040 | 4,440 | 4,850 | 5,250 |
| 120 | 2,200 | 2,640 | 3,080 | 3,520 | 3,960 | 4,400 | 4,840 | 5,280 | 5,720 |

Source: Adapted from Gluck, J., H.S. Levinson, and V. Stover, *Impacts of Access Management Techniques*, NCHRP Report 420, Transportation Research Board of the National Academies, Washington, D.C. (1999) pp. 31-67.

4.3.2.b Signalized access spacing

Signalized access spacing criteria is dependent on the traffic signal cycle length and the posted speed limit which will provide an acceptable progression of traffic along the highway route. The installation of a traffic signal introduces stopping and starting at points along the main corridor. These introduced delays can result in extended queues if the traffic signals along the corridor are not synchronized. Design of well-managed traffic *signal spacing* should consider the corridor operating speed, left-turn treatments and timing, roadway functional classification and purpose, and adequate queue storage provisions.

Table 4-7 provides recommended distances between signalized intersections based on speed limits and signal cycle lengths. Where adjacent signals have different cycle lengths, the higher cycle length should be used. Signalized intersection spacing criteria less than those shown may be permitted, but they will potentially lower the maximum *capacity* of the roadway. Where the spacing cannot be met, capacity analyses should be run to determine the amount of capacity loss due to the reduced spacing. This information will be used by KDOT in making decisions on where signalized intersections may be permitted.

4.3.3 Access spacing from interchanges and roundabouts

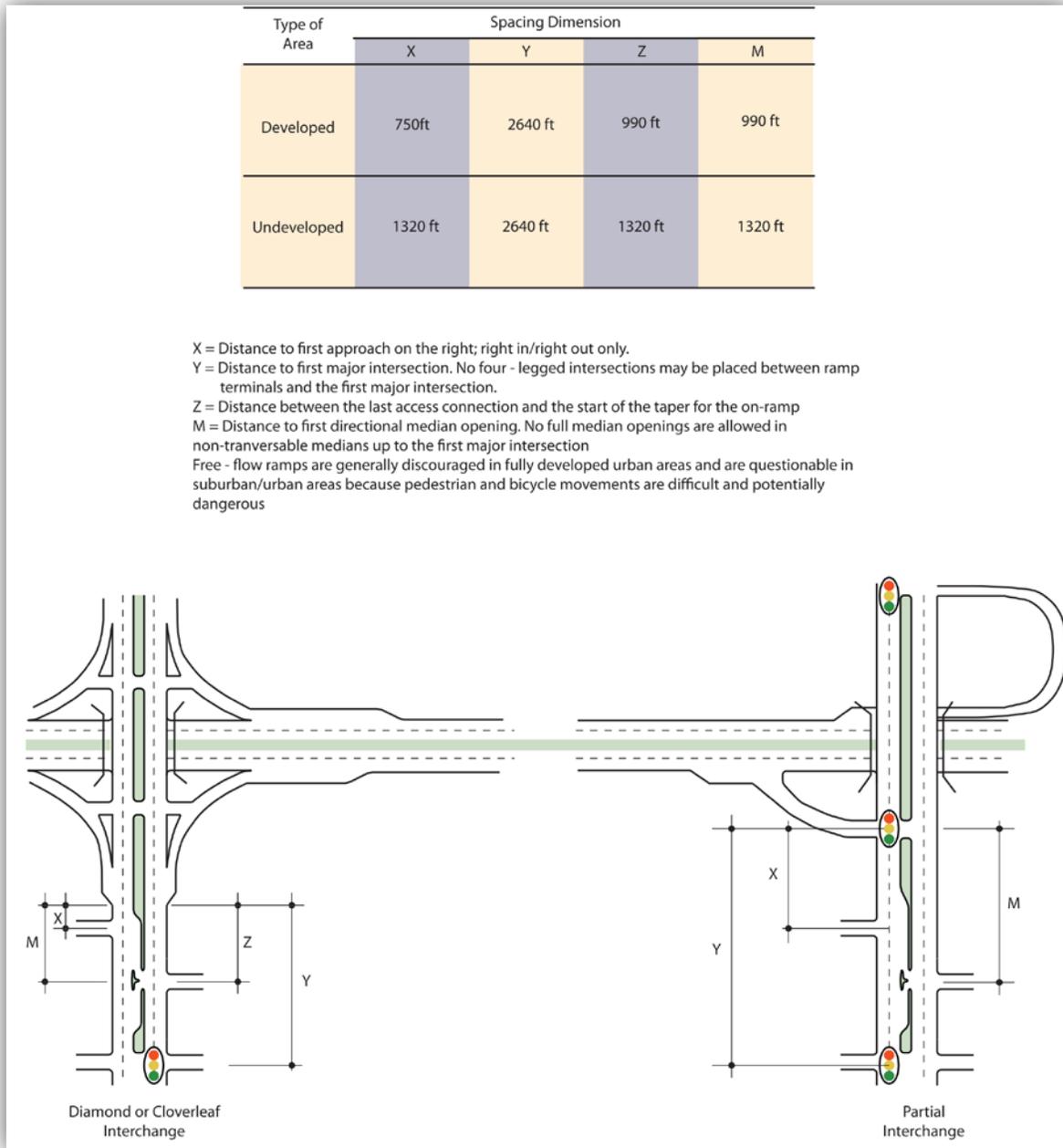
4.3.3.a Access spacing on crossroad from interchange ramp terminal

To determine the location of a crossroad near an *interchange* ramp terminal, KDOT uses the guidelines from the *National Cooperative Highway Research Program* (NCHRP) Report 420. The guidelines require a minimum spacing from the end of the exit ramp to the first *intersection* on a crossroad. The spacing is based on area type. Spacing from the ramp terminal to the first major intersection (four-legged full access) on a multilane crossroad is typically 2,640 feet, and spacing for a two-lane crossroad is typically 1,320 feet for all three area types. These guidelines are independent of whether the interchange is with the junction of two highways or a highway and a *local road*. The guidelines differentiate between intersections that provide right-in/right-out movements, median openings, and full movements. **KDOT follows the access spacing guidelines established in Figure 4-20 for freeway/expressway interchange areas with multilane crossroads and Figure 4-21 for freeway/expressway interchanges with two-lane crossroads. If a traffic study shows that the distance on the side road from an on- or off-ramp to a full-movement intersection should be more or less than one-half mile, this information should be taken into consideration before a final decision is made.**

Multilane crossroads

Figure 4-20 identifies the recommended minimum spacing to be used for freeway/expressway interchange areas with multilane crossroads.

Figure 4-20. Minimum spacing for freeway/expressway interchange areas with multilane crossroads

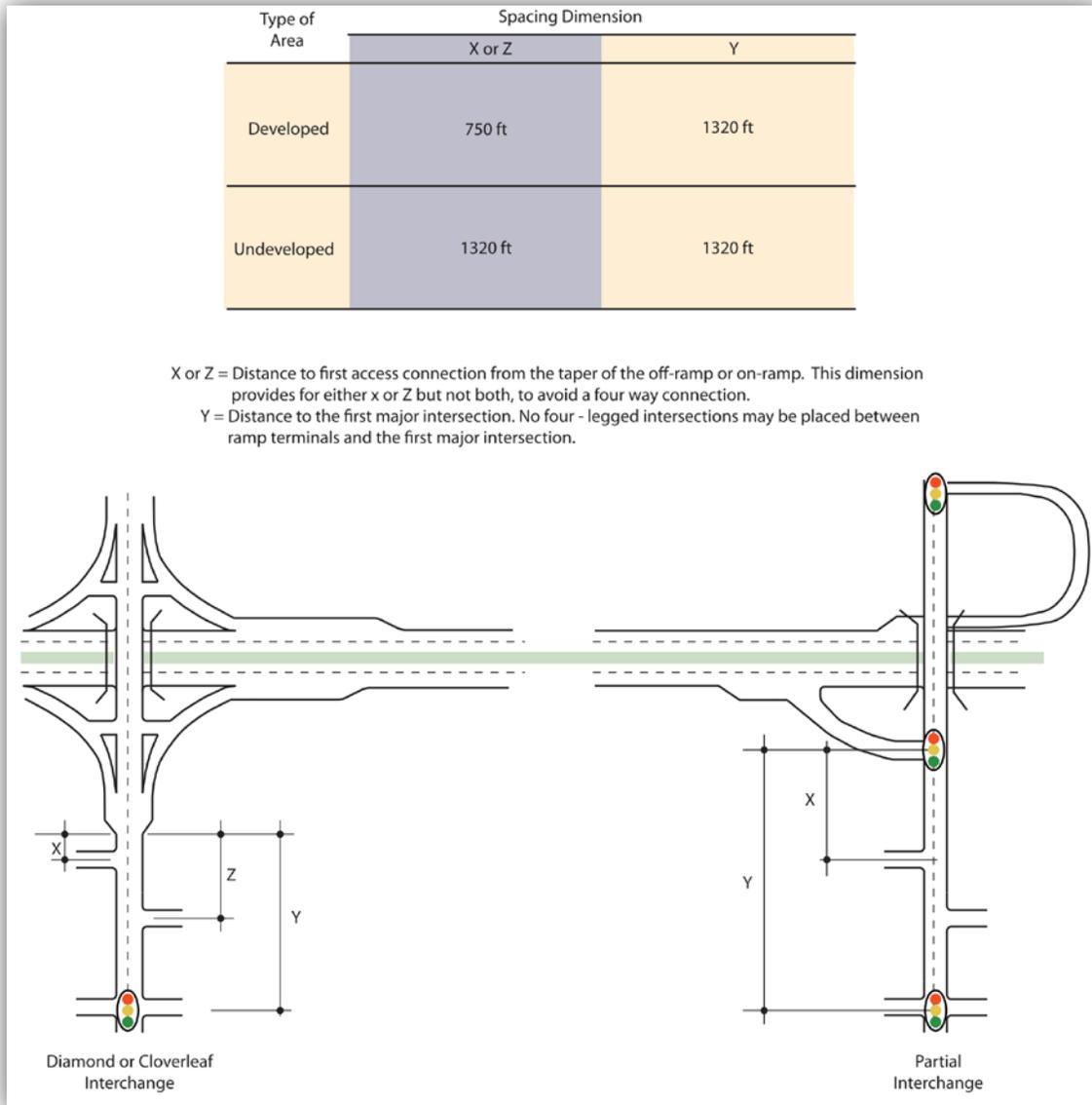


Source: Modified Version of Figure in TRB Access Management Manual, 2003, p. 160.

Two-lane crossroad

Figure 4-21 identifies the recommended minimum spacing to be used for freeway/expressway interchanges with two-lane crossroads.

Figure 4-21. Minimum spacing for freeway/expressway interchange areas with two-lane crossroads



Source: Modified Version of Figure in TRB Access Management Manual, 2003, p.161.

4.3.3.b Access spacing from tight urban diamond, single point urban diamond, and diverging diamond interchanges

The following list of *interchanges* falls under the category of alternative (a.k.a. non-traditional) interchanges being used, or soon to be used, in Kansas:

- *Tight urban diamond interchange (TUDI).*
- *Single point urban diamond interchange (SPUI) (Figure 4-22).*
- *Diverging diamond interchange (DDI).*

Figure 4-22. Single point urban diamond interchange—I-35 and 87th Street, Lenexa, Kansas



Source: Clarkson Construction Company aerial photo, 2007

Distances to access points *upstream* and *downstream* of these interchanges are the same distances used for the traditional diamond interchange discussed previously in this section. The geometric points used to measure the distance between the interchange and the intersection are the same as the conventional diamond interchange.

KDOT follows the access spacing criteria established in Figure 4-20 for freeway/expressway interchange areas with multilane crossroads and Figure 4-21 for freeway/expressway interchanges with two-lane crossroads even with alternative interchanges.

4.3.3.c Access spacing on one-way frontage roads in the area of entrance and exit ramps

The intersection of an interchange exit ramp with a *one-way frontage road* should allow vehicles on the exit ramp to merge on the left, weave across any additional lanes, and have adequate *stopping sight distance (SSD)*. Separation should be provided between exit and entrance ramps and access points located along the one-way frontage road. **KDOT utilizes the information in Table 4-8 to determine the appropriate spacing from the theoretical gore (painted gore) of an exit ramp to the first downstream local access point on the one-way frontage road (Figure 4-23). Access should be denied at least 50 feet upstream from the exit ramp along the one-way frontage road.**

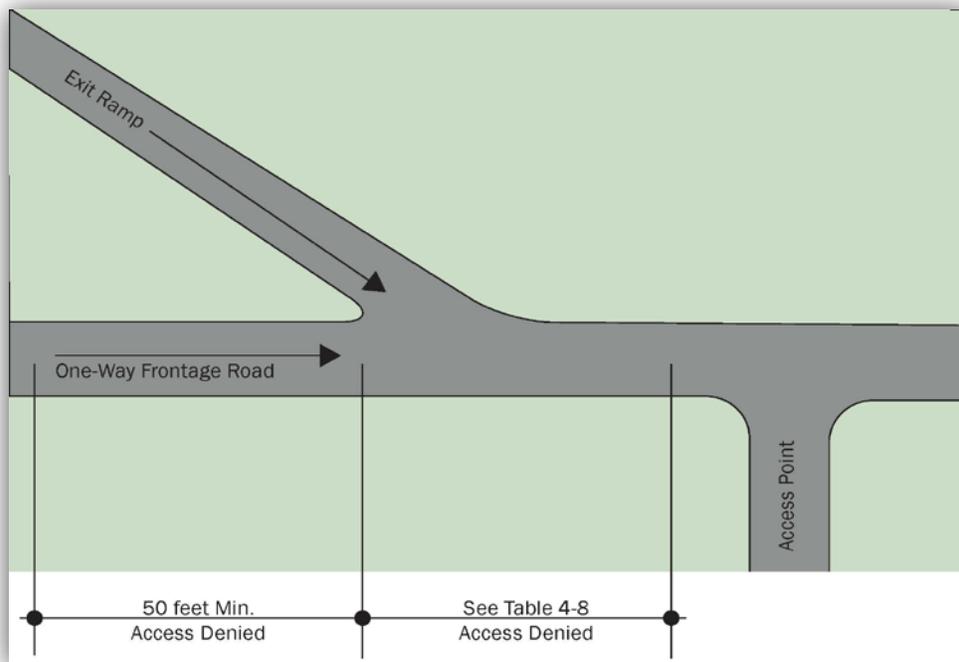
Table 4-8. Access spacing on one-way frontage road in vicinity of exit ramp

| Total Volume (vph) ¹ | Access Point Volume (vph) | Number of Weaving Lanes | | |
|---------------------------------|---------------------------|-------------------------|-----|-----|
| | | 2 | 3 | 4 |
| | | Spacing (feet) | | |
| <2000 | All | 250 | 250 | 250 |
| >2000 | <250 | 460 | 460 | 560 |
| | 250 | 520 | 460 | 560 |
| | 500 | 590 | 460 | 560 |
| | 750 | 790 | 460 | 560 |
| | 1000 | 980 | 460 | 560 |
| >2500 | <250 | 920 | 460 | 560 |
| | 250 | 950 | 460 | 560 |
| | 500 | 980 | 460 | 560 |
| | 750 | 980 | 590 | 690 |
| | 1000 | 980 | 790 | 890 |
| >2500 | <250 | 980 | 750 | 850 |
| | 250 | 980 | 820 | 920 |
| | 500 | 980 | 980 | 980 |
| | 750 | 980 | 980 | 980 |
| | 1000 | 980 | 980 | 980 |

Source: TTI's Development of Improved Guidelines for Frontage Road

¹Total volume is the volume of the exit ramp plus the upstream one-way frontage road volume.

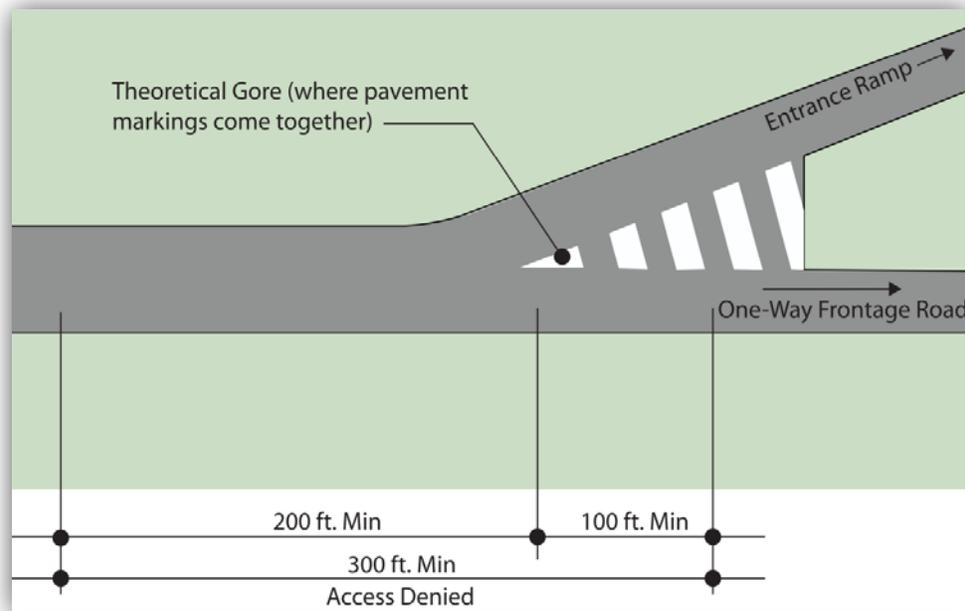
Figure 4-23. Exit ramp to one-way frontage road (area to deny access)



Source: Modified from TTI's Development of Improved Guidelines for Frontage Road Driveway Access at Entrance Ramp Locations, Report 2927-2; Driveway Access, Report 2927-1.

The *intersection* of an *interchange* entrance ramp with a one-way *frontage road* should allow vehicles to enter the one-way frontage road from an access and weave across any additional lanes before reaching the entrance ramp. **KDOT allows access 200 feet or more upstream and 100 feet or more downstream on a one-way frontage road in the area of an entrance ramp (Figure 4-24).**

Figure 4-24. One-way frontage road to entrance ramp (area to deny access)



Source: Modified from TTI’s *Development of Improved Guidelines for Frontage Road Driveway Access at Entrance Ramp Locations*, Report 2927-2

4.3.3.d Access spacing from roundabout intersection

The distance from a roundabout intersection (Figure 4-25) to an access point on the highway is consistent with KDOT’s unsignalized access spacing (Table 4-6). This distance should be measured from the end of the splitter island leaving the roundabout (see Figure 4-25). The appropriate *corner clearance* will be provided between the end of the splitter island leaving the roundabout intersection and the first access point along the local intersecting roadway (see Section 4.3.5).

Roundabouts have raised median islands, or splitter islands, on the approach to the roundabout that help guide the driver to the right upon entering the roundabout. Splitter islands provide a form of access management by restricting turning movements to right-in/right-out. Roundabouts also provide great locations for making U-turns if access management strategies are implemented along highways or local roadways.

Figure 4-25. Roundabout intersection—21st and Urish Road, Topeka, Kansas



Source: Kansas Highway Patrol (KHP)/KDOT aerial photo, 2009

The ability to provide an access point with full movement access is governed by a number of factors:

- **The capacity of the access point:** An unsignalized intersection *capacity* analysis should be performed to assess the operational effectiveness of an access point with full access. Typically an access point downstream of a roundabout may have less capacity and higher delay than one downstream of a traffic signal due to random arrival of vehicles. Queuing from nearby intersections (the roundabout or others nearby) should be checked to see if the operation of the access point will be affected.
- **Left-turn storage needs to serve the access point:** It is often necessary to provide separate left-turn storage for access points downstream of a roundabout. Analysis should be performed to determine the likelihood of a left-turning vehicle, as well as queuing analysis to determine the length of the queue behind the impeding left-turning vehicle. If a left-turn lane is needed, the appropriate components of a left-turn lane should be provided.
- **Sight distance**—A driver at the access point should have proper *intersection sight distance* and should be visible when approaching or departing the roundabout, as applicable.

KDOT follows the unsignalized access spacing (Table 4-6) requirements regarding access points near a roundabout intersection measured from the end of the splitter island leaving the roundabout.

KDOT’s Roundabout Guide provides detailed information on planning, design, and management of Roundabouts in Kansas (www.ksdot.org/burTrafficEng/roundabouts/roundabout.asp)

4.3.4 Offset access points

Closely spaced access, intersections on opposite sides of an *undivided roadway*, or a roadway with a two-way left-turn lane can result in conflicting movements resulting from the overlapping of turning movements into and out of the access points (Figure 4-26).

KDOT recommends new access points be aligned directly across from another access to minimize additional conflicts that arise from offset access.

The applicant (or designee) should calculate the influence area for intersections, or access points, adjacent to a proposed new access in order to determine if the intersection influence areas overlap or if there is an access window (see Section 4.3.2) available for new access. It is KDOT’s preference not to locate access within the influence area of an intersection. If this is not practical, the minimum offset distances shown in Table 4-9 should be used to minimize conflicts between access points on opposite sides of undivided highways.

Opportunities to realign existing offset access points that are either a safety or traffic flow issue should be investigated. Realignment can mean moving the access points opposite each other or separating so that the access point influence areas do not overlap. By separating the access points, each access point will operate as an independent “T” intersection, which has a lower crash potential than tight offset access points.

Figure 4-26. Schematic of issues arising from closely spaces access connections on opposite sides of a roadway

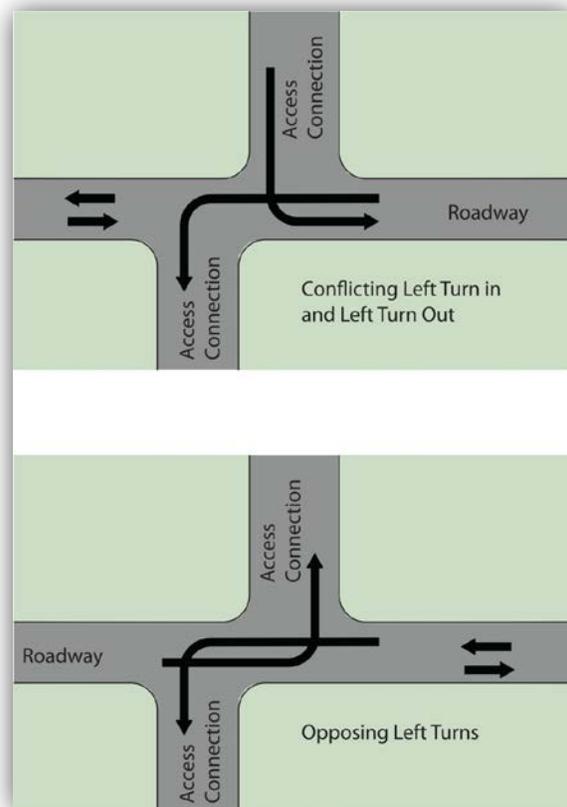


Table 4-9. Minimum offset distance between access points on opposite sides of undivided highways

| Access Type | Posted Speed (mph) | Minimum Offset Distance (feet) |
|-------------|--------------------|--------------------------------|
| 6 | > 45 | 700 |
| | 40–45 | 300 |
| | 20–35 | 225 |
| 4 & 5 | > 45 | 600 |
| | 40–45 | 275 |
| | 20–35 | 200 |
| 3, 2 & 1 | > 45 | 350 |
| | 40–45 | 165 |
| | 20–35 | 65 |

Note: Minimum offset distance is measured centerline-to-centerline of opposing access.

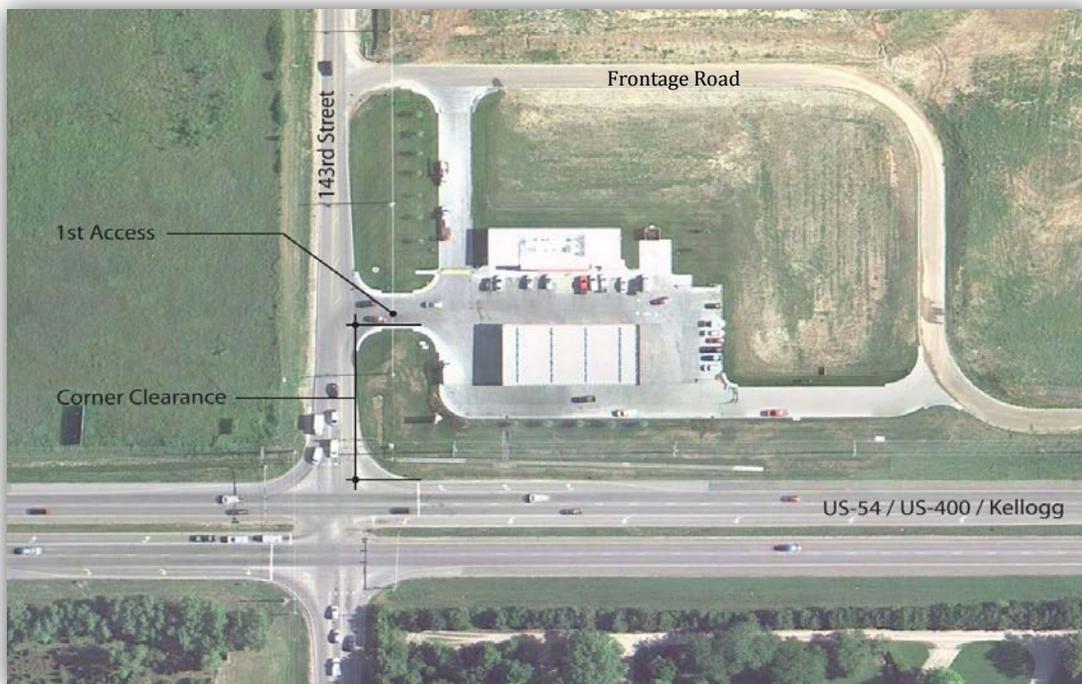
4.3.5 Corner clearance

Corner clearance is the distance required between a highway intersection and the nearest access on the crossroad at a corner development (Figure 4-27).

The first access point from a highway intersection should be outside the highway intersection influence area (see Section 4.3.1) so that vehicles turning into and out of the entrance do not affect traffic at the highway intersection.

When an access point on the side road will be constructed or modified as part of a corner development along a state highway, the corner clearance distance is important to address before the site plan is approved. Inadequate corner clearance can result in slow traffic operation, safety, and capacity problems. Queues can block access on the intersection approach for left-turning vehicles or result in delays for right-turning vehicles. Similarly, inadequate corner clearance can result in sudden deceleration or stops for right turns into access on the receiving leg of an intersection and may cause delays for left-turning vehicles trapped by queues from the opposite direction.

Figure 4-27. Corner clearance from state highway intersection—US-54/US-400/East Kellogg and 143rd Street, Wichita, Kansas

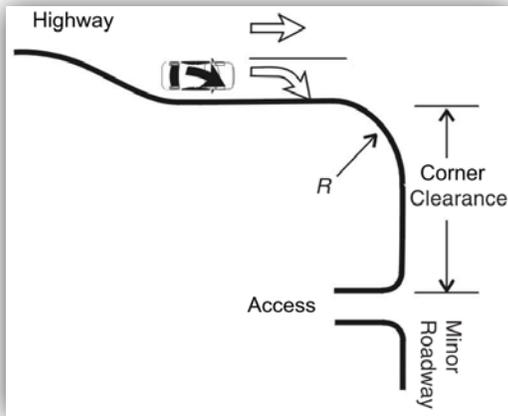


Source: 2011 Microsoft Corporation Pictometry Bird's Eye, 2010 Pictometry International Corp.

Corner clearance distances should be located outside the highway intersection influence area but may not be less than the minimum distances shown in Table 4-10.

In developed areas, corner clearance is measured from the edge of curb line of the highway to the edge or curb line of the access as in Figure 4-28.

Figure 4-28. Corner clearance measured from highway to access



Source: Adapted from TRB Access Management Manual (2003), pg. 158

Table 4-10. Minimum corner clearances by area type

| Area Type (highway) | Minimum Corner Clearance Distance (side road) (feet) |
|---------------------|--|
| Undeveloped | 155 |
| Developed | 115 |
| CBD | 85 |

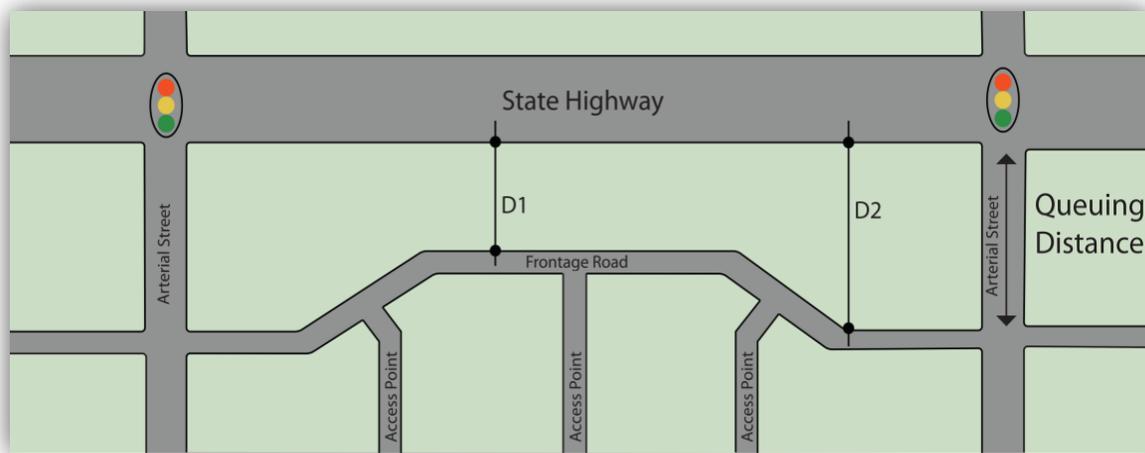
Source: AASHTO's A Policy on Geometric Design of Highways and Streets, Table 3-1 (2011) Frontage and backage roads

Frontage roads and backage roads adjacent to highways play an essential role in providing access to developing properties. By limiting direct access on the highway and providing access from an adjacent frontage or backage road, via an arterial street connection, the driver uses the “hierarchy of roadways” to reach their destination. **For new access points along frontage roads the applicant (or designee) should calculate the influence area for intersections, to determine if the intersection influence areas overlap. Access should not be located within the influence area of an intersection or within merging and weaving areas.**

4.3.5.a Frontage road spacing from highway

Frontage roads can be used in developed and undeveloped settings to provide property access while reducing the number of *conflict points* along a *state highway*. Frontage roads should be located near and parallel to the state highway to minimize potential for development between the facilities. The separation provided between the frontage road and the highway is important to traffic operations. **The minimum separation between the state highway and a frontage road should be 25 feet at mid-block and 300 feet between the state highway and the frontage road intersection (Figure 4-29). The frontage road should not be located within the influence area of the highway intersection and a traffic study is needed to determine if the separation needs to be longer than 300 feet.**

Figure 4-29. Minimum separation between a frontage road and a state highway



Source: Modified version of figure in TRB Access Management Manual, 2003, p.194.

D1 = Minimum midblock separation ≥ 25 feet

D2 = Minimum separation at intersection ≥ 300 ft

4.3.5.b Spacing on frontage roads

Frontage roads located within KDOT R/W, regardless of who maintains them, will necessitate a KDOT access permit. **Access on frontage roads will be subject to the requirements of this policy.** Under the KDOT Access route classification frontage roads are classified as a Type E route.

4.3.5.c Backage roads

Unlike frontage roads, backage roads are located at a greater distance from the primary roadway to allow for development between the two roadways (Figure 4-30). Direct access to the developments between the two roadways is provided from the backage road, which improves safety and traffic flow on the state highway. **KDOT requires the applicant (or designee) to perform a traffic study to determine the minimum separation between the state highway and the backage road such that the intersections of the arterial road and the state highway and the arterial road and the backage road should be great enough so that the intersection influence areas do not overlap.** Backage roads are typically maintained by the local agency (city or county) and are therefore subject to the local agency’s requirements on access spacing.

Figure 4-30. Backage roads adjacent to a state highway—US-183 (N. Vine Street) in Hays, Kansas



Source: 2011 Microsoft Corporation Pictometry Bird’s Eye, 2010 Pictometry International Corp.

4.3.7 Sight distance (stopping and intersection)

Sight distance, both stopping and intersection, is an essential component of the proper placement of an access point along a highway. Drivers need a clear view of the access from the highway to be able to slow or stop if required. They also need a clear view of the highway from the access when selecting an appropriate gap in traffic to cross or turn.

4.3.7.a Stopping sight distance

Stopping sight distance (SSD) is the distance required to stop a vehicle from a specific speed at a comfortable deceleration rate. SSD consists of the sum of two measurements: (1) the distance traveled by a vehicle during the time the driver perceives an object requiring a stop to the time the driver applies the brakes (perception-reaction distance) and (2) the distance required to stop the vehicle once the brakes are applied (braking distance).

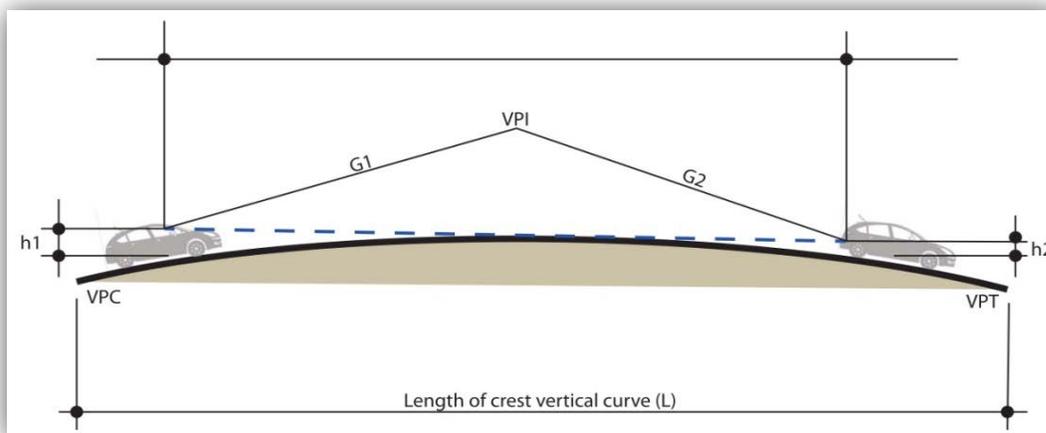
Table 4-11. Stopping sight distance (level terrain)

| Posted Speed (mph) | Design Distance (feet) |
|--------------------|------------------------|
| 20 | 115 |
| 25 | 155 |
| 30 | 200 |
| 35 | 250 |
| 40 | 305 |
| 45 | 360 |
| 50 | 425 |
| 55 | 495 |
| 60 | 570 |
| 65 | 645 |
| 70 | 730 |

Source: AASHTO's *A Policy on Geometric Design of Highways and Streets*, Table 3-1 (2011) and MUTCD, Table 6C-2 (2009)

Table 4-11 gives the SSD for level terrain based on the posted speed limit of the highway. Table 4-12 gives SSD calculations based on whether the vehicle is going uphill (less than level terrain) or downhill (more than level terrain). Figure 4-31 shows the SSD profile for a crest vertical curve.

Figure 4-31. Stopping sight distance profile for a crest vertical curve



Source: AASHTO's *A Policy on Geometric Design of Highways and Streets* (2011 Edition), pg. 3-14 and 3-15
 h1 = 3.5 feet; h2 = 2.0 feet

Table 4-12. Stopping sight distance on grades

| Posted Speed (mph) | Stopping Sight Distance (feet) | | | | | |
|-----------------------|--------------------------------|-----|-----|----------|-----|-----|
| | Downgrades | | | Upgrades | | |
| | 3% | 6% | 9% | 3% | 6% | 9% |
| 20 | 116 | 120 | 126 | 109 | 107 | 104 |
| 25 | 158 | 165 | 173 | 147 | 143 | 140 |
| 30 | 205 | 215 | 227 | 200 | 184 | 179 |
| 35 | 257 | 271 | 287 | 237 | 229 | 222 |
| 40 | 315 | 333 | 354 | 289 | 278 | 269 |
| 45 | 378 | 400 | 427 | 344 | 331 | 320 |
| 50 | 446 | 474 | 507 | 405 | 388 | 375 |
| 55 | 520 | 553 | 593 | 469 | 450 | 433 |
| 60 | 598 | 638 | 686 | 538 | 515 | 495 |
| 65 | 682 | 728 | 785 | 612 | 584 | 561 |
| 70 | 771 | 825 | 891 | 690 | 658 | 631 |

Source: AASHTO’s A Policy on Geometric Design of Highways and Streets, Table 3-2 (2011)

To determine the available SSD in the field, the following steps should be taken:

1. Create a target object using a traffic cone, roadway delineator, or other static free-standing object, make a distinct, highly-visible mark on the at 2.0 feet high (typical vehicle bumper height).
2. Place the target object out of the traveled path of vehicles on the roadway at the location of the proposed access.
3. Walk along the roadway in the direction of oncoming traffic from the access point in each direction until the two foot mark is just barely visible from an eye height of 3.5 feet. Use a measuring device to accurately obtain a 3.5-foot eye height.
4. The distance between one’s current location and the target object is the SSD. Record this value in feet.

On horizontal curves, the SSD may be restricted on the inside of the curve by obstructions such as bridge piers, buildings, median barriers, guardrail, cut slopes, etc. Refer to the latest edition of AASHTO’s A Policy on Geometric Design of Highways and Streets, which shows the relationship between sight distance, horizontal curvature, and obstruction offset for additional adjustments based on horizontal alignment.

Minimum SSD must be available in both directions on the roadway for all new access points. If SSD is not available, relocation of the proposed access point needs to be investigated. If relocation is not possible, the proposed access point is denied or an approved variance is needed (see Section 4.6.6).

4.3.7.b Intersection sight distance

Intersection sight distance provides motorists crossing or turning onto a state highway enough sight distance in both directions (on grades less than 3%) to make their movement without impeding the speed of approaching motorists (Figure 4-32). For example, a motorist on the minor road approaching an intersection should have an unobstructed view of the intersection, its *traffic control devices*, and sufficient distance to anticipate and avoid a potential collision (*clear sight triangle*). This permits the driver entering the intersection to see a vehicle travelling on the roadway they are entering, and vice versa. Intersection sight distance is determined by the type of intersection control at the intersection. Types of intersection control are listed in Table 4-13.

The intersection sight distance listed in Table 4-14 shows the clear sight triangle for access points with a stop condition for a passenger car, identified as Case B intersection control. If the design vehicle for the access is larger than a passenger car, refer to the latest edition of AASHTO’s, *A Policy on Geometric Design of Highways and Streets* to determine the intersection sight distance.

Figure 4-32. Clear sight triangle for viewing approaching traffic on the major road (state highway)

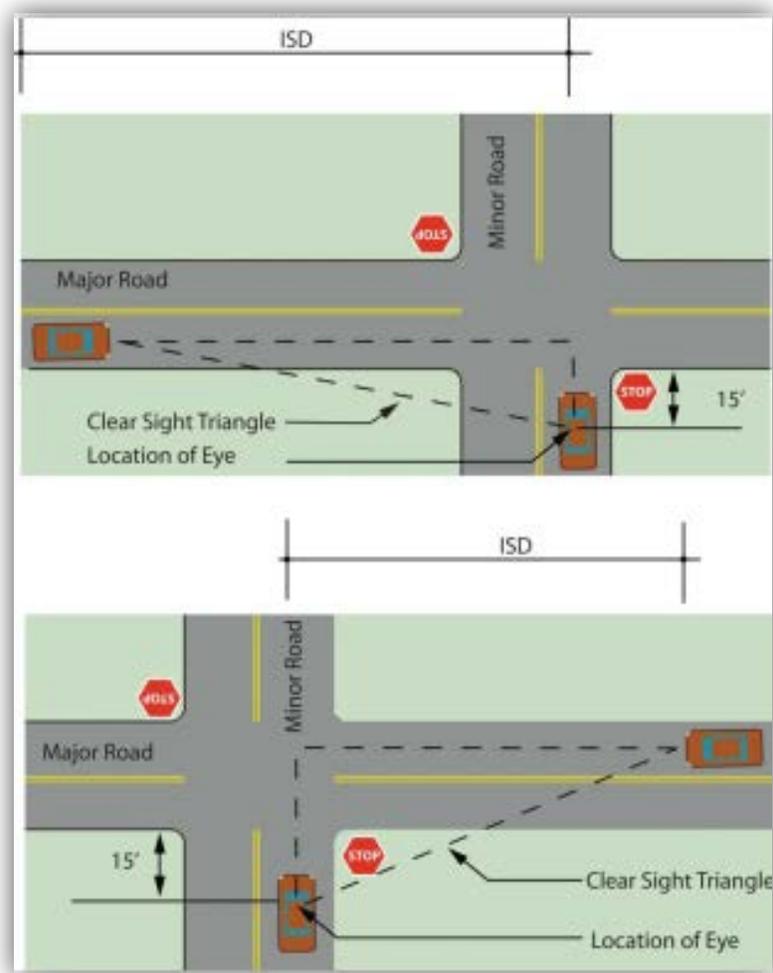


Table 4-13. Types of intersection control with methods for determining sight distance

| Case | Use |
|---------------|--|
| Case A | Intersections with no control |
| Case B | Intersections with stop control on the minor road |
| Case B1 | Left-turn from the minor road |
| Case B2 | Right-turn from the minor road |
| Case B3 | Crossing maneuver from the minor road |
| Case C | Intersections with yield control on the minor road |
| Case C1 | Crossing maneuver from the minor road |
| Case C2 | Left- or right-turn from the minor road |
| Case D | Intersections with traffic signal control |
| Case E | Intersections with all-way stop control |
| Case F | Left-turns from the major road |

Table 4-14. Clear sight triangle for access points (stopped condition for a passenger car)

| Posted Speed (mph) | Left-Turn, 2-Lane Highway (feet) ¹ | Left-Turn, 4-Lane Highway (feet) ² | Right-Turn, 2- or 4-Lane Highway (feet) ³ |
|--------------------|---|---|--|
| 20 | 225 | 240 | 195 |
| 25 | 280 | 295 | 240 |
| 30 | 335 | 355 | 290 |
| 35 | 390 | 415 | 335 |
| 40 | 445 | 475 | 385 |
| 45 | 500 | 530 | 430 |
| 50 | 555 | 590 | 480 |
| 55 | 610 | 650 | 530 |
| 60 | 665 | 710 | 575 |
| 65 | 720 | 765 | 625 |
| 70 | 775 | 825 | 670 |

¹ Source: AASHTO’s A Policy on Geometric Design of Highways and Streets (2011 Edition), Table 9-6, pg. 9-38;

² Source: AASHTO’s A Policy on Geometric Design of Highways and Streets (2011 Edition) 4-lane highway calculated from formula 9-1 provided on pg. 9-37;

³ Source: AASHTO’s A Policy on Geometric Design of Highways and Streets (2011 Edition), Table 9-8, pg. 9-41

The methods for determining intersection sight distance are provided in the current edition of AASHTO’s, *A Policy on Geometric Design of Highways and Streets*.

The intersection sight distance listed in Table 4-14 shows the calculated clear sight triangle for access points with a stop condition, identified as Case B intersection control. For crossing maneuvers, in most cases, the departure sight triangles for left and right turns onto the major road will provide adequate sight distance for minor road vehicles to cross the major road. Sight distance

design for left-turns and crossing maneuvers at divided-highway intersections should consider multiple design vehicles and the median width. Contact KDOT for assistance.

Once the required intersection sight distance is determined, it can be measured horizontally in the field (the following steps should be taken):

1. Create a target object using a traffic cone, roadway delineator, range pole, or other static free-standing object. Make a distinct, highly-visible mark on the object at 3.5 feet above where the top of the pavement for the access will be. In rural areas with ditches, this mark may be significantly higher than 3.5 feet to account for the ditch, which will be filled in, and the thickness of the pavement. This represents the typical eye height of a driver on the side road.
2. Place the target object out of the traveled path of vehicles on the roadway at the location of the proposed access. The target object shall be placed 15 feet back from the edge of the *traveled way* into the proposed access, which is approximately where a driver would be stopped while scanning the road.
3. Walk along the roadway in the direction of oncoming traffic from the access point in each direction until the 3.5-foot mark is just barely visible. Use a measuring device to accurately obtain a 3.5-foot eye height.
4. The distance between the measurer's current location and the target object is the available intersection sight distance for one approach. Record this value in feet. Repeat this process for the access approach in the opposite direction.

Minimum intersection sight distance must be available in both directions on the roadway for all new proposed access points. If that does not occur, relocation of the proposed access point needs to be investigated. If relocation is not an option, the proposed access point needs to be denied or have a variance approved (see Section 4.6.6).

4.3.8 Access requirements within highway right-of-way

KDOT *right-of-way* (R/W) is impacted by access points. This section outlines the expectations for activity and treatment within the KDOT R/W. Existing R/W uses are not required to conform to this Policy. Existing uses will usually be allowed, but should be brought into conformance with the Policy when changes occur.

A *permittee* cannot use any part of the highway R/W for servicing vehicles, displays, or conducting private business. The highway R/W is to be kept clear of buildings, sales, exhibits, unauthorized signs, parking areas, service equipment, or any other sight obstructions.

At highway and local road intersections, on-street parking is prohibited or restricted on the highway based on intersection sight distance requirements (see Section 4.3.7) for intersection sight distance and Section 4.6.3 for on-street parking).

No commercial or industrial access points that require backing vehicles from an access onto a highway are permitted. The property must have sufficient area for vehicles to turn around and enter the highway frontward.

Where lighting is present along a state highway, separate lighting for a specific access point is usually not necessary. All lighting equipment for roadside establishments must be located off the highway R/W, and any illumination for the development should be concentrated on the property with no light beams directed toward the eyes of drivers on the highway.

The installation of access points with culverts should meet the slope and *shoulder* foreslope criteria outlined in Section 4.4.9 as determined by the DE.

Proper building *setbacks* on the property will be established by agreement, zoning regulations, or with the cooperation of the local officials and abutting property owners. KDOT's guidance on building setbacks is provided in Chapter 3.

Developments with fuel pump dispensing islands, service stations, and bulk fuel plants will contact the State Fire Marshal's office and comply with the Fire Marshal's setback requirements, regulations, and codes.

4.4 Access design guidelines

Property owners are responsible for designing and developing project plans that will be used to provide access to their properties within the highway R/W. The design of and materials used in an *access point* to a state highway will be in accordance with KDOT guidelines. All access installations on highway R/W should be constructed from durable materials that provide a long service life and be relatively free from routine maintenance. Access points designed specifically for larger vehicles must also take into account factors such as sign placement, pedestrian accommodation, and other entrance users (i.e., smaller vehicles). Conformance with KDOT current applicable material specifications and codes is mandatory.

4.4.1 Width, radii, curb returns and tapers

The geometric elements of an *access point* (width, *radii*, and size of taper, if used) work together to accommodate the design vehicle. As a result, a wide access can be used together with a small radius to achieve a similar operation to a narrow access with a larger radius. The *access width*, *radii*, and *access taper* used to connect an access point to the state highway shall comply with this Policy. In special, situations and with the approval of KDOT, access points may be designed with widths, radii, and tapers that take into account special circumstances. Vehicle turning templates should be used for the custom design of an access point using the appropriate design vehicle.

4.4.1.a Width

The *access width* is the distance measured at the *throat* of an access. If the access has curb and gutter the width will only include the driving lanes. The curb and gutter is not counted when determining the width of an access.

Two-way widths are for access points where the driver can enter or exit from the same access. One-way widths are for access points that have been separated into a one-way in (ingress) or a one-way out (egress).

A maximum width of 40 feet may be warranted by semi-truck traffic or *shared/joint-use* access which is subject to review and approval by KDOT. Access type 3 (emergency) widths are as

required by the number and width of garage door openings and subject to KDOT review and approval.

Access width should comply with the widths shown in Table 4-15.

Table 4-15. Access width on state highway

| Access Type | 2-Way Width | | 1-Way Width | |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| | Maximum Width (feet) | Minimum Width (feet) | Maximum Width (feet) | Minimum Width (feet) |
| 1 and 2 | 30 | 12 | n/a | n/a |
| 3 | * | * | * | * |
| 4 | 36 | 24 | 18 | 12 |
| 5 and 6 commercial/other | 36 | 24 | 18-24 | 12 |
| 5 and 6 industrial | 40 | 24 | 18-24 | 12 |

Note: Types 5 and 6, 1-way width, may have a max width of 24 ft if there is a 2-lane egress (exit)

n/a = not applicable

* = as required by the number and width of garage door openings and subject to KDOT review and approval

4.4.1.b Curb returns

The *curb return* is the geometric treatment that changes your direction from the highway to an access. The most common transition is a *radius*. Acceptable radius designs vary depending on the surroundings and for this policy have been separated into radius for curb and gutter sections and radius for open ditch sections. KDOT’s preferred method for traffic redirection or transition is the radius, but other options also include a three center curve and a drop curb flare.

Radii on curb and gutter highway section—Area types “developed” and “CBD” typically utilize highway sections with curb and gutter. R/W within curb and gutter areas is typically restricted which facilitates the need for smaller radii for access. Smaller radii also accommodate pedestrians and bicyclist that use sidewalks and other pathways adjacent to the roadway.

Radii within curb & gutter sections of highway should comply with the radius dimensions shown in Table 4-16.

Figure 4-33 illustrates a typical access with curb and gutter. Figure 4-34 illustrates the shared/joint-use access with curb and gutter.

Table 4-16. Radius—curb and gutter

| Access Type | Radius (feet) (max) | |
|--------------------------|---------------------|--------------|
| | ≤30 mph | 35 to 45 mph |
| 1 and 2 | 10 to 20 | 20 to 30 |
| 3 | * | * |
| 4 | 15 to 25 | 25 to 35 |
| 5 and 6 commercial/other | 20 to 40 | 25 to 45 |
| 5 and 6 industrial | 25 to 50 | 30 to 50 |

Area type “developed” typically uses curb & gutter.

* = as required by the number and width of garage door openings and subject to KDOT review and approval

Figure 4-33. Typical access—curb and gutter

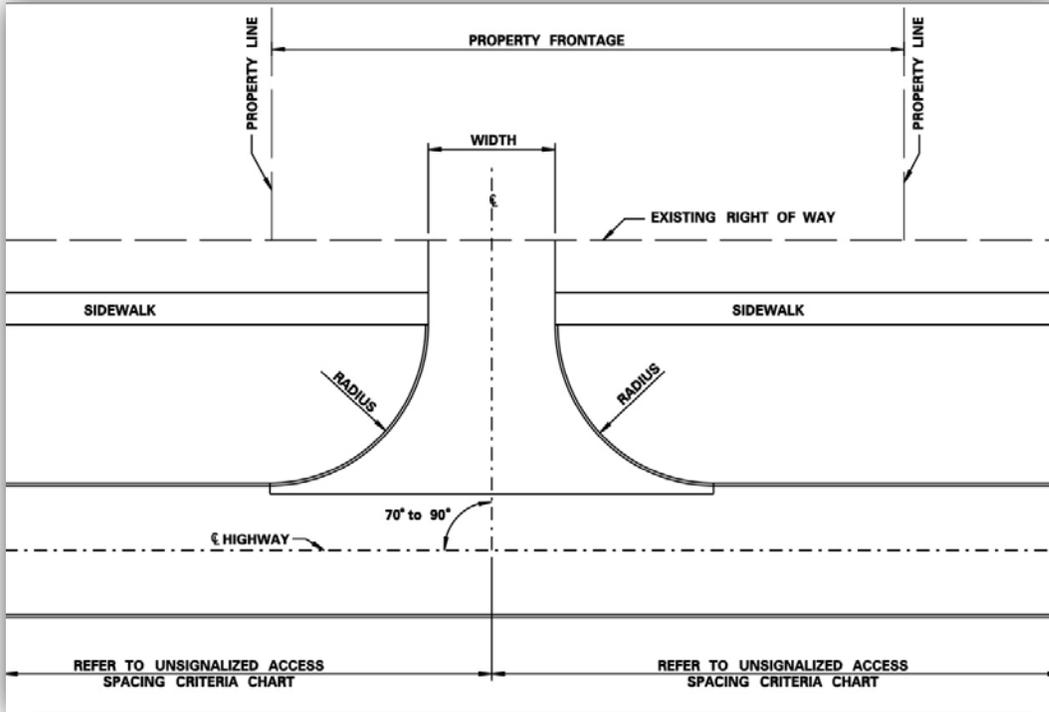
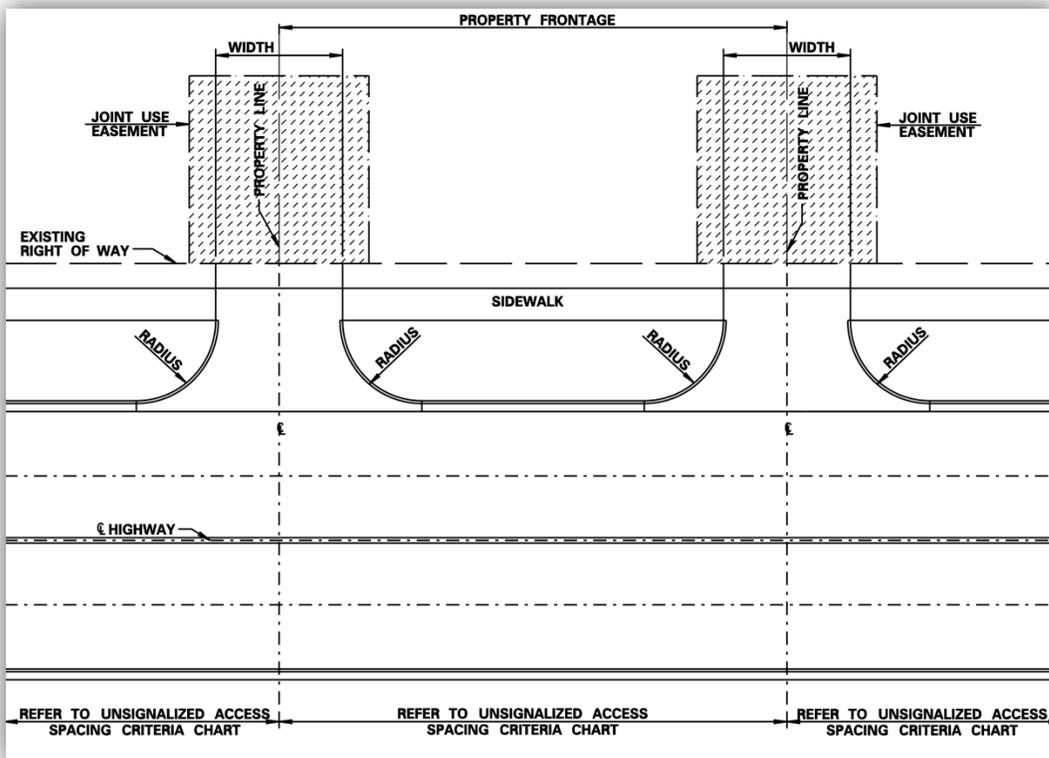


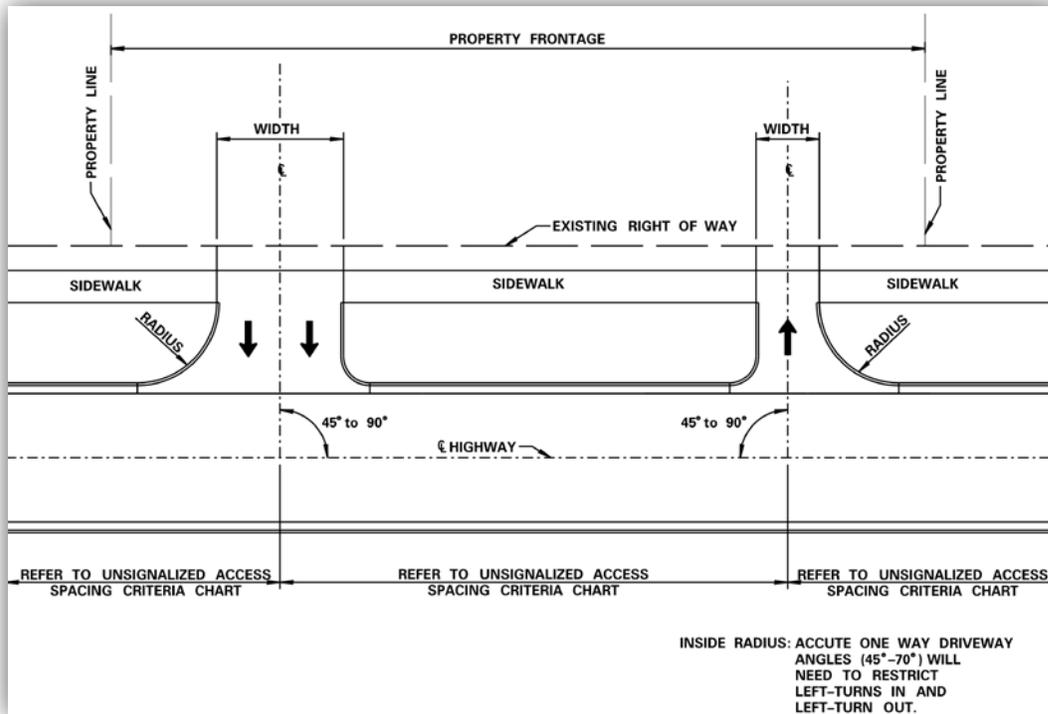
Figure 4-34. Typical shared/joint-use access—curb and gutter



With one-way access points, the inside radius may be less than the radius; however, turning movements for the design vehicle should be checked for all valid movements at the access before finalizing the design. Figure 4-35 illustrates a typical one-way access with curb and gutter.

On highways with curb and gutter KDOT recommends the use of a radius to connect the access to the curbed roadway.

Figure 4-35. Typical one-way access—curb and gutter



Radii in open ditch highway section—Area type “undeveloped” typically utilize highway sections with open ditch. Figure 4-36 shows a typical access with open ditch and Figure 4-37 shows a typical shared/joint-use access with open ditch. Additional R/W is typically available within open ditch sections of highway which facilitates the use of larger radii. Pedestrian and bicycle volumes are typically low in undeveloped areas.

Figure 4-36. Typical access—open ditch

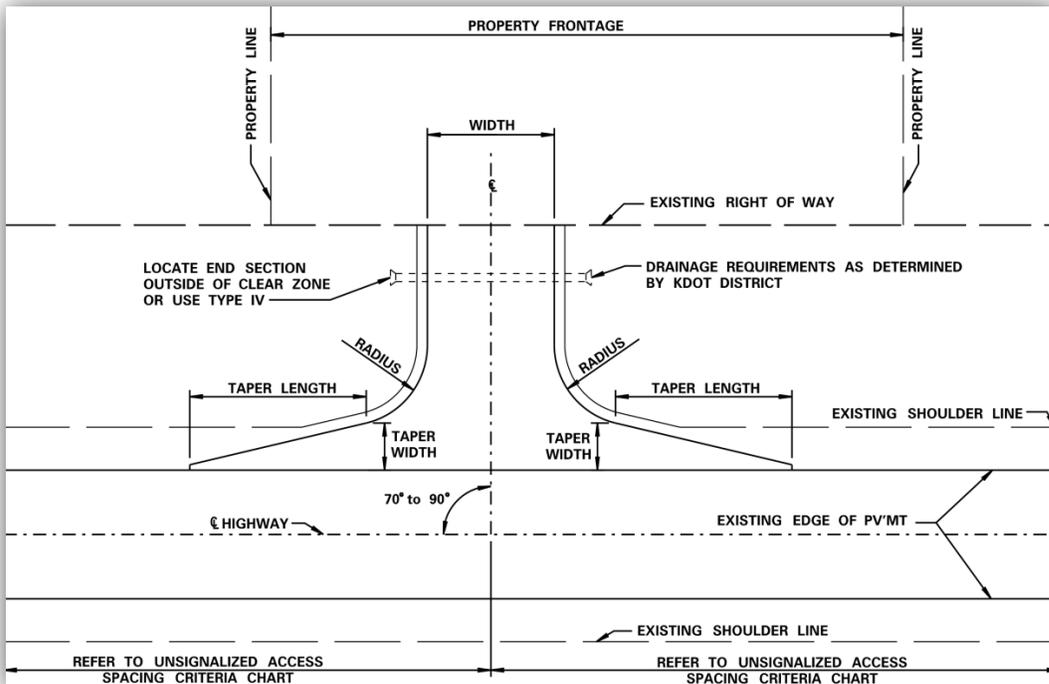
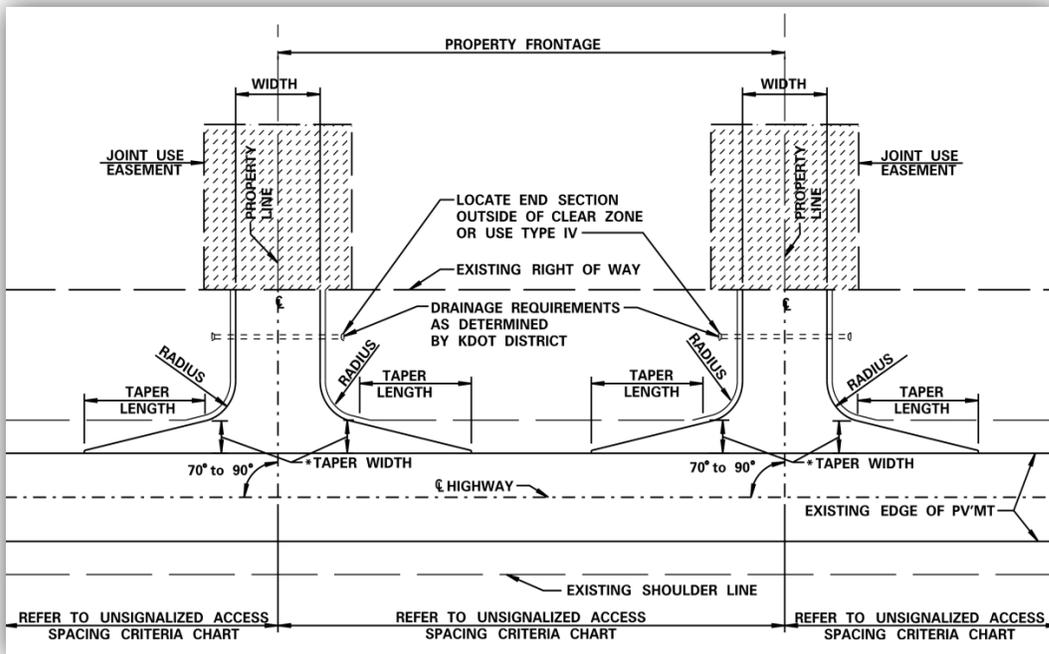


Figure 4-37. Typical shared/joint-use access—open ditch



Access radii within open ditch sections of highway should comply with the radius dimensions shown in Table 4-17.

Table 4-17. Radius—open ditch

| Access Type | Radius (feet) (max) | | |
|--------------------------|---------------------|--------------|-----------|
| | ≤30 mph | 35 to 50 mph | ≥55 mph |
| 1 and 2 | 20 to 25 | 25 to 30 | 30 to 60 |
| 3 | * | * | * |
| 4 | 25 to 30 | 30 to 35 | 35 to 70 |
| 5 and 6 commercial/other | 30 to 50 | 45 to 60 | 50 to 75 |
| 5 and 6 industrial | 40 to 50 | 50 to 75 | 75 to 115 |

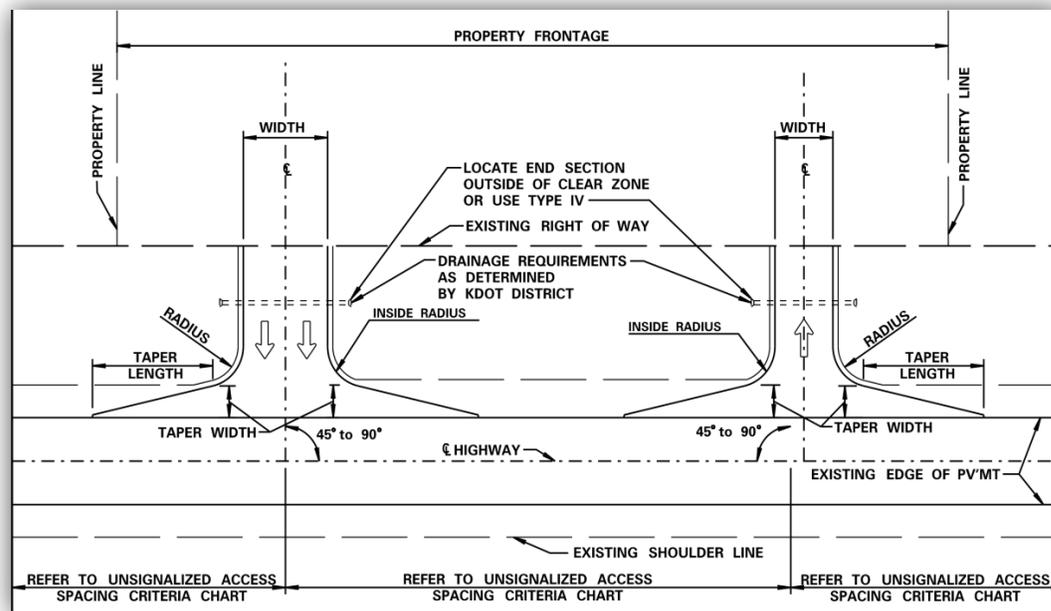
Area type “undeveloped” typically uses open ditch. Open ditches are assumed to have a 50-foot by 8-foot taper.

n/a = not applicable

* = as required by the number and width of garage door openings and subject to KDOT review and approval

With one-way access points, the inside radius may be less than the radius; however, turning movements for the design vehicle should be checked for all valid movements at the access before finalizing the design.

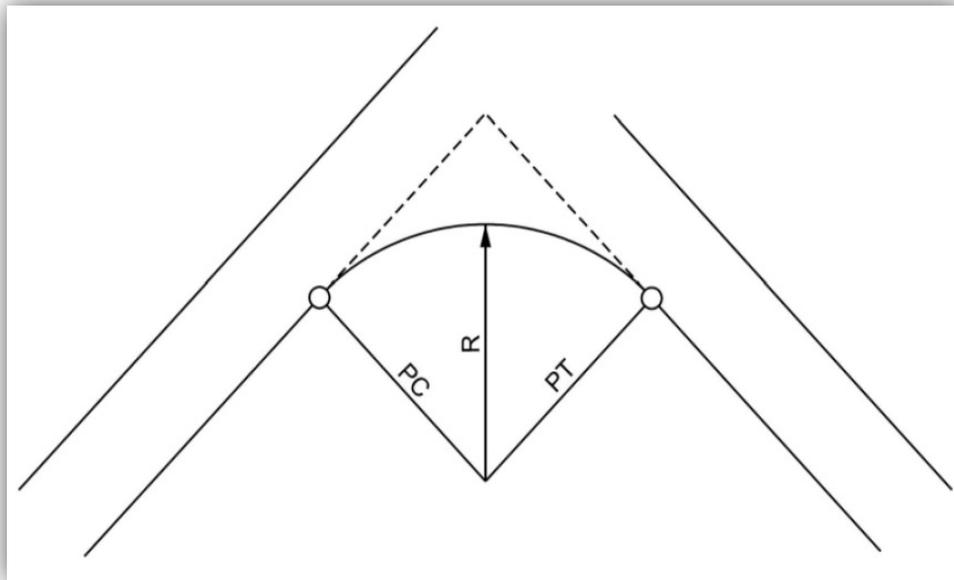
Figure 4-38. Typical one-way access—open ditch



Alternative radius—The off-tracking of trucks turning from a roadway into an access can result in the back wheels running over the curb or sidewalk. This can be avoided by providing a larger radius within the connection transition. However, for some combinations of access width and curb radii, the required curb radius can create a wide entry point. To avoid this, the simple radius curve can be redesigned as a simple curve with a taper or with a three-centered compound curve. *Access angle* and type of access will determine inside radii. Special design and geometric consideration will be given to sites that generate truck traffic. Larger radii may be necessary to accommodate the turning wheel path. Large simple curve radii used along with wider access widths can accommodate larger design vehicles; however, the use of three centered curves can better track the wheel paths of larger vehicles resulting in narrower-width access points.

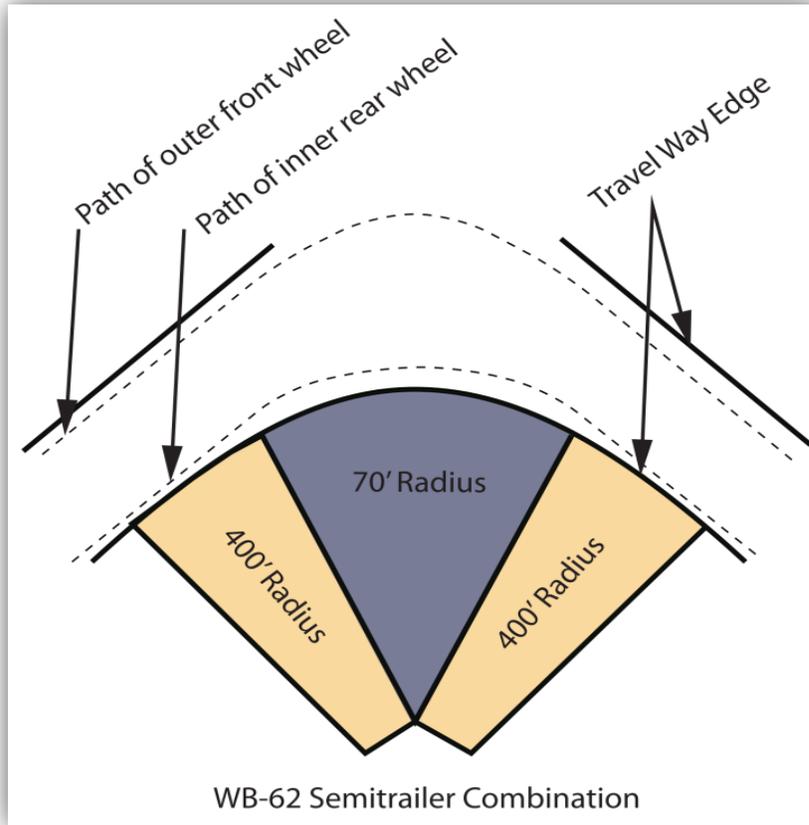
Figure 4-39 shows access design using a simple curve, while Figure 4-40 shows the use of three-centered compound curves for larger design vehicles.

Figure 4-39. Intersection edge of pavement design using simple curves



Source: South Dakota DOT Road Design Manual, 2003, Figure 12-6, p.12-17

Figure 4-40. Use of three centered curve for radii to accommodate large trucks



Drop curb flare—In special circumstances the curb may be **cut** or **dropped** and the access may connect directly into the roadway without a radius (upon request and approval by KDOT). See Figure 4-41 for a drop curb flare design detail. An example of a drop curb flare access point is shown on Figure 4-42.

Figure 4-41. Drop curb flare detail

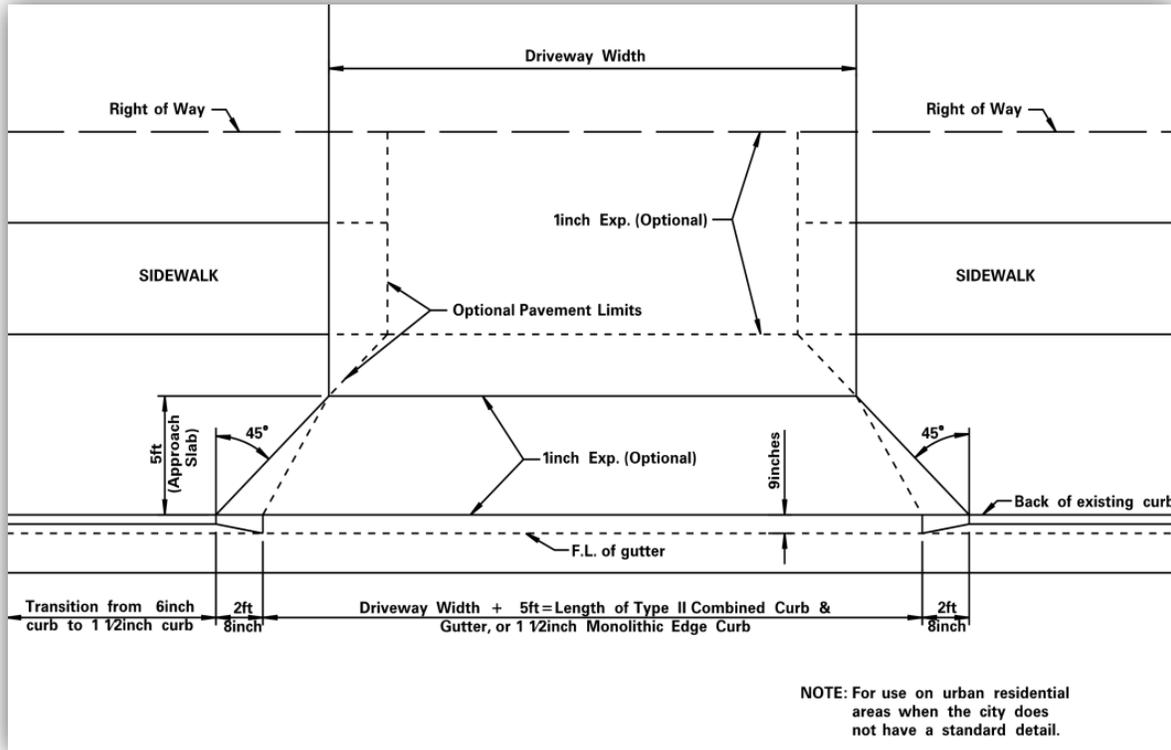


Figure 4-42. Typical drop curb flare access

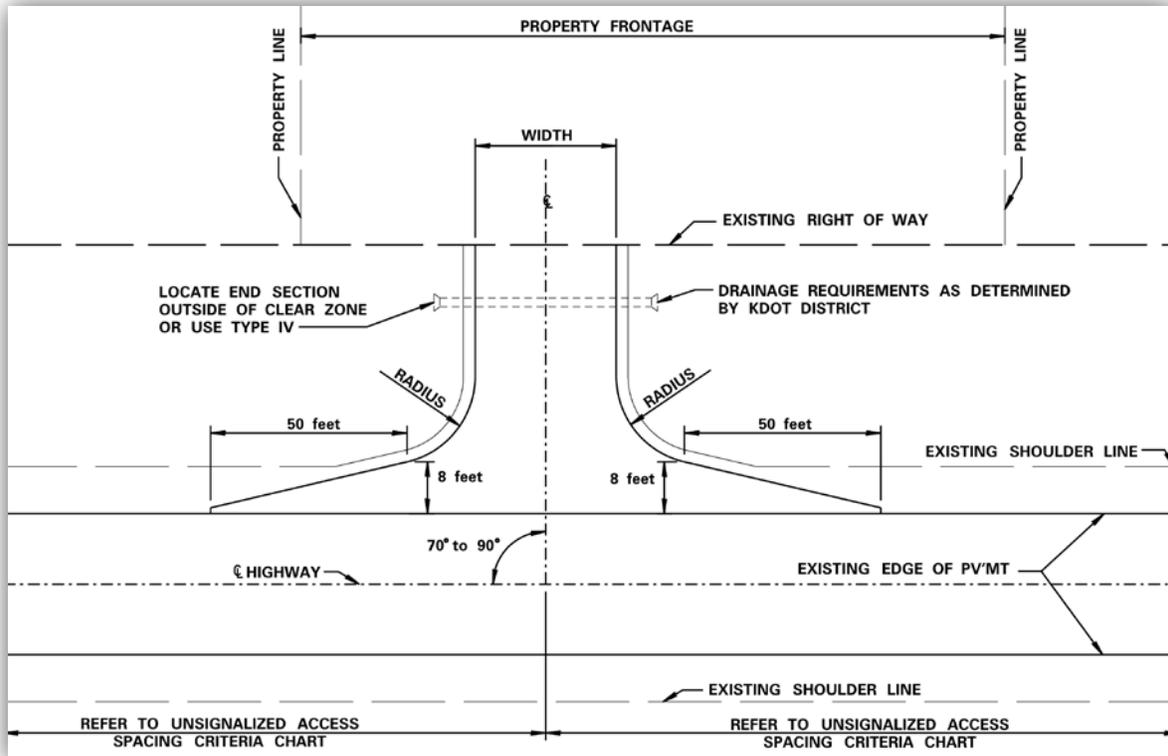


In special, limited situations it may not be practical or desirable to design and construct all access based on KDOT standards. With the approval of KDOT, access points may be designed with radii and widths that take into account the special circumstances.

4.4.1.c Tapers

There are four types of tapers to consider when designing an access. The first type of taper is an *access taper* and should be used on all access where the highway has an open ditch and deceleration taper is not required. The taper will be 50 feet long and 8 feet wide as depicted in Figure 4-43. The tapers should be constructed out of the same material as the new access unless there is an existing full width paved *shoulder*.

Figure 4-43. Access taper in undeveloped areas



The second type of taper is a right-turn *deceleration taper*. This taper is used to aid in the process of deceleration when turning right from a highway. See Section 4.5 (*Auxiliary lanes*) for more information about when this taper is required and how it is designed.

The third and fourth types of tapers work jointly to create an auxiliary lane. The approach is called the *through lane taper* and the entrance into the auxiliary lane is called the *bay taper* (see Section 4.5.3).

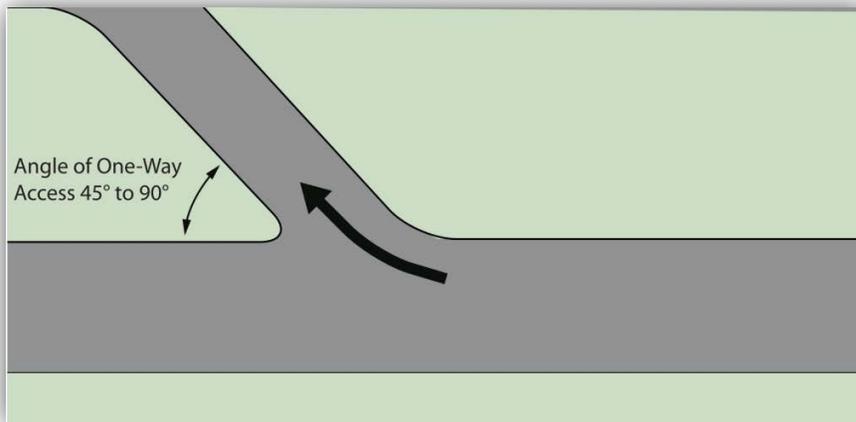
4.4.2 Angle of an access point

The intersection angle between an access point and a state highway places constraints on a motorist trying to enter or exit the flow of traffic. A motorist is forced to turn his/her head over his/her shoulder to view approaching traffic when the intersection angle is less than 90 degrees. This requires additional time to scan the roadway for an adequate gap and more distance and time to complete an acute angle turning movement. Depending on the degree of the turning angle, a driver may have difficulty twisting his/her body to see or may have his/her view blocked by passengers.

KDOT requires that the angle at two-way intersections be 90 degrees and, if that is not possible, the angle should not be skewed more than 60 degrees.

One-way access points are an exception and can operate successfully with skew intersections, but the skew should be in the range between 45 and 90 degrees (Figure 4-44).

Figure 4-44. One-way access (ingress) with angle less than 90 degrees



4.4.3 Access medians

Access medians are used to separate the ingress and egress movements for very high-intensity access points, such as access type 6. Table 4-18 provides guidance for when an access median may be recommended. This is especially true in areas with a large number of pedestrians as the access median provides refuge for them.

Where an access median is recommended, there are minimum dimensions that apply to avoid an access median that is too short or narrow. **KDOT requires the applicant's TIS to determine the required access median storage length to accommodate entering and exiting peak hour traffic for the specific development.** The applicant will utilize the information provided in Table 4-19, which lists suggested minimum dimensions and presents two versions of bullet nose end geometry. The half bullet nose provides a larger radius to accommodate the path and off-tracking of a vehicle nearing the end of its left turn. If the stop line and stopped position for vehicles leaving the site is close to the access median nose end, then a lesser radius may be adequate. It is recommended the turning paths of left-turning vehicles be used to determine the best shape of the bullet nose. Figure 4-45 shows details involving access median design in a developed area.

Table 4-18. Access median use recommendations

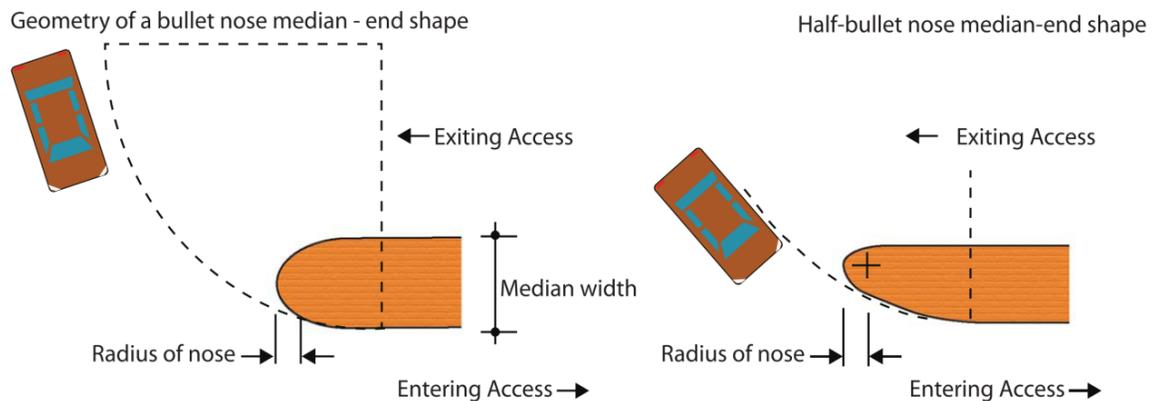
| Access Category | Description of Common Applications ¹ | Applicability of Median in Access |
|---------------------------------|--|---|
| Standard Access | | |
| Very high intensity | Urban activity center, with almost constant access use during hours of operation | Applicable |
| Higher intensity | Medium-sized office or retail, such as community shopping center, with frequent access use during hours of operation | May be applicable |
| Medium intensity | Smaller office or retail, some apartment complexes | Usually not applicable, but may be applicable for some wider access |
| Lower intensity | Single-family or duplex residential, other types with low use—may not apply to rural residential | Not applicable |
| Special Situation Access | | |
| Central business district | Building faces are close to the street | Usually not applicable, but may be applicable for some wider access |
| Farm or ranch, field | A mix of design vehicles—some may be very low volume | Usually not applicable |
| Industrial | Access are often used by large vehicles | Often not applicable, but may be applicable for some wider access |

Source: NCHRP Report 659, Guide for the Geometric Design of Driveways, Exhibit 5-31, p. 44

¹ These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

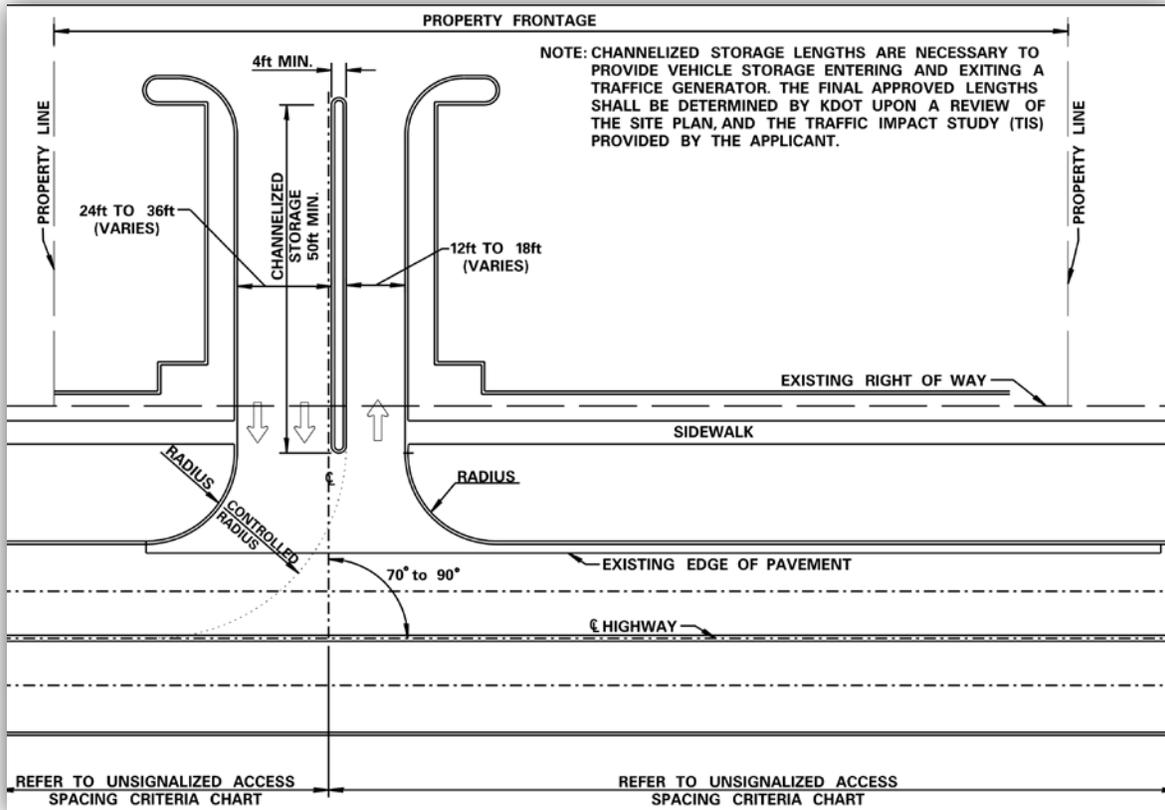
Table 4-19. Access median design guidelines

| Aspect | Design |
|------------------------------|---|
| Length | Minimum: 50 feet or more as determined by a traffic impact study |
| Width | Minimum: 4 feet |
| Back of Curb to Back of Curb | Minimum to provide signage within median: 6 feet (based on installing 24 inch wide sign) Minimum to provide pedestrian refuge: 6 feet Width for landscaping: 8 to 10 feet Maximum: 16 feet |
| End treatment | Median island < 10 feet wide: semicircle or bullet nose median-end Median island ≥10 feet wide: bullet nose median-end |



Source: NCHRP Report 659, Guide for the Geometric Design of Driveways, Exhibit 5-32, p. 45

Figure 4-45. Access median design details (developed)



Note: Access median widths are measured from back-of-curb to back-of-curb

4.4.4 Right-in/right-out access control by islands

Access point islands (sometimes referred to as “pork chop” or triangular islands) are placed in the entry throat of access points to prevent left turns. They are used to *channelize* right turns, prohibit one or more left turns, and provide a refuge for pedestrians. This type of island is most effective when used in conjunction with a raised *median* on the highway. Right-in/right-out access is typically used on highways in developed areas where the influence areas of adjacent access points provide a window for right-turns but not left-turns (Figure 4-18(b)).

Raised triangular islands must be large enough to be seen and designed to prevent the prohibited movement(s). The AASHTO *A Policy on Geometric Design of Highways and Streets*, 2011 Edition recommends the smallest triangular island be no smaller than 50 square feet in urban areas and 75 square feet in rural areas; however, 100 square feet is preferred for both. As discussed in Chapter 2, limiting left-turn movements reduces *conflict points* which, in turn, increases safety along the highway by reducing crashes. A typical island design is shown in Figure 4-46.

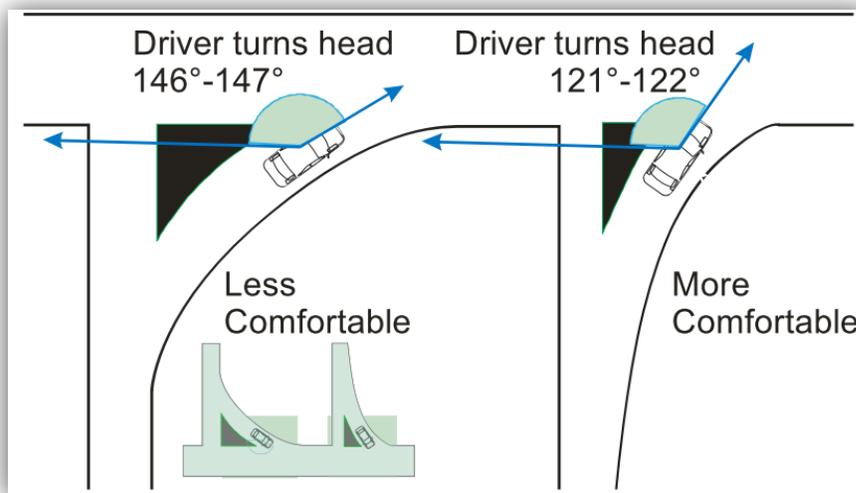
Figure 4-46. Right-in/right-out with raised median and right turn lane—US-40 (6th Street) just east of Wakarusa Drive, Lawrence, Kansas



Source: 2011 Google Maps

It is important to provide an entry angle that is comfortable for drivers exiting the access so they have a good view of traffic on the highway and pedestrians or bicyclists crossing the access. Figure 4-47 shows that the most comfortable angle for a driver is approximately 121 to 122 degrees.

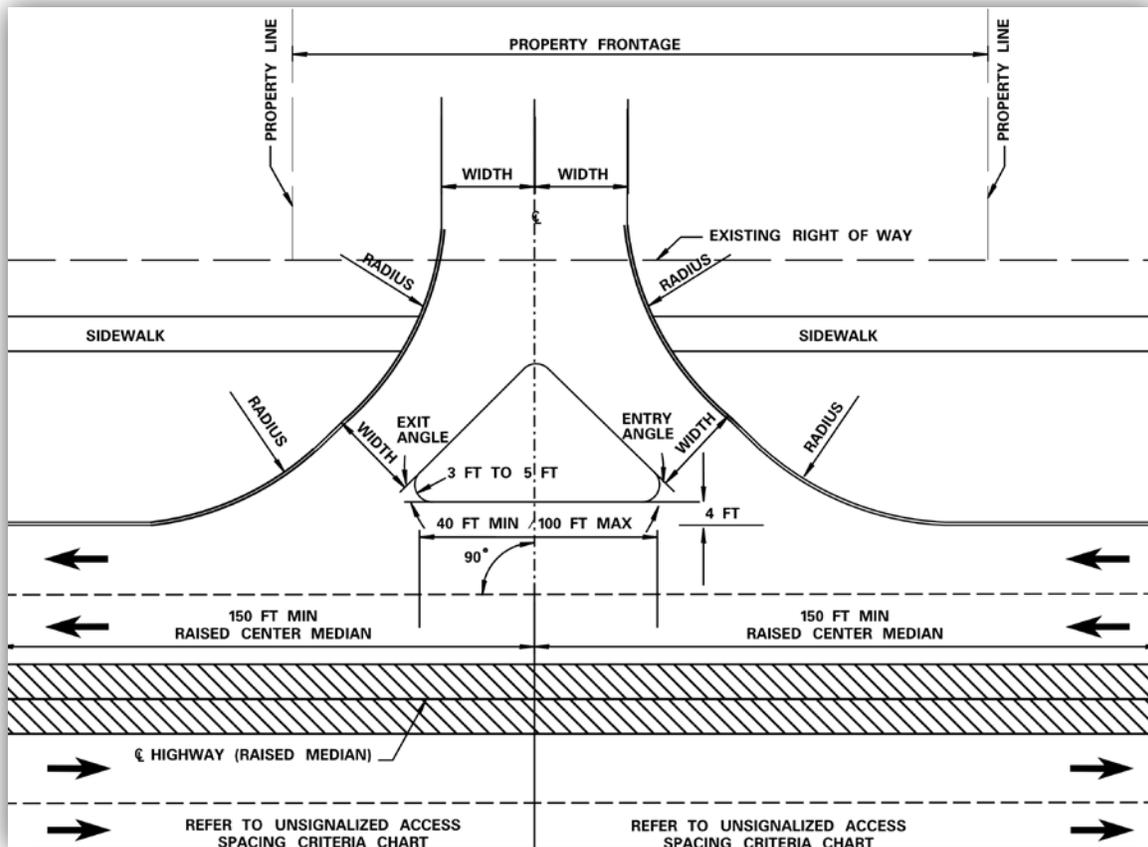
Figure 4-47. Traffic entry angle at channelized right turn



Source: Florida DOT Driveway Information Guide, 2008

The design of right-in/right-out access is site specific and varies based on Access Type, the need for a right-turn lane on the highway, pedestrians and bicyclists accommodations, as well as the presence of a raised median island on the highway. Figure 4-48 shows a typical right-in/right-out access for Access Types 4, 5, and 6 (commercial/ industrial). Table 4-20 shows the typical design dimensions for a typical right-in/right-out access with a raised median island.

Figure 4-48. Typical right-in/right-out access with raised median island (access types 4, 5, and 6)



Source: Adapted from Timothy R. Neuman, NCHRP 279, pgs. 86–87, Transportation Research Board, November 1985.

Table 4-20. Typical design dimensions for right-in/right-out access with raised median island (access types 4, 5, and 6)

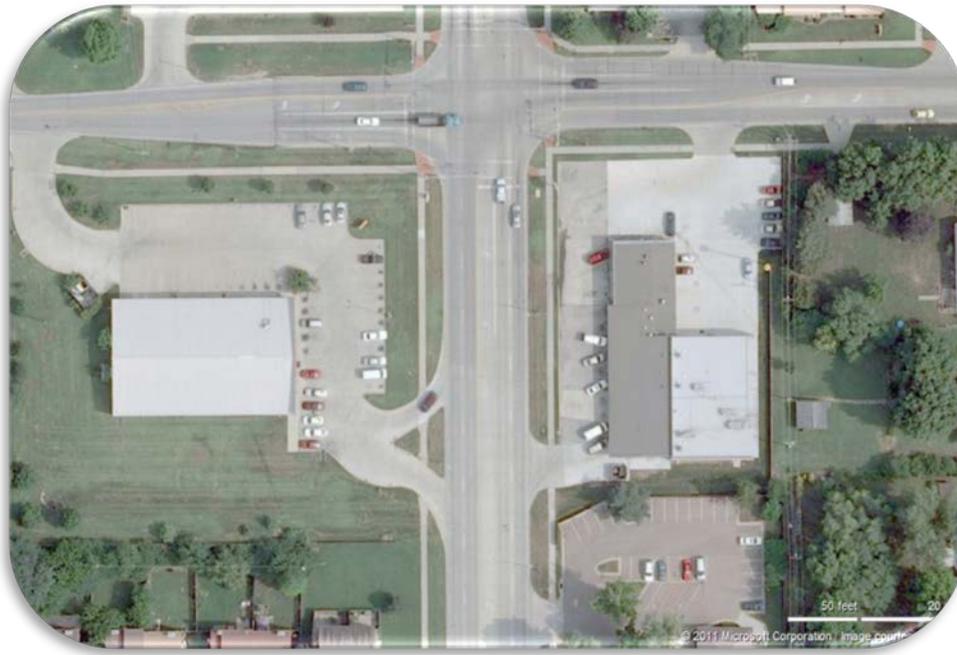
| Entry / Exit Angle (degrees) | Width (feet) | Radius (feet) |
|------------------------------|------------------|------------------|
| 45° min. | 16 min to 22 max | 50 min to 80 max |
| 60° max. | 18 min to 24 max | 50 min to 80 max |

Source: Adapted from Timothy R. Neuman, NCHRP 279, pgs. 86–87, Transportation Research Board, November 1985.

Some situations call for the installation of a raised median island on the highway to create a right-in/right-out access in developed areas. The raised median island should extend a minimum of 150 feet either side of the centerline of the right-in/right-out access to discourage wrong turn movements.

Without a raised median on the main roadway to restrict left-turning movements, the right-in/right-out island designs can have reduced effectiveness. Figure 4-49 shows a right-in/right-out design with a *two-way left-turn lane* (TWLTL) in the median instead of a raised median. The city of Topeka, Kansas, estimates the proper use of this right-in/right-out at approximately 75 percent with some drivers turning left from the main road into the exit and drivers turning left out of the entrance. The limited effectiveness of the right-in/right-out alone illustrates the importance of pairing the right-in/right-out islands with raised medians. Including a raised median reduces the number of conflict points at the access point intersection, which should increase safety with proper traffic movement.

Figure 4-49. Right-in/right-out island with no raised median



Source: 2011 Microsoft Corporation, Image Courtesy of 3Di

4.4.5 Raised medians on highway

Raised *medians* are usually used in developed locations and should only be used when speeds are equal to or less than 45 mph. KDOT may require the installation of a raised median to restrict an access to right-in/right-out. At these locations, the length of the median needs to extend a sufficient distance beyond the right-in/right-out access to prevent drivers from attempting to make a left-turn out of the access.

Table 4-21 summarizes some of the advantages and disadvantages of constructing a raised median. Raised medians restrict left-turning movements and can improve traffic operations and reduce crash rates when applied along a corridor. On average, where raised medians are installed, crashes are reduced by 39 percent. Figure 4-50 illustrates the use of raised medians along a developed corridor (87th Street in Lenexa, Kansas, in front of City Hall) including the use of a left-in/right-in/right-out intersection at W. 87th Street Parkway. Raised medians have additional design issues that need to be considered. For example, a variety of median widths may need to be evaluated. The use of median openings should also be evaluated. KDOT will support agencies with planning for

and developing design criteria for the use of raised medians when appropriate. Raised median islands can provide a good location for landscaping along the highway as long as adequate sight-distance is achieved.

Table 4-21. Advantages and disadvantages of constructing raised medians for access management

| Advantages | Disadvantages |
|---|---|
| Much improved safety by limiting left turns at access points which reduces vehicle-to-vehicle and vehicle-to-pedestrian conflict points | Drivers not able to perform full access movements at intersection |
| Improved traffic flow along the corridor because of restricted turning movements results in reduced travel times for all users. | Emergency vehicles have less flexibility to reach specific access points along the corridor. |
| Reduced travel times for deliveries as well as for customers in commercially developed areas which broadens the market area | Increased maintenance costs to maintain the raised median and any subsequent landscaping |
| Provides a pedestrian refuge for crossing the main roadway | Inconvenience to the motorist by requiring U—turns to access the opposite side of a development |

Figure 4-50. Use of raised median for access management—87th Street from Hauser Court to W. 87th Street Parkway, Lenexa, Kansas



Source: 2011 Microsoft Corporation, Image Courtesy of 3Di

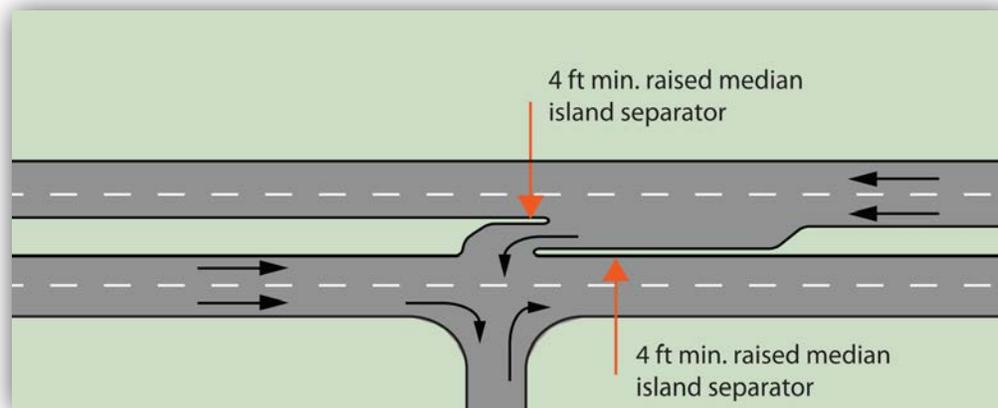
4.4.6 Three-quarter access

In some situations, it may be appropriate to limit either the left turn into or out of an access point. Where one of the four movements is restricted, it is referred to as three-quarter access. Typically, three-quarter access can be accomplished by using a restrictive median island as seen dividing the roadway in Figure 4-51. Typically in Kansas, the island is designed to restrict the left turn out of the access point while still allowing a left turn in from the highway. This design has more conflict points than a right-in/right-out only access point but less than one with full access movement.

The minimum width to construct a three-quarter access is 20 feet including a 4-foot raised island on both sides of the 12-foot wide channelized left-turn lane.

KDOT will consider the use of three-quarter access to a state highway and utilize it when appropriate.

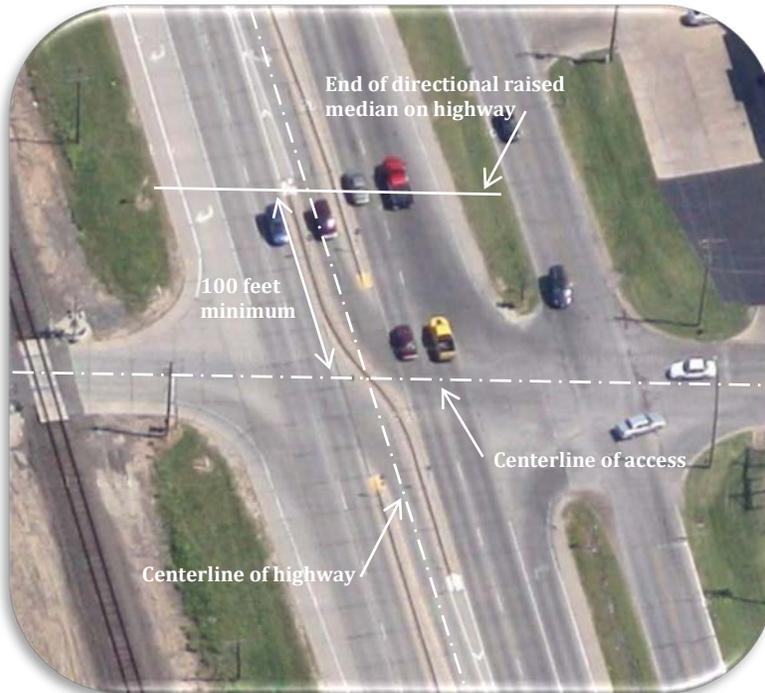
Figure 4-51. Using restrictive medians to eliminate some left-turn movements—left turn in allowed



Source: NCHRP Report 659, 2010, Exhibit 5-30 p. 43 (Transportation and Land Development Second Edition)

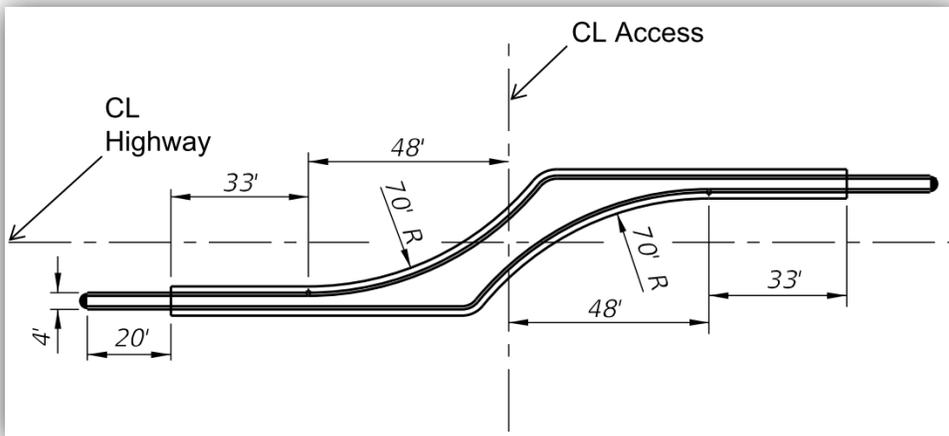
Figure 4-52 shows the left-in, right-in/right-out access at K-15 and Red Powell Road in Derby, Kansas, using raised median islands. Figure 4-53 shows typical directional median detail for three-quarter access.

Figure 4-52. Left-in, right-in/right-out—K-15 and Red Powell Road, Derby, Kansas



Source: 2011 Google Maps

Figure 4-53. Typical directional median detail—three-quarter access

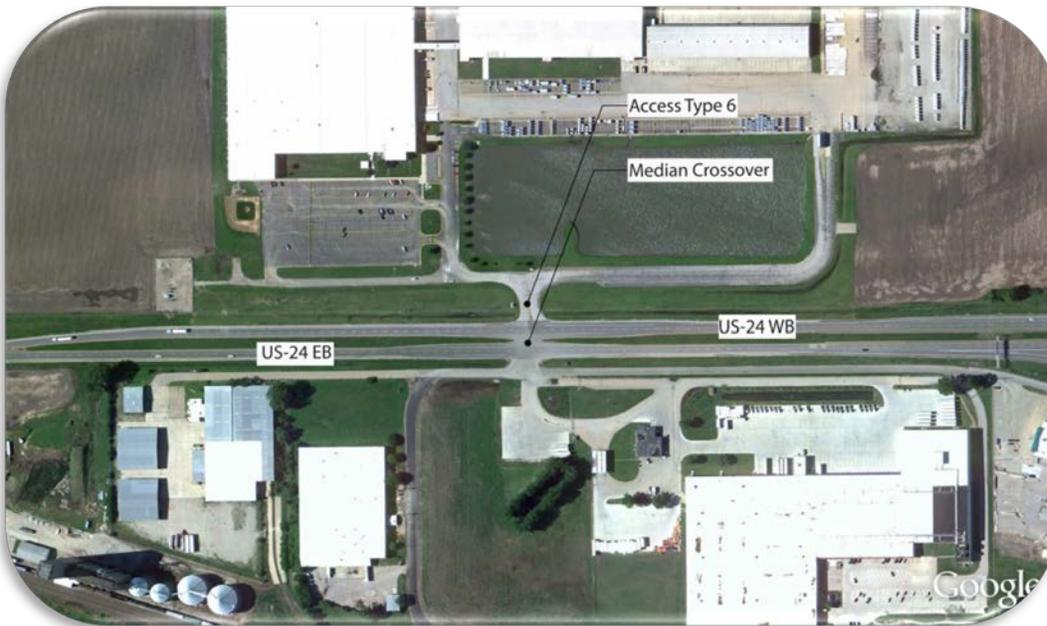


Source: 2013 Florida DOT Design Standards, Directional Median Openings, Index No. 527, pg. 2
 Design to accommodate WB-50 truck left-turn movements from the highway

4.4.7 Highway median openings

A *median opening* is an opening within a median, between intersections, that vehicles can travel through, turn left from and/or make a u-turn. Typically, requests for new median openings are from developers to serve access type 5 or 6 (medium- to high-volume commercial or industrial) facilities, such as shopping centers, industrial plants, business developments (Figure 4-54) public road connections, minor arterials, or state highways along a divided highway.

Figure 4-54. Median opening for access type 6—US-24 West of Topeka, Kansas, in Shawnee County



Source: 2011 Microsoft Corporation, Image Courtesy of 3Di

The minimum median opening spacing, as shown in Table 4-22, should be provided. KDOT prefers not to locate a median opening within the influence area of another median opening or intersection. Additional median openings should not be permitted on existing divided highways where openings for crossroads and preplanned openings are established or spacing is not

Table 4-22. Minimum median opening distance on divided highways

| Area Type (highway) | Minimum Median Opening Distance (feet) | |
|----------------------|--|--------------------|
| | Full Access | Directional Access |
| Undeveloped | 2,640 | 1,320 |
| Developed (> 45 mph) | 2,640 | 660 |
| Developed (≤ 45 mph) | 1,320 | 660 |

Source: Adapted from Florida DOT Median Handbook, pg. 15 (2006)
 "Full Access"—all movements into and out of an access is allowed
 "Directional Access"—only right-in/right-out/left-in access is allowed

in the best interest of the traveling public. A detailed TIS is needed to vary from the minimum opening spacing.

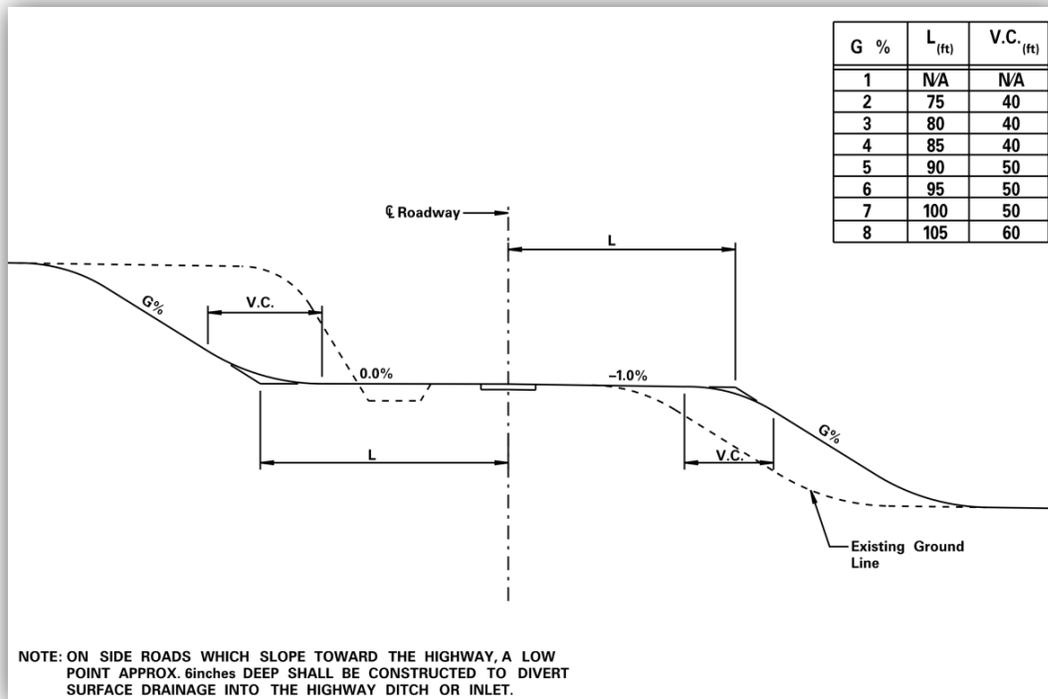
Median openings existing prior to the construction of a new access may require modification to accommodate future projected traffic movements. The cost incurred for such modification will be borne by the property owner.

When existing median openings do not serve a proposed development and additional openings are not justified, access at the proposed development will be limited to right-in/right-out access.

4.4.8 Profiles of the access and crossroad approach

Profile *grades* from 1 to 8 percent are acceptable on the approach to the state highway from a crossroad. A vertical curve (either sag or crest) is used to transition from a steeper to a flatter *grade* for a certain distance in advance of the access point to the state highway (Figure 4-55). The appropriate vertical curve radius and length of tangent are provided for approach grades from 1 to 8 percent

Figure 4-55. Standard crossroad approach grade details



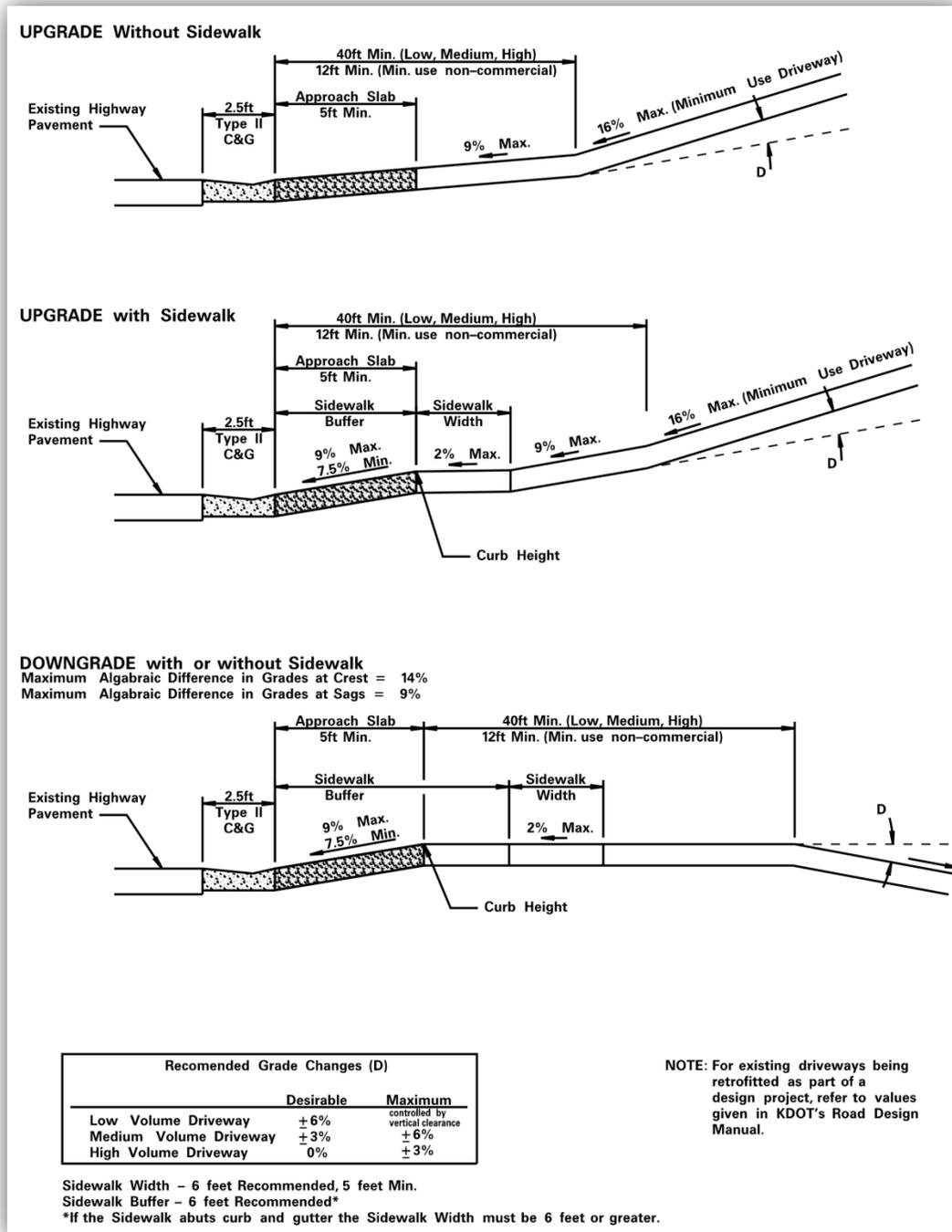
4.4.9 Access point grade (maximum and difference)

When designing access points, it is important to consider the difference between the change of grade that creates the crest or sag vertical curves causing the undercarriage of a vehicle to drag.

4.4.9.a Developed and CBD area (curb and gutter)

The grade of an access point in a developed or CBD area will conform to the current KDOT design as shown in Figure 4-56. When curb and gutter is removed, the curbing along the highway will be extended along an access radius to the R/W line. Curbs along access points will be depressed at sidewalk crossings to maintain *Americans with Disability Act (ADA)* compliance. For existing access being retrofitted as part of a design project, refer to values given in KDOT’s *Roadway Design Manual*.

Figure 4-56. Developed and CBD area access grades on new curb and gutter sections of highway



4.4.9.b Undeveloped area (shoulder with open ditch)

In an undeveloped area, the access will slope between 2 and 8 percent from the edge of roadway pavement to a point that is located a minimum of 6 inches below the edge of pavement or as necessary to provide drainage away from the roadway. The grade of the access should be constructed to conform to the slope of the roadway *shoulder* from the edge of the pavement to the edge of the shoulder. Figure 4-57 identifies a typical access profile. When curb is used to

channelize access on an open ditch section, the grade will be maintained as stated above and a valley gutter with suitable curb inlets or surface drains will be provided. The recommended *access grade* change to help accommodate drainage in an undeveloped area, as well as prevent access scraping from the undercarriage of vehicles, is shown in Figure 4-58.

Figure 4-57. Typical access profile (undeveloped)

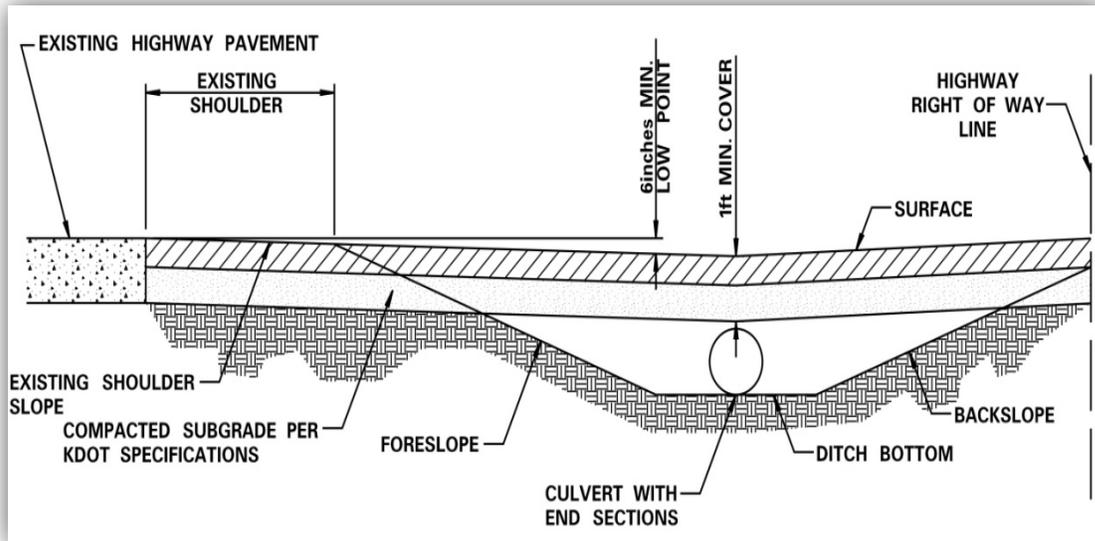
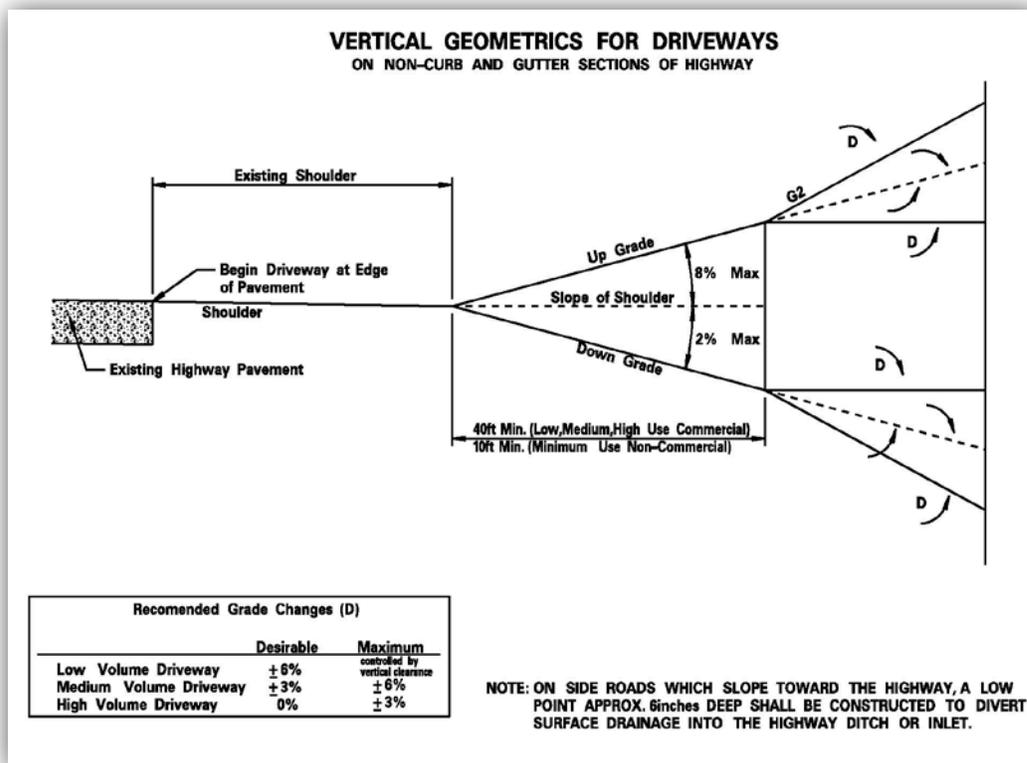


Figure 4-58. Undeveloped area access grades (non curb and gutter sections of highway)



4.4.10 Drainage considerations

Drainage pipes used in KDOT's R/W should meet KDOT's *Pipe Policy*, dated July 11, 2008, or the current version. The Pipe Policy provides information on the different pipe types and when and where they may be used based on differing soil conditions. The policy may be found at http://www.ksdot.org/burlocalproj/BLPDocuments/KDOT_Pipe_Policy.pdf.

In addition, the most recent version of KDOT's *Drainage Design Manual* should be used for all aspects of drainage design with respect to access, especially in sizing drainage pipes. The Drainage Design Manual may be found at <http://kart.ksdot.org/>.

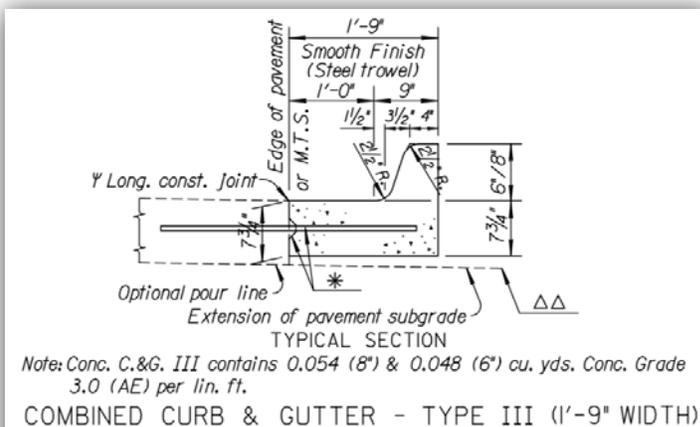
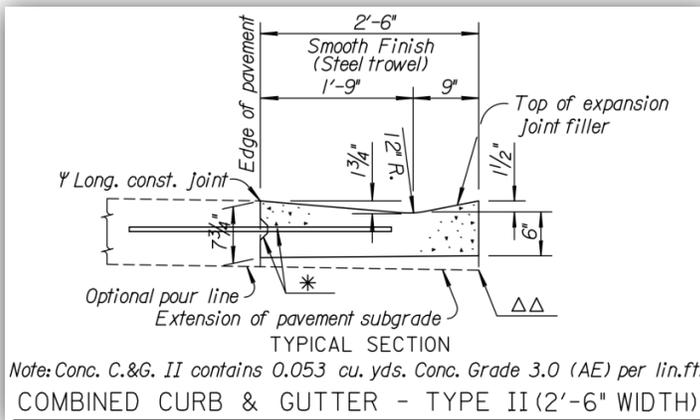
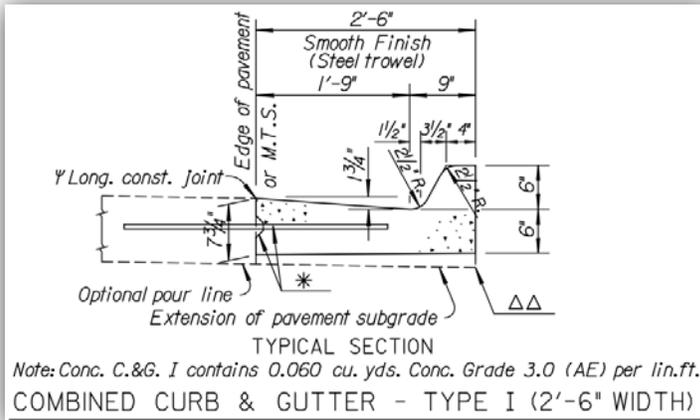
Access points must be designed and constructed so that they do not adversely affect drainage of the highway or adjacent properties. The drainage and the stability of the highway sub-grade must not be impaired. In no case may the construction of an access cause water to flow across the highway, pond on the shoulder or ditch, or result in erosion within the highway R/W. In order to prevent drainage from the access flowing onto the roadway, the profile of the access can be designed to accommodate either uphill or downhill grades from the roadway to the access. Drainage collected by ditches, gutters, or pipes on private property will not be discharged into the highway drainage system unless expressly approved by KDOT. The owner may be required to submit a drainage report to KDOT, justifying the drainage system proposed and the pipe or storm sewer size to be used.

4.4.10.a Curb and gutter

Where drainage is carried along an existing highway curb and gutter, the access will be constructed with a short rise in elevation to prevent runoff from spilling into private property. The flow line of the highway gutter through the access must be restored. Where curbs are cut for the construction of access, the entire curb and gutter section must be removed. Removal of only the raised portion of the curb and then paving over the broken section will not be allowed. Design details for curb and gutter (Type I, Type II and Type III) are shown in Figure 4-59. Gutter details are given in Figure 4-60, and protection curb details are shown in Figure 4-61. City details for curb and gutter may be used as approved by the *District Engineer*.

KDOT curb & gutter guidelines should be used on curb & gutter sections. On *City Connecting Links* (CCL), city standards may be substituted as approved by KDOT.

Figure 4-59. Curb and gutter details (Type I, Type II and Type II)

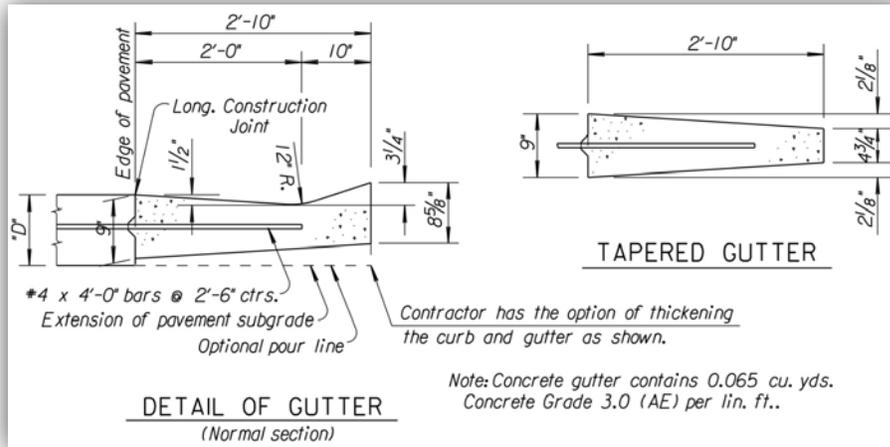


* Longitudinal construction joint and #4 x 3'-0" bars @ 2'-6" ctrs., where concrete pavement is constructed.

△△ Contractor has the option of thickening the curb and gutter as shown.

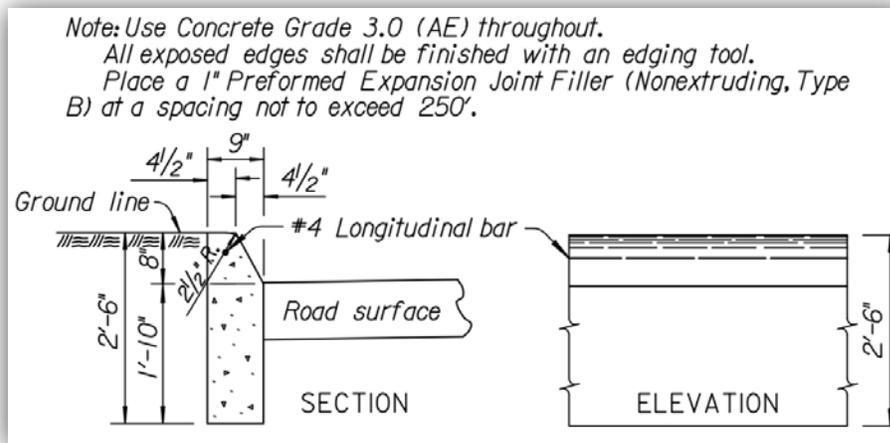
Source: KDOT Road Design Standard drawing RD 635

Figure 4-60. Gutter details



Source: KDOT Road Design Standard drawing RD 635

Figure 4-61. Protection curb details (8-inch)



Source: KDOT Road Design Standard drawing RD 635

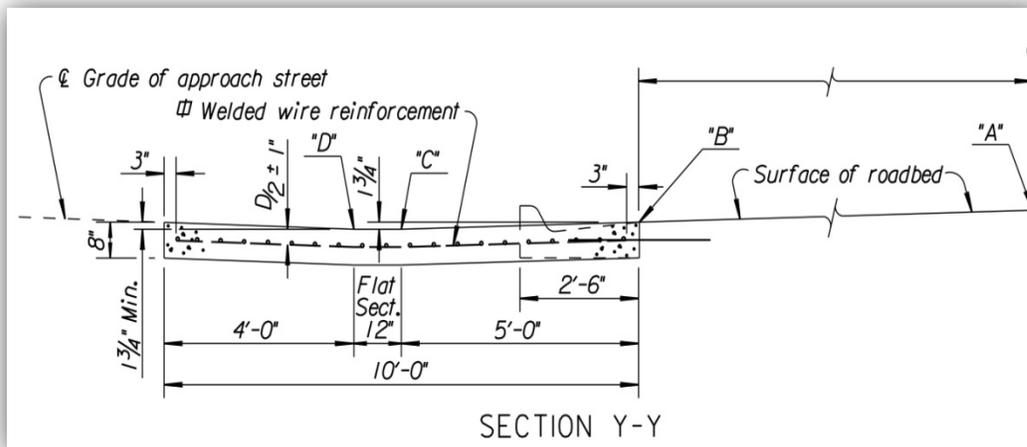
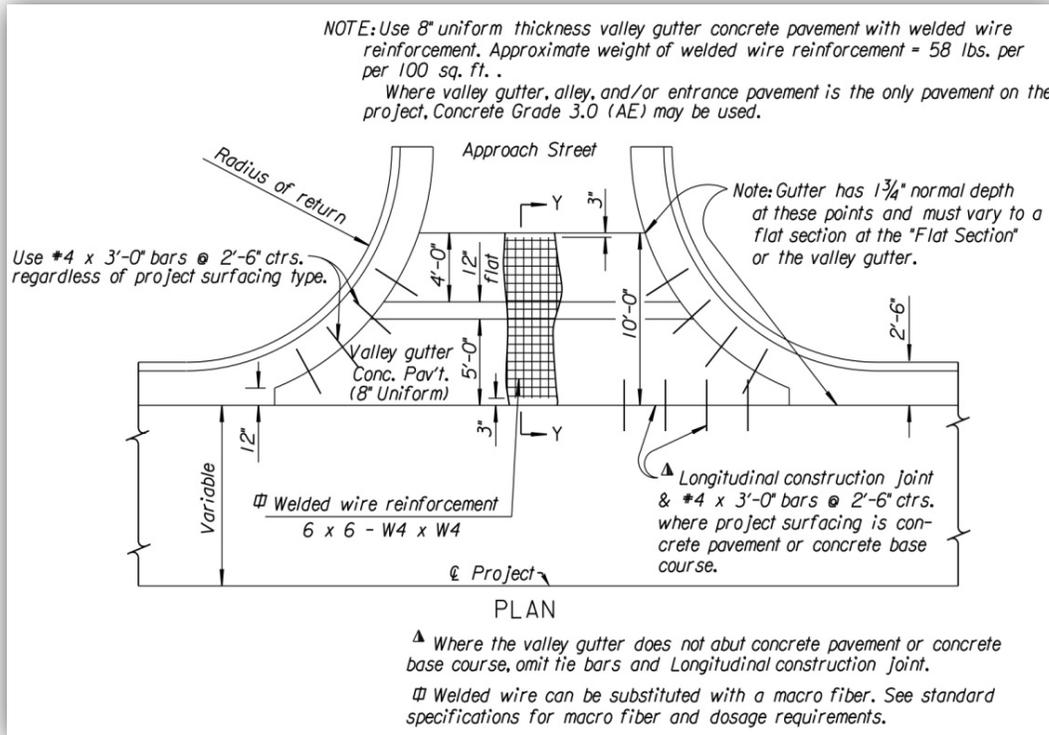
General Notes for Figure 4-59 through Figure 4-61 are provided here for ease of reference. Per RD 635:

- Combined curb and gutter or gutter adjoining concrete pavement may, at the contractor's option, be constructed either monolithically or separately, using either the mix used in the concrete pavement or Concrete Grade 3.0 (AE). The combined curb and gutter or gutter shall have the same section as shown on the plans. If constructed monolithically, the longitudinal joint and dowel bars shall be omitted from the combined curb and gutter or gutter. Pavement Joints shall be continued through curb or gutter and no other planes of weakness will be required. Joints in the combined curb and gutter or gutter are to be filled with the same material as used for the pavement joints.
- Expansion joints in the combined curb and gutter are to be placed opposite expansion joints in the pavement.
- Where combined curb and gutter or gutter does not abut concrete pavement or concrete base course, omit tie bars and place a 1-inch Preformed Expansion Joint Filler (Type B) cut to the dimensions of the combined curb and gutter or gutter, at a spacing not to exceed 250 feet and at the ends of curb returns. Planes of weakness shall be constructed at 10-foot intervals.
- A 4-foot length of transition from normal gutter section to the tapered gutter section shall be used at the ends of each run of gutter except where the gutter abuts a curb, such as at the end of a bridge. Inlets shall be located so as not to fall within this transition section.
- Where pressure relief joint is placed across the pavement, and gutter or curb and gutter is continued on for more than 10 feet, use 4-inch-x-4-inch membrane sealant installed with bonding adhesive through gutter section, shaped to fit gutter or curb and gutter. See Std. Drawing RD712.
- Longitudinal joints shall be sawed and sealed with joint sealant, see Standard Specifications.

4.4.10.b Valley gutter

Valley gutters carry water from the curb and gutter section across an access. Design information for valley gutters is shown in Figure 4-62. These details are to be used where concrete curb and gutter exist.

Figure 4-62. Valley gutter details



Source: KDOT Road Design Standard drawing RD 722

4.4.10.c Pipes/culverts under access

When the construction of an access necessitates crossing a highway ditch that has been constructed to carry drainage, an appropriate drainage structure will be installed by the owner at the owner's expense. The low point of the ditch will dictate the location for culvert placement unless specified differently by KDOT. Under no circumstances will existing ditches or gutters be filled without adequate alternate provisions.

All pipes, culverts, catch basins, drainage channels, and other drainage structures required within the buffer area, and under the access as the result of the property being developed, will be installed in accordance with KDOT's typical practices. The minimum pipe size will be a 24-inch-x-18-inch arch or 24-inch circular pipe. Pipes less than 24 inches (round) or less than 24-inch-x-18-inch arch will require a variance report (see Section 4.6.6). There will be a minimum of 12 inches of cover over the drainage structure. The minimum height for new Reinforced Concrete Box (RCB) culverts is 3 feet. Each *District* should be contacted concerning its preference and experience regarding minimum drainage structure size.

All pipes/culverts installed under access points should include end sections. The inlets and outlets of permanent drainage structures will be provided with an appropriate end treatment. This requirement applies to extensions of existing structures as well as new structures. The end treatment is typically a manufactured end section or a concrete headwall and wingwalls (used for box culverts). KDOT typically uses three types of end sections for pipe culverts (from KDOT's Design Manual, Volume 1, Part C—Elements of Drainage and Culvert Design, pg. 14-3, May 2011 edition):

1. Type I end sections are flared end sections made of metal or concrete. They serve to retain the embankment and to control local scour. Type I end sections may be used within the *clear zone* on crossroad and parallel pipes of any shape that are 24 inches or less in height.
2. Type III end sections are side-tapered end sections made of concrete or metal. Type III inlets are very efficient hydraulically. They are functionally equivalent to FHWA's standard side-tapered inlets. Type III end sections may be used within the clear zone on crossroad pipes of any shape that are 24 inches or less in height.
3. Type IV end sections are metal end sections with heavy steel bars across the flow opening. Type IV end sections can be traversed by automobiles and, therefore, may be used within the clear zone.

Other end section types may be used as approved by the District Engineer.

See Figure 4-63 to determine the length of access drainage structures with end sections. See Table 4-23 for the nominal waterway opening for different sizes of access drainage pipes.

Access side slopes will have the same side slope as the highway with no steeper than a 6:1 slope from the shoulder of the access to the bottom of the drainage ditch (rounding to the drainage ditch or ground level). Where a pipe/culvert is used under an access, the pipe/culvert and end sections will be of sufficient length to allow extensions through the entire width of the access and side slopes. *Mound entrances*, where the fill is less than 10 feet, should have an 8:1 side slope when inside the highway clear zone. *Mound entrances*, where the fill is greater than 10 feet, may use slopes not steeper than 6:1

When practical, drainage structures parallel to the state highway will be located beyond the Clear Zone (as defined in AASHTO’s *Roadside Design Guide*). A traversable design using safety-treated end sections on pipe culverts larger than 24 inches in diameter, or pipe grates for reinforced concrete boxes, will be used when parallel structures are located within the clear zone. Where a traversable design is not feasible, an engineering study will be performed to determine the appropriate safety treatment.

Figure 4-63. Guideline for length of access drainage structures with end sections

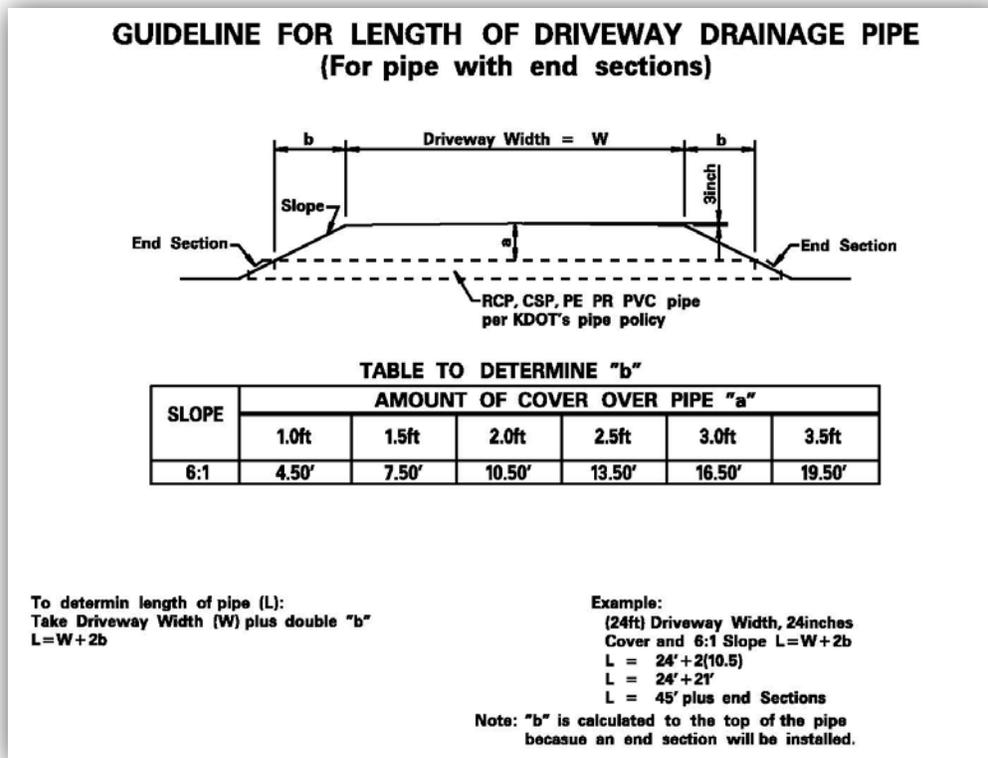


Table 4-23. Nominal waterway opening for an access drainage pipe

| Round Pipe | | Metal Arch Pipe | |
|------------------------|--------------------|---------------------------------|--------------------|
| Pipe Diameter (inches) | Area (square feet) | Pipe Dimension Span and Rise | Area (square feet) |
| 18 | 1.8 ¹ | 21-inch by 15-inch ¹ | 1.6 |
| 24 | 3.1 | 24-inch by 18-inch | 2.2 |
| 30 | 4.9 | 28-inch by 20-inch | 2.8 |
| 36 | 7.1 | 35-inch by 24-inch | 4.4 |
| 42 | 9.6 | 42-inch by 29-inch | 6.4 |

¹ Pipes that are 18-inch or 21-inch by 15-inch will need a permit variance.

Should the property owner want to fill the roadway ditch along his or her frontage, a storm drainage system of adequate size to handle surface water will be installed. Inlets will be provided by the property owner as part of the storm drainage system and be sufficient in size for cleaning purposes and intercepting surface drainage.

4.4.11 Pavement section

4.4.11.a Base and surface

Medium and high volume, commercial and industrial access will be constructed with sufficient thickness of asphalt or concrete to support anticipated traffic loading. Residential and low-volume access will have an all-weather dustless surface consisting of sand and/or gravel as a minimum surface treatment. The District Engineer may specify stricter surfacing requirements. Field entrances require only compaction and seeding. Thicknesses for access types and surface material are as shown in Table 4-24.

For gravel entrances, use 6.0-inch AB-3 or 6.0-inch SA material. The SA material can be any of the following: SA-1, SA-2, SA-6, SA-7, or SA-X. (See Section 1104.2 for specifics on Aggregate Base “AB” materials and Table 1111-1 for specifics on Surfacing Aggregate “SA” materials located at <http://www.ksdot.org/burConsMain/specprov/2007/DIVISION-1100.pdf>.)

For turf entrances, 6-inch Type A compaction with MR-5-5 moisture control is needed. (Information on compaction type can be found in Table 205-1 and Moisture Control Requirements “MR” can be found in Table 205-2 at <http://www.ksdot.org/burConsMain/specprov/2007/DIVISION-200.pdf>.)

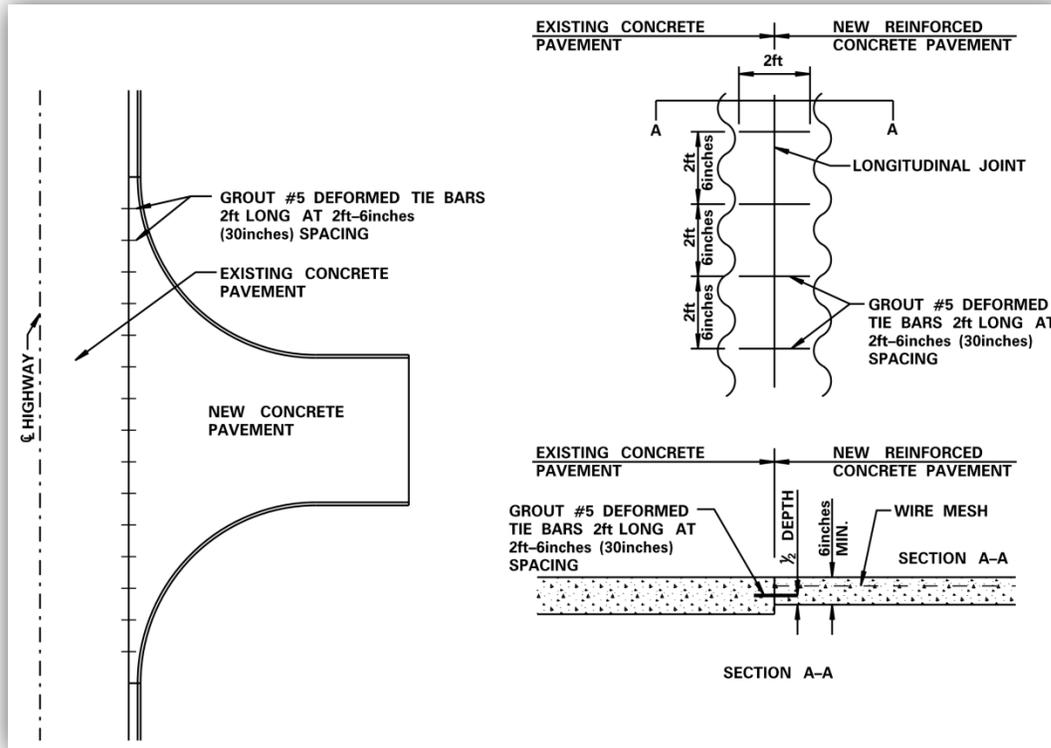
Table 4-24. Access surface material and thickness

| Access Type | Surface type and thickness (inches) | | | |
|--------------------------|-------------------------------------|--------|---------|----------|
| | Turf | Gravel | Asphalt | Concrete |
| 1, 2 | 6 | 6 | 6 | 8 |
| 3 | NA | NA | 6 | 8 |
| 4 | NA | 6 | 6 | 8 |
| 5, 6 Commercial/other | NA | NA | 6 | 8 |
| 5, 6 Industrial | NA | NA | 8 | 12 |

4.4.11.b Construction joint—concrete pavement

When a new concrete access is constructed that adjoins an existing concrete roadway, tie bars will be used to tie them together. Tie bars should be placed at the junction of the two pavements laterally according to the spacing, length, and depth in Figure 4-64.

Figure 4-64. Details for tying new concrete to existing concrete pavement



4.5 Auxiliary lanes

The decision to provide an *auxiliary lane* (a dedicated left- or right-turn lane) on approach to an *intersection* or other *access point* along a state highway is made by KDOT. These decisions are based on (1) capacity analyses where *capacity* and *level of service* (LOS) are the driving factors and (2) safety factors where rear-end conflicts result from motorists slowing significantly and where turning from the through lanes is a major source of crashes.

4.5.1 Auxiliary lane warrants—right-turn lanes and deceleration taper

To determine if a right-turn lane is warranted the operating speed for a specific highway (in mph) and *directional design hourly volumes* (DDHV) on the highway are needed. The highway operating speed is considered the posted speed limit or the 85th percentile speed if varying from the posted speed limit. The DDHV is the number of vehicles traveling on the highway in the peak hour in the same direction as the right-turning vehicle. The design hourly right-turn volumes are the estimated number of right-turns made at the access during the same peak hour. If the number of right turns exceeds the design hourly right-turn volume thresholds in the cell corresponding to a specific

highway operating speed and DDHV, either a right-turn lane or deceleration taper is warranted at the access. See Section 4.5.3 for the design of auxiliary lanes.

The values in Table 4-25 shows the minimum turning volume needed to warrant a turn lane or a deceleration taper on a two-lane highway.

Table 4-25. Right-turn treatment guidelines for two-lane highways

| Highway DDHV (vph) | Highway Operating Speed (mph) | | | | | | | | | | | |
|--------------------------|-------------------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
| | 40 | | 45 | | 50 | | 55 | | 60 | | 65 | |
| | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper |
| 200 | | | | 83 | 73 | 30 | 35 | 14 | 20 | 8 | 15 | 7 |
| 300 | | | 120 | 40 | 41 | 19 | 24 | 9 | 15 | 7 | 12 | 6 |
| 400 | 200 | 85 | 52 | 27 | 30 | 14 | 19 | 8 | 12 | 6 | 11 | 5 |
| 600 | 50 | 27 | 26 | 13 | 20 | 9 | 14 | 6 | 10 | 5 | 9 | 4 |
| 800 | 25 | 12 | 16 | 8 | 15 | 7 | 11 | 5 | 9 | 4 | 8 | 3 |
| 1000 | 14 | 8 | 12 | 5 | 11 | 5 | 9 | 4 | 8 | 3 | 7 | 3 |
| 1200 | 10 | 6 | 9 | 4 | 9 | 4 | 8 | 4 | 7 | 3 | 7 | 3 |

Source : "Guidelines for right-turn treatments at unsignalized intersections and driveways," K-Tran:KSU-95-5, Kansas Department of Transportation, Kansas State University, Tanweer Hasan, Dr. Robert W. Stokes

- Turning speed is 15 mph (right-turn)
- The values presented in this table represent minimum right-turn design hour volumes (vph) required to warrant right-turn treatments (lane or taper)
- DDHV = directional design hourly volumes

Two-lane highway example—A new development along US-50 (two-lane highway) in Reno County east of Hutchinson, Kansas, has requested an access point to the north. It is estimated that during the peak hour, approximately 25 vehicles will be turning right into the new access from the east soon after the facility opens. The 2011 average daily traffic (ADT) is shown to be 4,370 vpd and the posted speed limit is 65 mph. Is a right-turn lane warranted?

The directional design hourly volume (DDHV) is equal to the ADT divided by two (assuming half the traffic is traveling westbound and half eastbound on US-50) and multiplied by 10 percent (assumed peak hour volume).

$$DDHV = (ADT/2) \times 0.10$$

$$DDHV = (4,370/2) \times 0.10 = 219 \text{ vph (westbound on US-50)}$$

Looking at Table 4-25, it can be seen that the DDHV is over 200 vph, the highway operating speed is 65 mph and, therefore, the design hourly right-turn threshold is 15 vph. The estimated number of right turns westbound during the peak hour is 25 vph (greater than 15 vph) and, therefore, a right-turn lane is warranted.

The values in Table 4-26 shows the minimum turning volume needed to warrant a turn lane or a deceleration taper on a four-lane highway.

Table 4-26. Right-turn treatment guidelines for four-lane highways

| Highway DDHV (vph) | Highway Operating Speed (mph) | | | | | | | | | | | |
|--------------------------|-------------------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
| | 40 | | 45 | | 50 | | 55 | | 60 | | 65 | |
| | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper | Lane | Taper |
| 300 | | | | | | 55 | 75 | 25 | 19 | 9 | 19 | 9 |
| 400 | | | 145 | 65 | 75 | 30 | 40 | 17 | 16 | 8 | 15 | 8 |
| 500 | | 140 | 95 | 50 | 57 | 25 | 32 | 14 | 14 | 7 | 13 | 7 |
| 600 | 160 | 80 | 65 | 30 | 42 | 18 | 26 | 11 | 12 | 6 | 12 | 6 |
| 800 | 70 | 40 | 37 | 18 | 28 | 12 | 19 | 8 | 11 | 5 | 11 | 5 |
| 1200 | 25 | 14 | 20 | 10 | 18 | 8 | 14 | 6 | 8 | 4 | 8 | 4 |
| 1600 | 15 | 8 | 14 | 6 | 13 | 6 | 10 | 5 | 7 | 3 | 7 | 3 |
| 2000 | 10 | 6 | 9 | 6 | 9 | 4 | 8 | 4 | 6 | 3 | 6 | 3 |

Source: "Guidelines for right-turn treatments at unsignalized intersections and driveways," K-Tran:KSU-95-5, Kansas Department of Transportation, Kansas State University, Tanweer Hasan, Dr. Robert W. Stokes

- Turning speed is 15 mph (right-turn)
- The values presented in this table represent minimum right-turn design hour volumes (vph) required to warrant right-turn treatments (lane or taper)
- DDHV = directional design hourly volumes

Four-lane highway example—A new development along US-24 (four-lane highway) in Pottawatomie County east of Manhattan, Kansas, has requested an access point off an existing county road intersection to the north. It is estimated that during the peak hour, approximately 30 vehicles will be turning right on to the county road to access this new facility. The 2011 ADT is shown to be 10,400 vpd and the posted speed limit is 70 mph. Is a right-turn lane warranted?

The DDHV is equal to the ADT divided by two (assuming half the traffic is traveling westbound and half eastbound on US-24) and multiplied by 10 percent (assumed peak hour volume).

$$DDHV = (ADT/2) \times 0.10$$

$$DDHV = (10,400/2) \times 0.10 = 520 \text{ vph (westbound on US-24)}$$

Looking at Table 4-26, note that the DDHV is over 500 vph, the highway operating speed above 65 mph and, therefore, the design hourly right-turn threshold is 13 vph. The estimated number of right turns westbound during the peak hour is 30 vph (greater than 13 vph) and, therefore, a right-turn lane is warranted.

KDOT follows the right-turn treatment guidelines in Table 4-25 (two-lane highways) and Table 4-26 (four-lane highways) when determining if right-turn lanes or deceleration tapers are warranted; however, meeting the warrant does not require the installation of right-turn lanes.

4.5.2 Auxiliary lane warrants—left-turn lanes

A three-tiered warrant criterion was developed by the AMU based upon research performed by national access management researcher, for this AMP update.¹

- **Safety warrant**—The safety criterion is triggered if one of the following occurs:
 - An existing access point (public intersection or driveway) has a crash rate (crashes per 10 million entering vehicles) statistically significant above the statewide average (critical crash rate).
 - A proposed access point (public intersection or driveway) is located within an existing highway corridor with a crash rate (crashes per million vehicle miles traveled) statistically significant above the statewide average (critical crash rate).
 - A pattern of left-turn/rear-end crashes is present at an existing access point along a corridor and the addition of a left-turn lane would be expected to reduce those crashes.
- **Special circumstances warrant**—The special circumstances criterion is triggered if one of the following occurs:
 - Consider the construction of left turn lanes at locations where site geometry (horizontal/vertical alignment, sight distance, access configuration, other) would improve the operational and/or safety aspects of the highway.
 - Construct left-turn lanes at all new educational institutions and medical facilities located on or adjacent to a highway with a posted speed limit of greater than 45 mph.
 - Construct left-turn lanes when special circumstances known by the District Engineer are present at the specific access location.
- **Operational warrant**—The operational criterion is triggered if one of the following occurs:
 - **Left-turn lane warrants for two-lane highways**—Utilize the information provided in Table 4-23 for guidance based on operations.
 - **Left-turn lane warrants for four-lane highways**—Utilize the information provided in Table 4-24 for guidance based on operations.

4.5.2.a Two-lane highways

The four key data elements required for this analysis are:

- Opposing volume (V_o) in *vehicles per hour* (vph)—includes the right-turning and through vehicles in the opposite direction of the left-turning vehicles.
- Advancing volume (V_a) in vph—includes the right-turn, left-turn, and through movements in the same direction as the left-turning vehicles (do not include right turns if a dedicated right-turn lane exists).
- Speed in miles per hour (mph)—often indicated as the operating speed 85th-percentile speed (posted speed is acceptable if the 85th-percentile speed is not available).
- Percentage of left turns in the advancing volume

¹ Research study by Dr. Karen Dixon, educator at Oregon State University and national access management researcher, entitled *KDOT Proposed Left-Turn Warrants* (February 2012).

To use Table 4-27, do the following:

- Locate opposing traffic volume, V_o , and operating speed on chart
- Determine the percentage of the advancing volume that is expected to turn left

If the associated advancing traffic volume, V_a , is greater than the value shown, then a left-turn lane is warranted. As an example, for a two-lane highway with an opposing volume of 600 vph, a speed of 50-mph, a left-turn percentage of 10 percent, and an advancing volume of 200 vph, a left-turn lane is warranted since $200 \text{ vph} > 117 \text{ vph}$.

4.5.2.b Four-lane highways

For four-lane highways, left-turn lanes are not warranted if the opposing volume, V_o , is less than 400 vph unless the advancing volume, V_a , is greater than 400 vph. For values above these thresholds, Table 4-28 can be used to assess four-lane undivided and four-lane divided highway configurations.

An additional key data element required for this analysis is

- Left-turn volume (V_L) in vph—the left-turn volume in the advancing direction during the peak hour

To use Table 4-28, do the following:

- Determine if the four-lane road is divided or undivided and select the applicable column
- Identify the opposing traffic volume, V_o , and locate on the chart

If the corresponding left-turn volume, V_L , is greater than the value shown, then a left-turn lane is warranted. As an example, for an undivided four-lane highway with an opposing volume of 870 vph and a left-turn volume of 10 vph, a left-turn lane is warranted since $10 \text{ vph} > 6 \text{ vph}$ (the corresponding V_L). Note: for a divided highway with similar traffic volumes, the turn lane would not be warranted since $10 \text{ vph} < 14 \text{ vph}$ (the corresponding V_L). The divided highway is assumed to allow at least one vehicle of storage in the median area resulting in less stringent warrant criteria.

KDOT follows a three-tiered warrant evaluation (safety, special circumstances, and operational) when considering left-turn lanes at an access. Left-turn lanes should be considered if one or more of the three warrants are met; however, meeting one or more of the warrants does not require the installation of left-turn lanes.

Table 4-27. Recommended left-turn lane warrants for two-lane highways

| Opposing Volume V_o (vph) | Advancing Volume V_a (vph) | | | |
|--------------------------------|------------------------------|----------------|----------------|----------------|
| | 5% Left turns | 10% Left turns | 20% Left turns | 30% Left turns |
| 40-mph speed | | | | |
| 800 | 136 | 99 | 74 | 65 |
| 700 | 159 | 116 | 87 | 76 |
| 600 | 186 | 135 | 101 | 88 |
| 500 | 218 | 158 | 119 | 103 |
| 400 | 255 | 185 | 139 | 121 |
| 300 | 301 | 218 | 164 | 143 |
| 200 | 356 | 259 | 194 | 169 |
| 100 | 426 | 309 | 232 | 202 |
| 50-mph speed | | | | |
| 800 | 118 | 86 | 64 | 56 |
| 700 | 138 | 100 | 75 | 66 |
| 600 | 161 | 117 | 88 | 77 |
| 500 | 188 | 137 | 103 | 90 |
| 400 | 221 | 161 | 120 | 105 |
| 300 | 260 | 189 | 142 | 124 |
| 200 | 309 | 224 | 168 | 147 |
| 100 | 369 | 268 | 201 | 175 |
| 60-mph speed | | | | |
| 800 | 96 | 70 | 53 | 46 |
| 700 | 113 | 82 | 61 | 54 |
| 600 | 131 | 95 | 72 | 63 |
| 500 | 154 | 112 | 84 | 73 |
| 400 | 181 | 131 | 98 | 86 |
| 300 | 213 | 154 | 116 | 101 |
| 200 | 252 | 183 | 137 | 120 |
| 100 | 301 | 219 | 164 | 143 |
| 70-mph speed | | | | |
| 800 | 68 | 50 | 37 | 32 |
| 700 | 80 | 58 | 43 | 38 |
| 600 | 93 | 68 | 51 | 44 |
| 500 | 109 | 79 | 59 | 52 |
| 400 | 128 | 93 | 70 | 61 |
| 300 | 150 | 109 | 82 | 72 |
| 200 | 178 | 129 | 97 | 85 |
| 100 | 213 | 155 | 116 | 101 |

Source: Adapted from Van Schalkwyk, I., and V. Stover. *Revisiting Existing Warrants for Left-Turn Lanes at Unsignalized Intersections on Two-Way Roadways*, TRB 2007 Annual Meeting CD-ROM, National Research Council, Washington, D.C. (2007).

Note: Critical gap = 8.0 seconds, time to turn left = 4.3 seconds, time to clear lane = 3.2 seconds

Table 4-28. Recommended left-turn lane warrants for four-lane highways

| Left-Turn Volume V_L (vph) | 4-Lane Undivided Opposing Volume V_o (vph) | 4-Lane Divided Opposing Volume V_o (vph) |
|------------------------------|--|--|
| ≥ 29 | Turn lane not warranted unless $V_a > 400$ vph | Turn lane not warranted unless $V_a > 400$ vph |
| 28 | | 422 |
| 26 | | 474 |
| 24 | | 530 |
| 22 | | 589 |
| 20 | | 652 |
| 18 | | 719 |
| 16 | | 793 |
| 14 | | 873 |
| 12 | | 414 |
| 10 | 542 | 1062 |
| 8 | 690 | 1179 |
| 6 | 867 | 1319 |
| 4 | 1094 | 1499 |
| 2 | 1429 | 1762 |

Source: Adapted from Harmelink, M. D. *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections*, Highway Research Record, No. 211, Highway Research Board, National Research Council, Washington, D.C. (1967), pp. 1-18.

Note: Critical gap = 8.0 seconds, time to turn left = 5.3 seconds

4.5.3 Auxiliary lane design

As Figure 4-65 and Figure 4-66 illustrate, the length of an *auxiliary lane* has four parts—*through-lane taper*, *bay taper*, deceleration length, and *storage length*. The width of auxiliary lanes for either right- or left-turn lanes should equal the width of the through lanes (typically 12 feet). The Traffic Engineering Section of KDOT’s Bureau of Transportation Safety and Technology should be contacted for details regarding the design of double left-turn auxiliary lanes (not covered in this Policy).

Figure 4-65. Components of auxiliary lanes (left-turn lane)

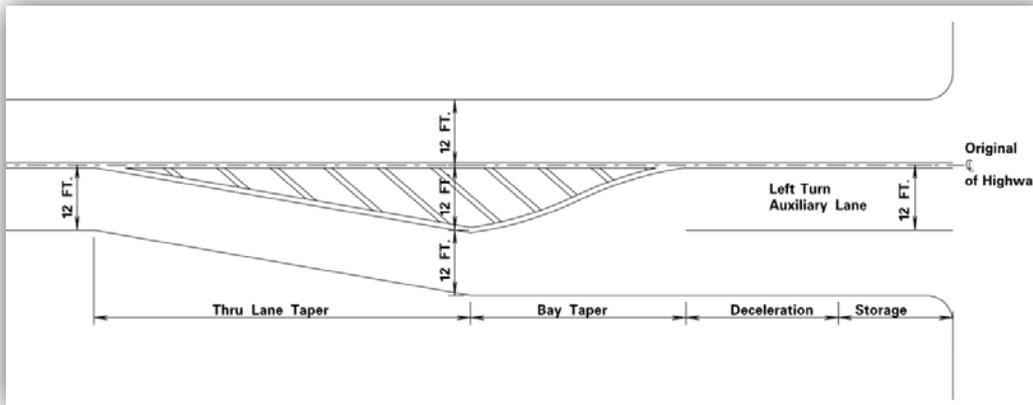
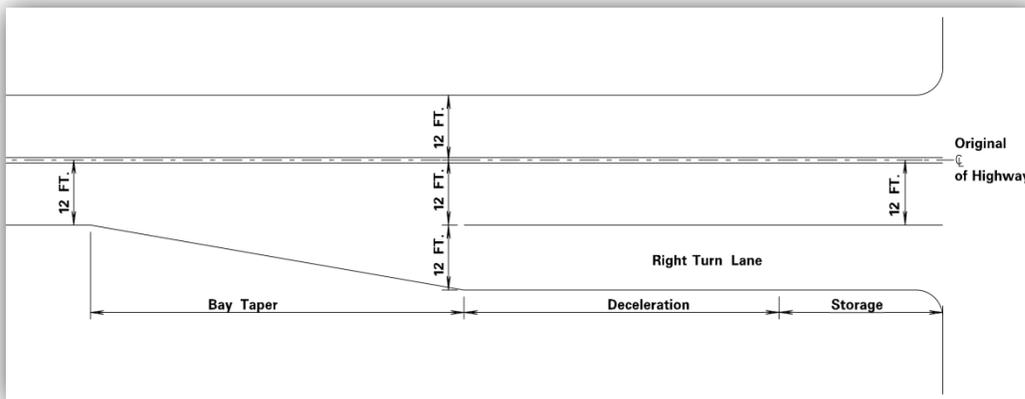


Figure 4-66. Components of auxiliary lanes (right-turn lane)



4.5.3.a Right-turn lane design

The components of a right-turn lane including storage length, deceleration length and bay taper are discussed in detail below.

Storage Length—The *storage length* is dependent on the traffic control condition at the access—signalized or unsignalized.

Signalized—The storage length depends on the signal cycle length, signal phasing arrangement, and the rate of arrivals and departures of turning vehicles. The storage is based on 2 times the 95th percentile back of queue as determined by traffic modeling software, such as Synchro.

Unsignalized—The storage length is based on the number of vehicles likely to arrive in an average 2-minute period within the peak hour of the highway.

All peak-hour turning counts are projected design-year traffic volumes (typically 20 years). Each vehicle is assumed to occupy 25 feet of storage space. The minimum storage length is 50 feet (based on a minimum of storing two vehicles) and should be adjusted to account for high truck traffic according to Table 4-29.

The auxiliary lane should be long enough to store the number of vehicles likely to accumulate during a critical period. Through traffic should not block the turn lane.

Deceleration length—The recommended deceleration distances for left-turn lanes and signalized right-turn lanes are based on the need to stop before turning (0 mph), while unsignalized right-turn lanes are based on being able to turn at 15 mph.—**KDOT’s policy is to utilize the recommended deceleration distances provided in Table 4-30 for left-turn lanes and signalized right-turn lanes , which are based on all deceleration occurring in the auxiliary lane and are based on drivers traveling at the posted speed limit.**

Table 4-29. Queue storage length adjustments for trucks

| Percent Trucks | Storage Length (ft) |
|----------------|---------------------|
| ≤ 5 | 25 |
| 10 | 30 |
| 15 | 35 |

Table 4-30. Guideline to determine deceleration distance for auxiliary lanes

| Posted Highway Speed (mph) | Recommended Deceleration Distance (feet) (to turn at 0 mph) | Recommended Deceleration Distance (feet) (to turn at 15 mph) |
|----------------------------|---|--|
| 20 | 40 | 40 |
| 25 | 60 | 40 |
| 30 | 90 | 40 |
| 35 | 135 | 105 |
| 40 | 190 | 150 |
| 45 | 265 | 205 |
| 50 | 310 | 265 |
| 55 | 400 | 335 |
| 60 | 490 | 415 |
| 65 | 600 | 505 |
| 70 | 705 | 600 |
| 75 | 815 | 700 |

Source d2: Modified version of TRB, Access Management Manual, 2003, p. 172

Bay taper—The *bay taper* is needed for the driver to move from the through lane into the auxiliary lane, normally at the same speed of through traffic. Bay tapers are present for both left-turn and right-turn auxiliary lanes. A pair of symmetrical reverse curves, or a straight line, can be used to create the bay taper. Typically, designers use symmetrical reverse curve bay tapers in developed areas with speeds at 45 mph or less and straight line tapers in undeveloped areas with speeds of 50 mph or greater. However, both can be used interchangeably based on local preference. Example bay tapers are shown in AASHTO’s *A Policy on Geometric Design of Highways and Streets*, 2011 edition (page 9-130).

For bay taper design, KDOT follows the guidance provided in Table 4-31, which is compliant with AASHTO references.

Table 4-31. Bay taper ratios and symmetrical reverse curve radius info for auxiliary lanes (12 feet wide) in developed and undeveloped areas

| Posted Speed (mph) | Developed Area | | Undeveloped Area | |
|--------------------|---------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
| | Straight Line Bay Taper (ratio) | Symmetrical Reverse Curve (feet) | Straight Line Bay Taper (ratio) | Symmetrical Reverse Curve (feet) |
| 30 or less | 8:1 ¹ (100-foot taper) | 150-foot radius (86-foot taper) | n/a | n/a |
| 35 to 45 | 10:1 ¹ (120-foot taper) | 150-foot radius (86-foot taper) | 12:1 ¹ (140-foot taper) | 300-foot radius (118-foot taper) |
| 50 or greater | 15:1 (180-foot taper) | 300 foot radius (118-foot taper) | 20:1 ¹ (240-foot taper) | 300 foot radius (118-foot taper) |

¹*A reduced bay taper ratio may be used if constraints are present that require a reduced bay taper length (prior approval by KDOT)
n/a = not applicable

4.5.3.b Left-turn lane design

The components of the left turn lane are the same as that of the right turn lane with the addition of the *through lane taper* and are discussed in detail below.

Through-lane taper—This is the taper needed to move through traffic over to create the auxiliary lane. Through-lane tapers are not needed for right-turn lanes. The formula to calculate the length of the through-lane taper is shown below:

$$L = (WS^2/60) \text{ for speed of 45 mph or less}$$

and

$$L = WS \text{ for speeds of 50 mph or more}$$

where:

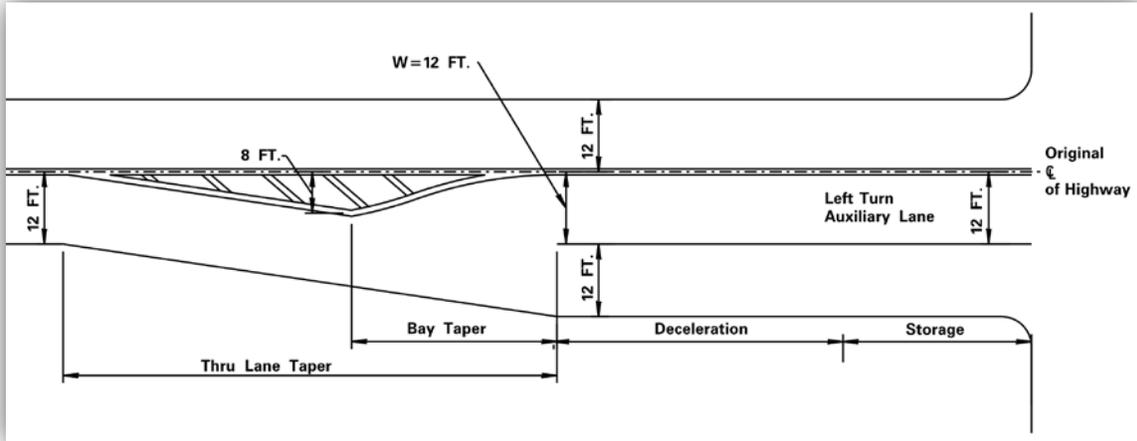
L = length of taper (feet)

W = offset (feet)—the distance the through lane has moved laterally at the end of the through lane taper

S = posted speed or 85th percentile speed (mph)

Left turn lanes can be designed to lessen the turn-lane length and require less R/W by incorporating the bay taper within the through-lane taper in areas with low speeds or limited space to create a safe and effective turn. The effect is called a *partial shadow* as shown in Figure 4-67. A *partial shadow* only partially protects or “shadows” the turn lane. It also has the advantage of allowing left-turn traffic to enter the turn lane with less lateral movement from the through traffic. **KDOT uses partial shadows only when there are physical constraints.**

Figure 4-67. Partial shadow design with widening on one side of highway



Left-turn lane designs can also depend on whether the turn lanes widen to one side of the highway or widen to both sides of the highway. Figure 4-68 shows a typical left-turn lane designs using a *full shadow* and widening to one side of the highway. With a full shadow of this design, the bay taper follows the through-lane taper, which adds to the length of the project, but fully protects the turn lane. Table 4-31 provides bay taper ratios.

Figure 4-68. Full shadow with widening on one side of highway

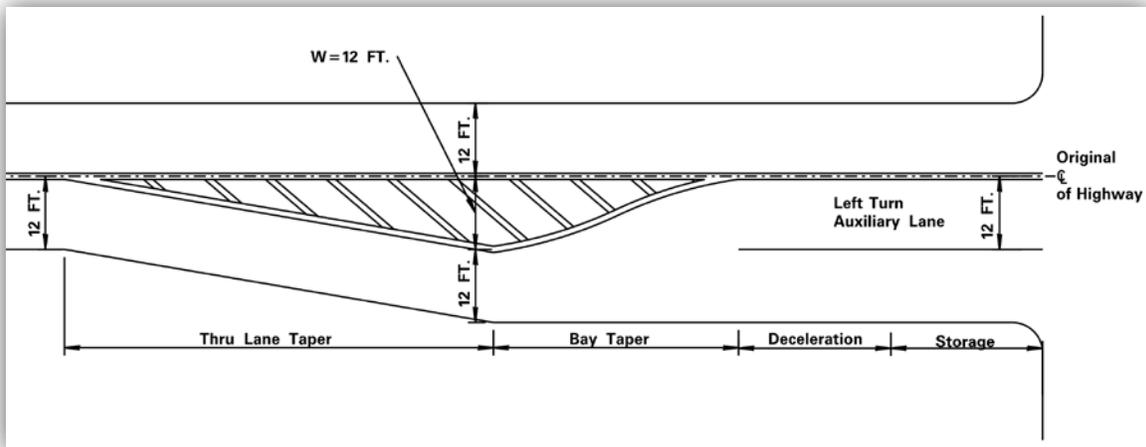
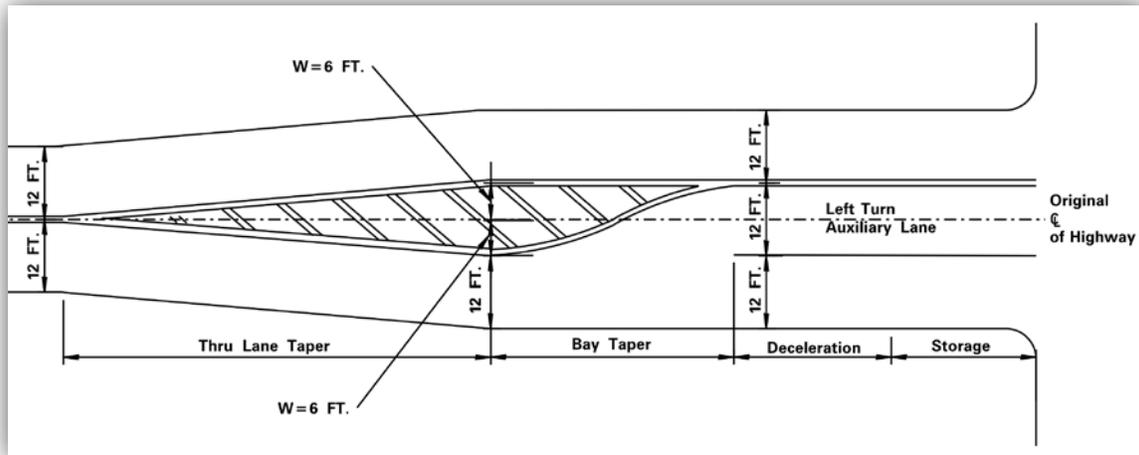


Figure 4-69 shows a typical left-turn lane design using a *full shadow* and widening to both sides of the highway. With a full shadow of this design, the left-turn traffic can enter the turn lane with less lateral movement from the through traffic. **KDOT uses the full shadow and widens to both sides when possible.**

Figure 4-69. Full shadow with widening on both sides of highway



4.5.4 Other auxiliary lane designs

The auxiliary lanes described above are the most common treatments at an access; however, they are not the only auxiliary lane options available. Below are other suitable options.

4.5.4.a Right-turn deceleration taper

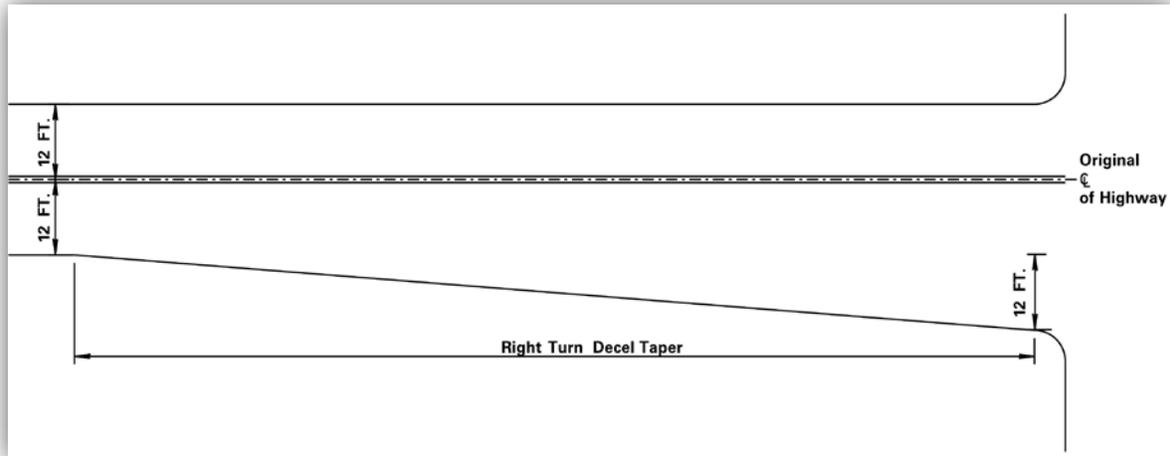
When the guidelines for the installation of a right-turn deceleration taper are met (see Section 4.5.1), see Table 4-32 for taper lengths based on the highway posted speed limit. Figure 4-70 shows a typical right-turn deceleration taper on a two-lane highway.

Table 4-32. Right-turn deceleration taper lengths

| Posted Speed Limit (mph) | Straight-line right-turn deceleration taper (feet) |
|--------------------------|--|
| 45 or less | 150 |
| 50—55 | 250 |
| 60 or greater | 300 |

The width of the right-turn deceleration taper is 12 ft at the radius point for the right-turn

Figure 4-70. Right-turn deceleration taper on two-lane highway



4.5.4.b Continuous right-turn lanes (CRTL)

A *continuous right-turn lane* is essentially a combination of right-turn acceleration and deceleration lanes that are extended to accommodate several closely spaced access points.¹ For proper operation, continuous right-turn lanes should not be longer than 0.25 mile (1320 feet). Continuous right-turn lanes may be considered where speeds are greater than 30 mph, roadway volumes are heavy, and turning demands are high.

KDOT recommends the following when considering the use of CRTL:

- **The need and application should be site-specific and should be based on analysis of rear-end accidents, turn volumes, and operation.**
- **The design of a typical section and tapers should be the same as that for a typical right-turn lane.**

4.5.4.c Two-way left-turn lanes (TWLTL)

Midblock left-turns from a through lane can restrict capacity and increase the possibility of rear-end and left-turn crashes. TWLTLs have proven to be a safe and cost-effective solution to this problem when combined with access management techniques limiting access along developed sections of highway.

TWLTLs should be considered whenever actual or potential midblock *conflicts* occur. This is particularly true when accident data indicates a history of midblock left-turn related accidents. Closely spaced access, strip commercial development, or multiple-unit residential land use along the corridor are other indicators of the possible need for TWLTLs.

¹ MnDOT Design Manuals (2002), 5-3.01.07 Continuous Right-Turn lane (CRTL)

KDOT recommends the following guidelines when evaluating the use of a TWLTL on a state highway:

- **10,000 to 20,000 vehicles per day for four-lane undivided highways.**
- **5,000 to 12,000 vehicles per day for two-lane highways.**
- **Posted speed limit of 45 mph or below.**

And when one of the following two criteria are met:

- **70 midblock turns per 1,000 feet during peak hours.**
- **Left-turn peak-hour volume 20 percent or more of total volume.**

A TWLTL is preferably the same width as through-lane widths. Care should be taken not to make TWLTLs wider than 14 feet (16 feet max per AASHTO’s *A Policy on Geometric Design of Highways and Streets* (2011)), since this may encourage shared side-by-side use of the lane. Once traffic volumes approach the upper limits of three-lane (12,000 *vehicles per hour* (VPH)) and five-lane roadways (20,000 VPH), channelized mid-block left turns with raised medians will offer improved safety over a TWLTL.

4.5.4.d Acceleration lanes and tapers

Acceleration lanes are dedicated lanes that allow vehicles turning from a minor street to accelerate to free flow speeds before merging onto the highway. *Acceleration lanes* are typically used at unsignalized intersections that experience a high rate of accidents related to the speed differential caused by vehicles making a turning maneuver onto the highway or where large trucks (e.g., dump trucks, semi-trailer trucks) and recreational vehicles frequently turn onto the highway. Acceleration lanes should also be considered when installing a free flow right turn onto the highway.

KDOT considers the use of acceleration lanes when the following conditions apply:

- **At unsignalized intersections, or signalized intersections with free-flow right-turn lanes, in an undeveloped area, where the posted speed limit is above 45 mph.**
- **When the average daily traffic (ADT) of the highway is over 3,000 vehicles per day (vpd) and there are a minimum of 45 large trucks/recreational vehicles turning right from the access to the highway within the peak hour.**
- **A traffic study indicates a crash history involving right-turning vehicles from an existing access (when applicable).**

Figure 4-71 shows the typical layout of an acceleration lane. The lane width of the acceleration lane should be equal to the through-lane width of the highway. The acceleration lane length should be calculated based on Table 4-33. The lengths provided in Table 4-33 are based on an acceleration lane on a flat grade of 2 percent or less so longer lengths may be needed for grades greater than 2 percent. The taper length should be 300 feet for speeds up to and including 60 mph and 600 feet for speeds greater than 60 mph.

Figure 4-71. Acceleration lane length and taper (two-lane highway)

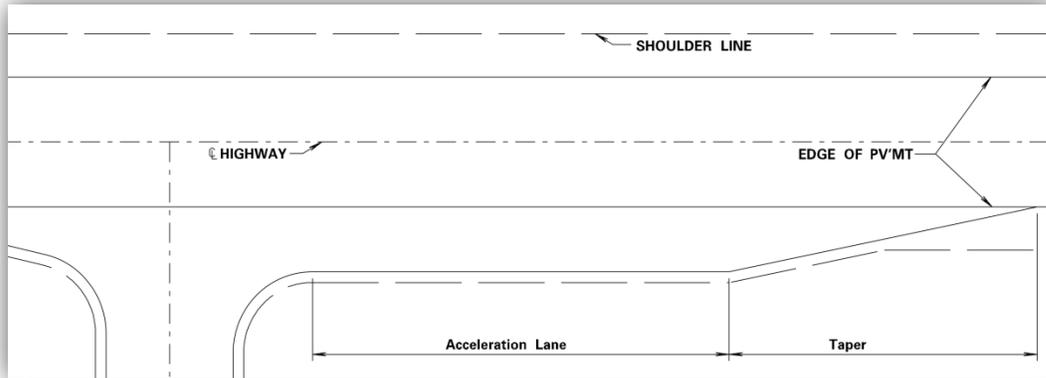


Table 4-33. Acceleration lane lengths

| Posted Speed (mph) | Acceleration Lane Length (from stop condition) (feet) ¹ | Acceleration Lane Length (from free-flow right condition) (feet) ² |
|--------------------|--|---|
| 45 | 560 | 490 |
| 50 | 720 | 660 |
| 55 | 960 | 990 |
| 60 | 1200 | 1140 |
| 65 | 1410 | 1350 |
| 70 | 1620 | 1560 |

Source: AASHTO's *A Policy on Geometric Design of Highways and Streets* (2011 Edition), table 10-3

Taper lengths equal 300 feet for speeds ≤ 60 mph and 600 feet for speeds > 60 mph

¹ 0-mph design speed

² 15-mph design speed

Figure 4-72 shows the appropriate use of an acceleration lane at the US-77 and K-57 south junction where through traffic is not stopping and the merging vehicle traffic includes large trucks.

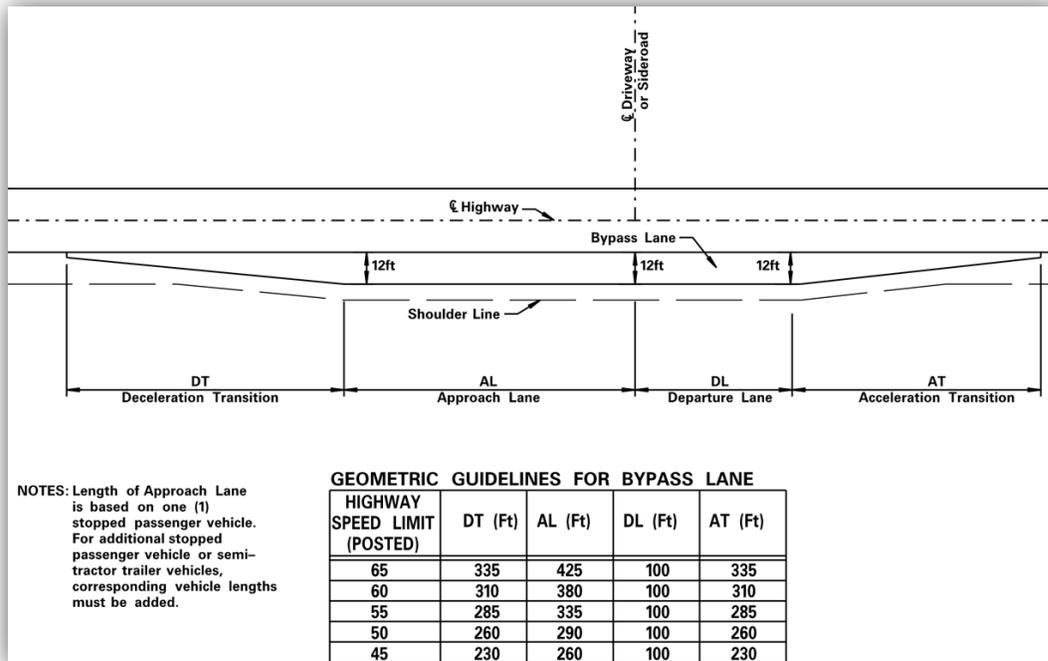
Figure 4-72. Acceleration lane-US-77 and K-57 (south junction), Junction City, Kansas



4.5.4.e Bypass lanes

A bypass lane allows vehicles to pass left-turning vehicles on the right. The vehicle following is allowed to reduce its speed and pass the left-turning vehicle on the right and then merge back into the through lane. The bypass lane minimizes delay to following through vehicles and requires them to decelerate to approximately 50 percent of their operating speed; if the bypass lane was not present through vehicles would have to stop. Geometric details (lane widths, shoulder widths, taper lengths, etc.) are based on the primary highway’s speed limit and are shown in Figure 4-73. **KDOT considers the use of bypass lanes at “T” intersections in undeveloped areas when left-turn lane warrants are met but the installation of a left-turn lane is not practical.**

Figure 4-73. Geometric guidelines for bypass lane



4.5.4.f Shoulders adjacent to auxiliary lanes

Shoulders should be used adjacent to *auxiliary lanes* and *access tapers*. See Table 4-34 for shoulder widths adjacent to auxiliary lanes. Shoulder surfacing should match existing shoulder but if heavy truck traffic KDOT may require the shoulder to be paved.

Table 4-34. Shoulder width adjacent to auxiliary lanes

| Shoulder Width Adjacent to Highway (feet) | Shoulder Width Adjacent to Auxiliary Lane (feet) |
|---|--|
| 0–3 | 4 |
| 4–6 | 4–6 (match existing) |
| 7–10 | 6 |

4.6 Other design considerations

4.6.1 Mailbox turnouts

Existing mailboxes are not required to conform to this Policy and will usually be allowed to remain in place. However, existing mailboxes should be brought into conformance with this Policy when changes occur to the mailbox or roadway.

Mailbox installations are typically set near the shoulder of a highway, and the height is approximately that of a typical vehicle windshield. For safety considerations and proximity to the highway, mailbox installations should comply with NCHRP Report 350, 1993, and/or Manual for Assessing Safety Hardware (MASH), October 2009 safety criteria.

4.6.1.a Responsible authority

The United State Postal Service (USPS) regulates the mailbox design, size, height, delivery location (right/left side of the highway), and delivery service.

KDOT uses criteria established by AASHTO for the placement of the mailbox, *turnout* construction, and safety features of the mailbox mounting, post, and multiple mailbox installations.

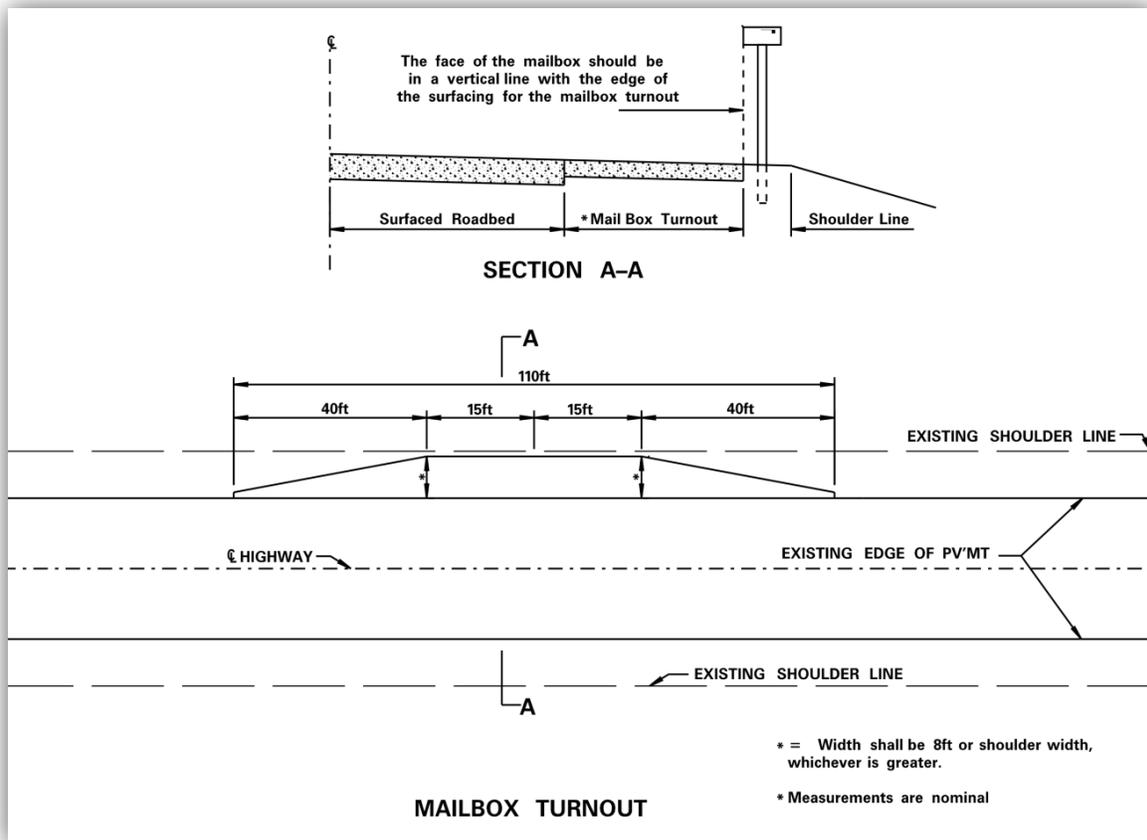
When installing a mailbox turnout or mailbox in conjunction with an access installation or improvement, use KDOT *Application for Highway Access* (Form 827). For mailbox turnout or mailbox installation and maintenance not in conjunction with an access, use *Highway Use of Right-of-Way Permit* (Form 304). Contact your local KDOT *Area office* for further information. Any variance requires the written approval of the District Engineer or designee.

USPS and KDOT require mailboxes be placed so that the postal carrier and the customer are able to pull off the highway to access the mailbox. KDOT specifies each mailbox or group of mailboxes be placed so that an 8-foot-minimum turnout can be installed.

4.6.1.b Turnout

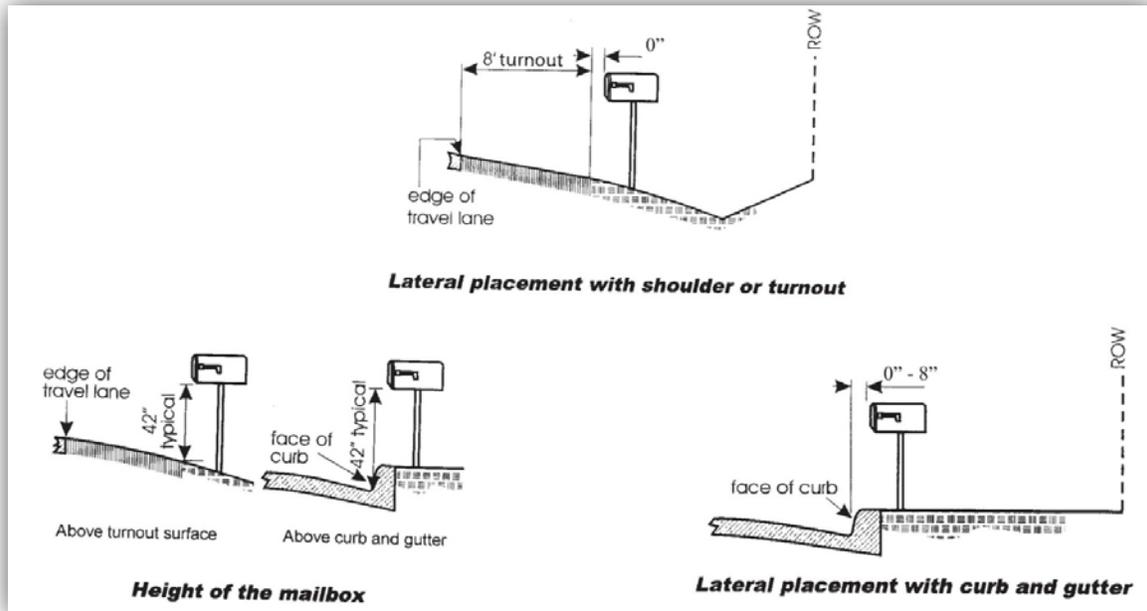
On rural or urban highways, an 8-foot-minimum-wide paved or graveled shoulder or *turnout* is required. In urban area with curb and gutter, the mailbox should be set between 0 and 8 inches behind the curb. Figure 4-74 presents an illustration of the turnout detail.

Figure 4-74. Mailbox turnout detail



The height of the mailbox is 42 inches above the driving surface (USPS). The mailbox is attached to the top of the post with metal bracket that is bolted horizontally through the post (AASHTO). Acceptable posts include 4-1/2-inch Round Wood, 4-by-4-inch wood, 2-inch thin wall steel pipe, or U-channel (AASHTO). Figure 4-75 illustrates the specifications described.

Figure 4-75. Mailbox placement



4.6.1.c Unapproved structures

Large structures, such as I-beams, hand pumps, farm implements, or stone/brick structures used to support a mailbox along the highway, pose a safety risk to the traveling public and are not permitted. These structures are not in compliance with NCHRP Report 350 and MASH safety criteria and will require removal.

4.6.1.d Mailbox post

Mailbox-to-post attachments should prevent the mailbox from separating from its support under vehicle impact. The post must be designed to break away when struck. The traditional 1-by-6-inch piece of wood nailed to the top of the post used to attach the mailbox provides insufficient connective strength and may separate under vehicle impact. Mounting brackets supplied by Shur-Tite, as shown in Figure 4-76, or S-Square Tubing Products, are examples of products that meet the NCHRP 350 safety testing criteria. Plastic mailboxes with integral support, as in Figure 4-77, also meet the safety testing criteria.¹

¹ However, these products are not endorsed, promoted or guaranteed by KDOT.

Figure 4-76. Mailbox post—Shur-Tite



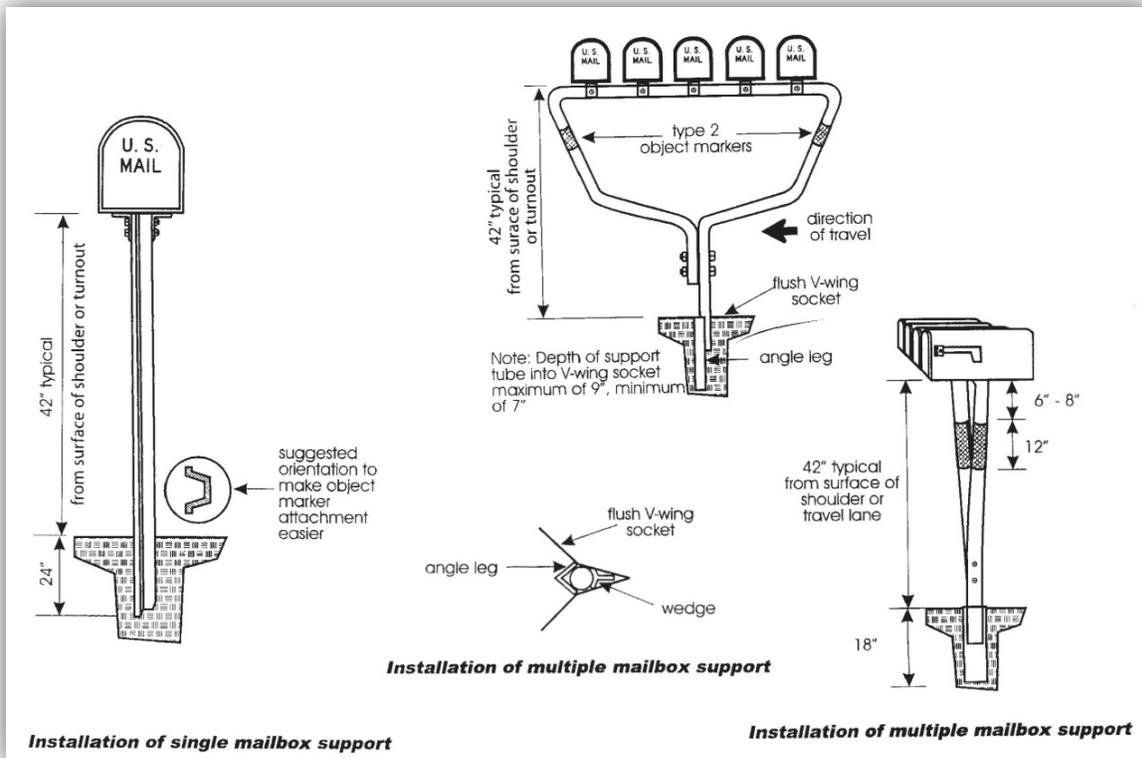
Figure 4-77. Mailbox post—molded plastic with integral support



4.6.1.e Multiple mailbox mountings

Install multiple mailbox mountings on a “D” or coat hanger shaped post, and attach the mailboxes with a metal bracket. Place adjacent multiple supports no closer than 4 feet between installations, with no limit on the number of adjacent groups. Use support mountings illustrated in Figure 4-78.

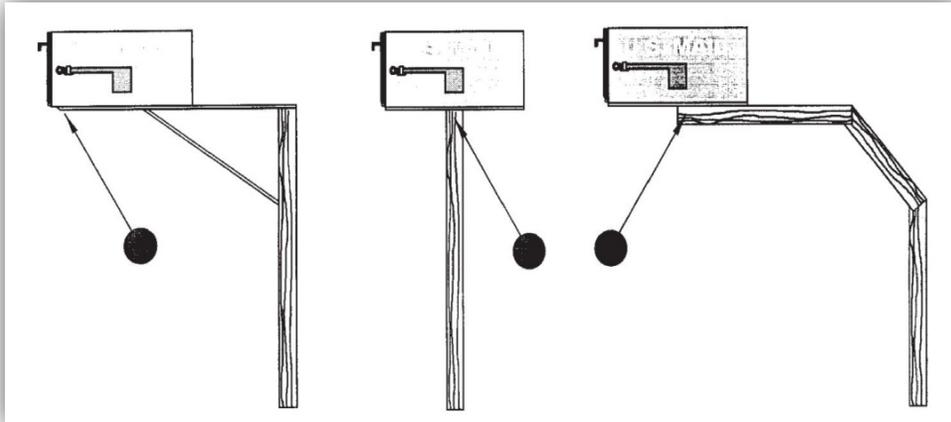
Figure 4-78. Mailbox supports



4.6.1.a Object markers for mailboxes

Object markers can provide increased visibility of mailbox installation at night. The KDOT *Sign Manual* specifies that mailbox reflectors be blue. The reflectors should be installed at the front or the center of the mailbox or on the post if the mailbox is centered over the post (Figure 4-79).

Figure 4-79. Mailbox object marker



4.6.2 Pedestrian and bicycle awareness

Bicycles and pedestrian accommodations should be considered on transportation projects, except where bicycle and pedestrians are not permitted. The type of accommodation considered depends on the number of bicyclists and pedestrians, the number and type of motor vehicles, speed limit, availability of R/W, and costs. In developed and CBD areas, the width and radii of access points should be considered so that pedestrian and bicyclist exposure to vehicles entering and exiting the roadway is limited.

4.6.2.a Bicycles

Access should be designed appropriately for highways where bicycle traffic is accommodated with the use of on-street bike lanes or shared use paths. The latest edition of AASHTO's *Guide for the Development of Bicycle Facilities* is a good resource designing bicycle facilities along roadways with access.

4.6.2.b Pedestrians

Sidewalks must comply with design requirements under the Americans with Disabilities Act (ADA) for accessibility to pedestrian facilities in the public right-of-way. The pedestrian crossing at an access is a facility covered by the ADA and must be made accessible in new construction projects. The ADA guidelines for public R/W require that there be a continuous accessible pedestrian route leading to and crossing each access. This includes the following:

- The transition between the public sidewalk and the pedestrian crossing at the access, which is usually achieved by an accessible curb ramp.
- The pedestrian crosswalk pavement surface.
- Any island improvements within the access that pedestrians must cross.

The pedestrian crossing at newly constructed access must offer a minimum 60-inch-wide sidewalk with a cross slope no greater than 2 percent. Where the access is a modification to an existing improvement with the public R/W, the pedestrian crossing must offer a cross slope no steeper than 2 percent to the maximum extent feasible, given existing site-related constraints.

4.6.3 On-street parking

Both the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* and the 6th Edition of the *Institute of Transportation Engineers (ITE) Traffic Engineering Handbook* suggest the primary reason for having a roadway network is to provide for the safe and efficient movement of vehicles. While the movement of vehicles is the primary function of a roadway network, segments of the network may, as a result of land use, need to provide on-street parking.

On-street parking is incompatible with high-speed, high-volume roadways where the function of the street is focused on motor-vehicle carrying capacity. On-street parking should be prohibited on roadways carrying more than 20,000 vehicles per day and those with posted speeds greater than 35 mph due to potential hazards associated with maneuvering in and out of spaces.¹ In lower-volume and slower-speed environments, the opportunity for on-street parking applications usually increases.

4.6.3.a Parallel versus angled parking

When on-street parking will be added to a roadway, parallel parking (Figure 4-80) is commonly preferred by transportation professionals over angled parking to maintain better highway operation. Angled parking presents special problems because of the varying length of vehicles and the sight distance problems associated with the higher heights of vans, SUVs, trucks, and recreational vehicles when backing out into the *traveled way* (Figure 4-81).

Figure 4-80. Parallel parking along a developed corridor



Source: Phil Demosthenes

Figure 4-81. Angle parking—vehicle backing out of space (CBD)



Source: Phil Demosthenes

¹ Institute of Transportation Engineers, 2010.

Most angled parking is provided by head-in angled parking, where the front of the vehicle enters the parking stall first. With head-in angled parking, vehicles must back out into the traveled way to exit the parking space. In certain circumstances, an alternative form of angled parking may be used where the vehicle backs into the parking space as shown in Figure 4-82. The maneuvers for back-in angled parking are not significantly different than parallel parking, and the sight lines for exiting vehicles are superior. Back-in angle parking should be supplemented with descriptive signs showing how they should be used.

Figure 4-82. Back-in angled parking in Pottstown, PA (CBD area)



Source: “Back-In Angle Parking in Central Business District”; Presentation, John A. Nawn, P.E., PTOE, URS Corporation

On-street parking should match the existing road characteristics. If parallel parking exists in a CBD area, a section of angled parking should not be allowed within the same area. Table 4-35 provides volume and speed criteria when parallel or angled parking will be allowed. **KDOT allows on-street parking when both the speed and volume criterion in Table 4-35 are met. Parallel parking is the preferred on-street parking method.**

Table 4-35. Criteria for allowing on-street parking

| Parking Type | Criteria | |
|---------------------------|---------------------------------------|-------------|
| | Volume (ADT) ¹ | Speed (mph) |
| No parking allowed | ≥20,000 | ≥35 |
| Parallel | ≤15,000 | ≤30 |
| Angle (including back-in) | ≤10,000—multi-lane ≤5,000—one-lane | <20 |

Note: ADTs are total, two-way, except for the one-lane reference.

¹This does not imply absolute conditions, but guides the successful application

Figure 4-83 and Figure 4-84 depict approved on-street parking layouts. **KDOT follows the width/length of parking stalls and buffer area provided in Figures 4-83 and 4-84 when reviewing on-street parking layouts. Intersection sight distance should be measured from the access/intersection to determine the length of parking restriction needed either side of the access/intersection and should be no less than 20 feet from the marked or unmarked crosswalk and 30 feet on approach to signalized intersections.**

Figure 4-83. On-street parallel parking typical dimensions

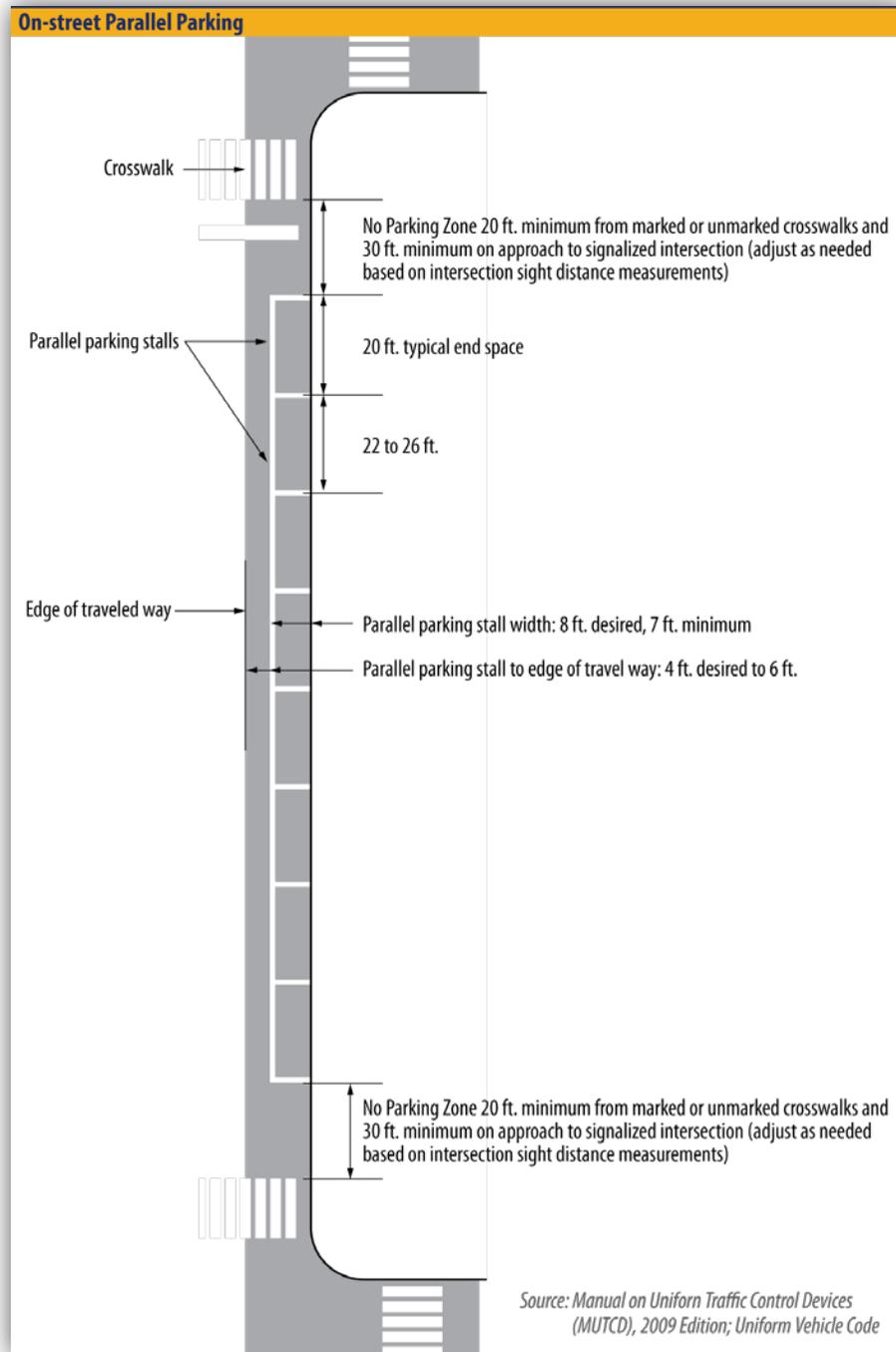
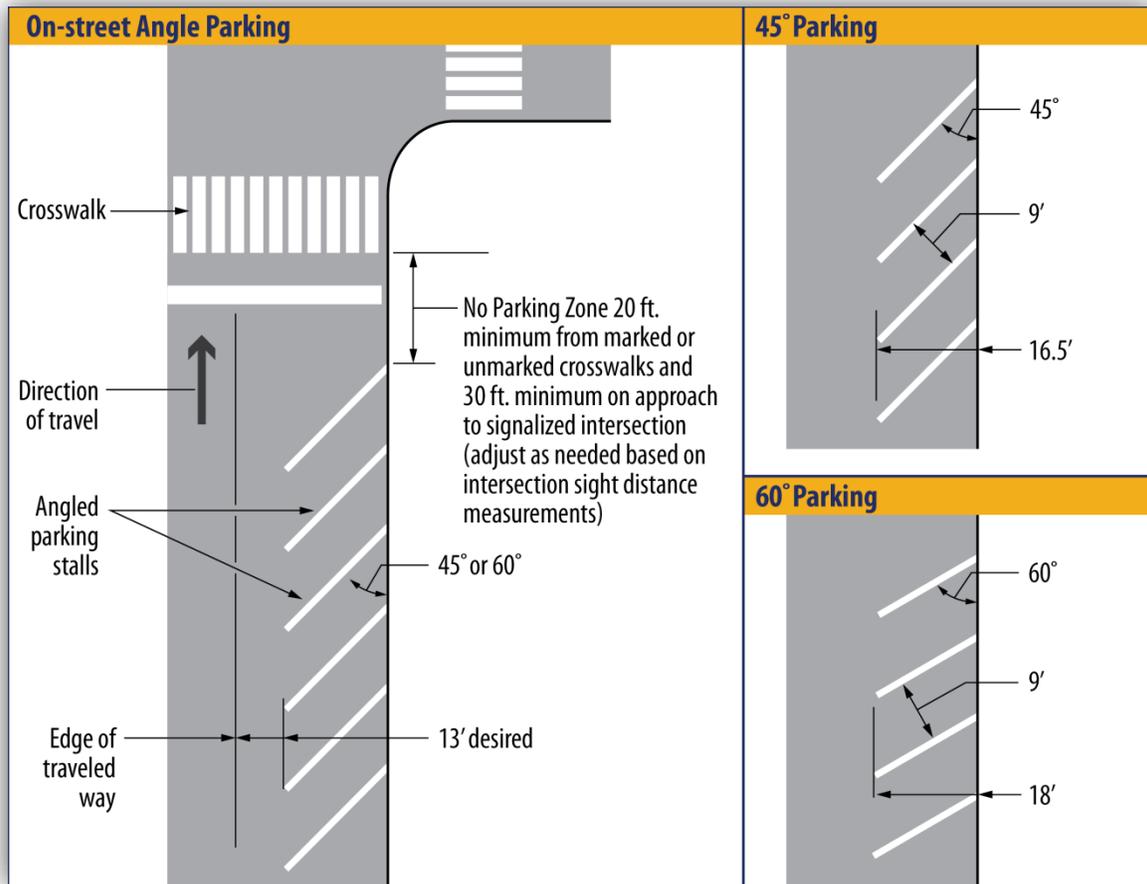


Figure 4-84. On-street angle parking typical dimensions



Sources: *Manual on Uniform Traffic Control Devices (MUTCD) 2009 edition*; *the Traffic Engineering Handbook, 6th edition*; *ITE's An ITE Recommended Practice—Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*
 Typical dimensions for on-street back-in angle parking are the same dimensions (45-degree) with the direction of traffic reversed

4.6.3.b Bulbouts in urban areas

Bulbouts, or curb extensions, are an extension of the sidewalk into the street at intersections (Figure 4-85). Bulbouts can:

- Reduce the crossing distance (exposure time) for pedestrians crossing in crosswalks.
- Improve the sight distance and sight lines for both pedestrians and motorists.
- Prevent parked cars from encroaching into the crosswalk area.
- Create adequate space for curb ramps and landings where the existing sidewalk space is too narrow.

Bulbouts are typically used where on-street parking is provided to prevent parking from extending near the crosswalks at intersections. Typically, parking should end a minimum of 25 feet prior to the intersection. The *AASHTO Pedestrian Guide* recommends bulbouts should extend the width of the parking lane, approximately 6 feet from the curb. Bulbouts may not be needed or desirable on every leg of an intersection if the street leg is narrow and parking is not permitted or the bulbout

would interfere with a bicycle lane or the ability of the design vehicle to negotiate a right-turn. Bulbouts can make snow plowing more difficult. Low-level landscaping, through the use of planting strips or boxes, is recommended on bulbouts to provide alignment cues for pedestrians with vision impairments and visibility for approaching motorists.

4.6.4 Bus turnouts

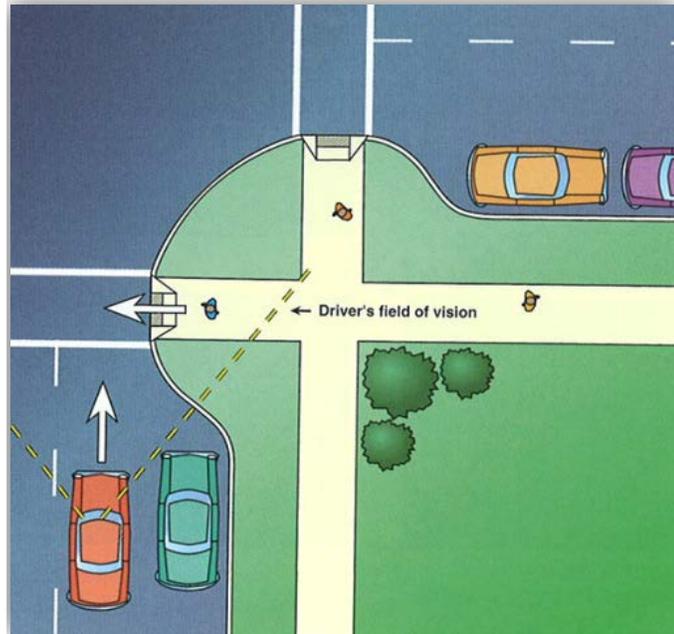
Buses travel in mixed traffic, and bus *turnouts* remove the bus from the traveled way when picking up and dropping off passengers. They also provide tapers for decelerating and accelerating, which increases safety and limits degradation of roadway operations.

For roadways with speed limits of 35 mph and less, turnouts should be considered. However, if space is available, a turnout can improve safety for transit users and other vehicles on the roadway. For roadways with speeds of 45 mph and above, the turnouts support better roadway performance because much of the bus deceleration and acceleration takes place out of the traveled way and in deceleration and acceleration lanes. Additionally, buses merging with through traffic have an advantage because a bus's speed is closer to the speed of traffic on the through roadway and its presence is clear to approaching vehicles on the roadway. Therefore, turnouts are recommended on roads with speeds of 45 mph and above.

Along highways, the goal of the bus turnout is to allow deceleration, standing, and acceleration to occur out of the traveled way. It is desirable that the bus turnout pavement be a distinct color or texture to discourage through traffic from encroaching on or entering the bus stop. Agency signage should be visible in advance of the turnout lane to advise drivers of the bus turnout.

Bus turnouts on arterials should incorporate (1) a deceleration lane or taper to permit easy entrance to the loading area, (2) a standing space long enough to accommodate the maximum number of buses expected at one time, and (3) an acceleration lane to enable easy reentry into the traveled way. On arterials, there are three options for bus stop location—near side (of the intersection), midblock, and far side (of the intersection). Some believe the far side location permits the best operation, since queues from the approaching intersection are less likely to reach this location permitting the bus to enter the right through lane. Each of the three locations has a slightly different design configuration, as shown in Figure 4-86. The near side and far side orientation of the bus stop allow the use of the cross road for acceleration or deceleration, which can decrease the total length of the turnout.

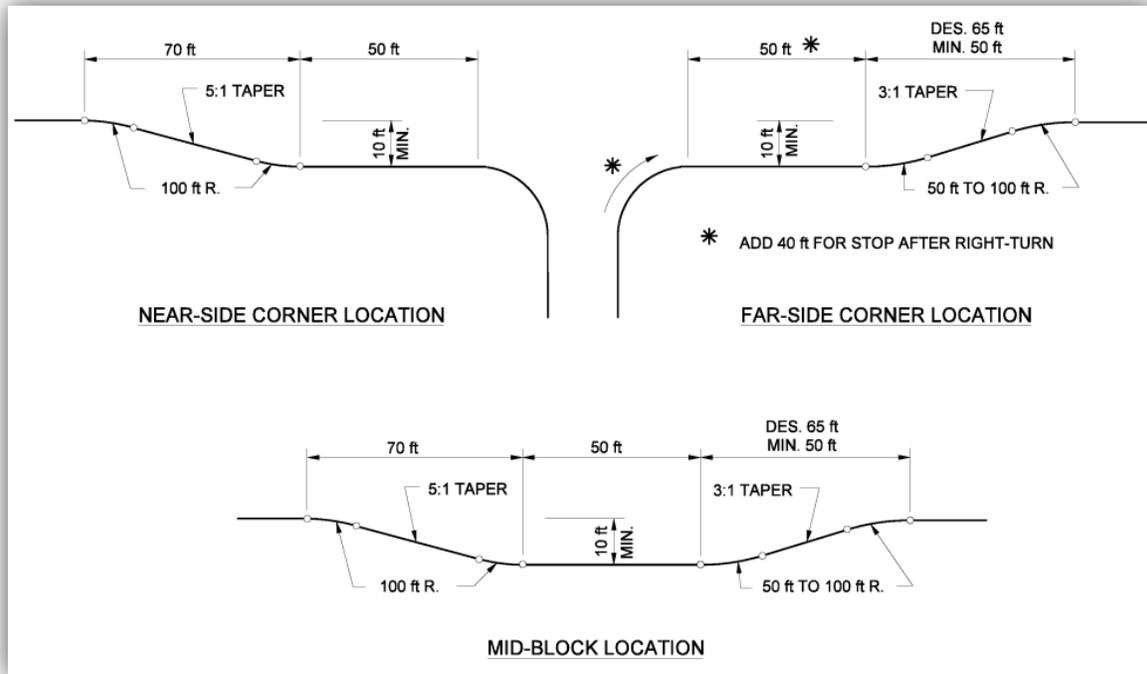
Figure 4-85. Intersection bulbout



Source: AASHTO, *Guide to the Planning, Design, and Operation of Pedestrian Facilities*, July 2004, p.74

When possible, greater lengths for tapers are beneficial to roadway performance because they decrease the interference between the bus and other vehicle traffic while the bus is decelerating or accelerating.

Figure 4-86. Bus turnout configurations



Source: Indiana DOT, The Indiana Design Manual, Chapter 51, Figure 51-5B.

4.6.5 Gates on private property

Gates installed at an access shall be located on private property outside the highway clear zone. Gates will need to be hinged to open on private property. Gates are required to be set back from the highway to accommodate the access design vehicle and any traffic queue expected during peak times. This will allow vehicles to remain on the access while entering the property without encroaching on to the state highway. Table 4-36 shows the minimum distance between the edge of shoulder/curb & gutter and the gate located on private property. **The minimum distance between the edge of shoulder and a gate should be determined from Table 4-36 or the highway clear zone, whichever is greater.**

Table 4-36. Minimum distance between edge of shoulder/curb and gate on private property

| Design Vehicle | *Distance (feet) |
|----------------------------|------------------|
| Passenger car/truck | 25 |
| Truck & trailer | 50 |
| Commercial vehicle (WB-65) | 75 |
| Single unit truck | 35 |
| Recreational vehicle | 50 |

*Note: Additional length is needed when study indicates a queue of vehicles between the gate and the roadway during peak times

Figure 4-87 through Figure 4-89 depicts the wide range of gated access scenarios in both undeveloped and developed areas.

Figure 4-87. Type 1 field access—passenger car/truck design vehicle



Source: Parsons Brinckerhoff

Figure 4-88. Type 1 field access—truck and trailer design vehicle



Source: Parsons Brinckerhoff

Figure 4-89. Type 5 industrial access—commercial vehicle (WB-65) design vehicle

Source: Parsons Brinckerhoff

4.6.6 Variances

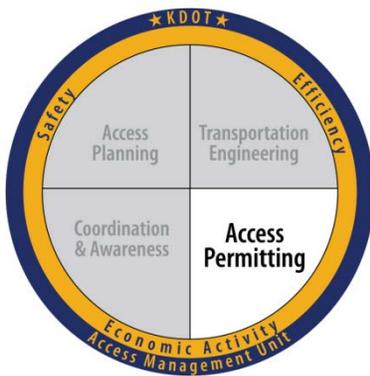
An access variance grants permission to depart from the requirements of this Policy due to unique circumstances or existing special conditions. Examples of items that would require a variance if outside the parameters of this Policy include width, radius, entry/exit tapers, spacing, pavement thickness, pipe size/type, sight distance (stopping or intersection), grades, lane widths, cross slopes and other similar items. If property would not have reasonable access without a variance to this Policy, further discussion and analysis is needed.

A variance can be given to the design criteria in the previous sections by following the guidance in Chapter 5.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. Italicized terms signify terms defined in section 8.2 of Chapter 8.

Chapter 5

Access permitting



Access permitting is one of the four core areas used by KDOT to manage highway access. A property owner wanting *access* to a *state highway* must **apply** and be **approved** for a *Highway Access Permit*. Cornerstones of the KDOT permitting process are transparency and coordination with affected stakeholders, such as property owners and local jurisdictions. In addition, consideration of applicable long-range plans along with transportation and environmental impacts of the proposed access are integral components of the permitting process.

5.1 The permitting process

A permit is a legal agreement between KDOT and the *permittee*. An *access permit* is:

- Permission to do work on KDOT *right-of-way* (R/W).
- A record of improvements made to the highway, including the location of the *access*.
- A license to the landowner for a specific use.

Non-compliance with any of the terms of the *Highway Access Permit* may be considered cause for shutting down construction or use of the *access point* until the terms of the permit are complied with or for revocation of the permit. The cost of any work required by KDOT, including the removal of non-complying construction, will be assessed against the property owner.

The permitting process has four phases—application, review, approval, and construction and inspection. KDOT and the applicant coordinate throughout the phases to define an access that addresses the request and meets KDOT's requirements. When local governmental controls, laws, or orders of public authority prescribe a higher degree of protection than provided in this Policy, then the stricter controls will govern.

KDOT has divided the state into six *Districts* administered by a *District Engineer*, who approves all Highway Access Permits. Each *District* is divided into three to six *Areas* administered by an *Area Engineer*. Each *Area office* has an *Area Permit Coordinator* who is the first point of contact for questions or concerns about the highway access permitting process. The *Area Engineer* initially reviews all Highway Access Permits before they are forwarded to the *District Engineer*. Contact information for each *Area office* can be found in Chapter 8.

KDOT has identified six *access types* that are based on daily traffic volumes and property use. Access type is an important component of the permitting process and helps KDOT to determine where to best locate an access and what design criteria apply. Table 5-1 lists the access types by volume and provides typical use examples.

Table 5-1. Access types

| Type | Traffic Volume | Use |
|------|--|---|
| 1 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Non-commercial—farm, agriculture, field, timber, cultivated, pasture, duplex, single family residential/home, apartment building containing five or fewer dwelling units, other |
| 2 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Special-use—city water treatment plant, microwave station, pipeline checkpoint, telephone repeater stations, utilities (electric, gas, telephone, and water) check/maintenance stations, Corps of Engineers dike roads, other |
| 3 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Emergency facility—fire station, paramedic facility |
| 4 | Low volume 0–49 vehicles per day maximum, in/out bound traffic count | Commercial—small business, cemetery, nursing home, other |
| 5 | Medium volume 50–499 vehicles per day and less than 50 vehicles per peak hour of the highway (in/out bound traffic count) | Commercial, industrial, institutional, recreational, local road connections, including shared access, other |
| 6 | High volume 500 or more vehicles per day or 50 or more vehicles per peak hour of the highway (in/out bound traffic count) | Commercial, industrial, institutional, recreational, local road connections, including shared access, other |

Figure 5-1 and Figure 5-2 present the general flow diagrams of the KDOT permitting process for access types 1 and 2 and for access types 3 through 6, respectively. The following sections describe each phase of the permitting process in detail.

5.1.1 Application

KDOT requires all applicants to complete the *Application for Highway Access (Form 827)*. The application provides KDOT with the information needed to determine whether direct access will be allowed to a *state highway*. The applicant can be the property owner or the property owner's representative, such as a lessee or consultant engineer. The property owner is ultimately responsible for the access. If the applicant is not the property owner, the applicant must have the property owner's consent to alter the property access. The property owner or owner's legal agent will be required to sign the approved permit.

The *Application for Highway Access* may be obtained at any of KDOT's 26 Area offices. In addition, an electronic version of the application is posted on KDOT's website at www.ksdot.org/accessmanagement. The application can be filled out online; however, it cannot be submitted online. The application must be printed, signed, and submitted to the Area office. Maps showing the addresses and telephone numbers for each Area office are included in Chapter 8.

The Area office reviews the application and coordinates with the applicant as needed to compile any necessary supporting documentation. The supporting documentation may include a *Traffic Impact Study (TIS)*, *drainage report*, or a *site plan*. The supporting documentation is described and requirements are outlined in Table 5-2 and Sections 5.4 through 5.4.5.

Figure 5-1. Permitting process for access types 1, 2, 3 and 4

Highway Access Permit Process for Access Type 1, 2, 3, and 4

Receiving an approved Highway Access Permit for Type 1, 2, 3, and 4 usually takes 4 weeks or longer

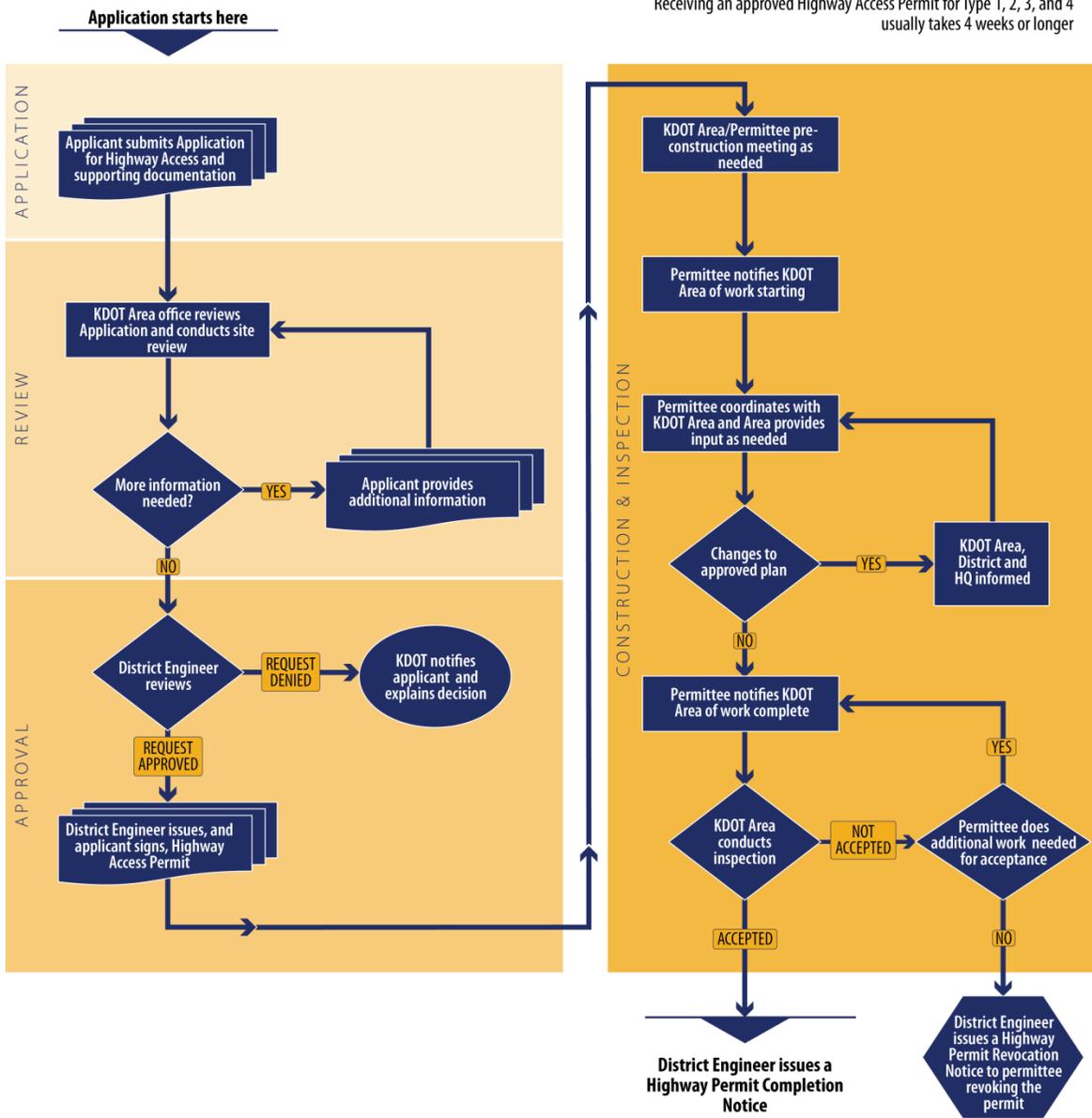


Figure 5-2. Permitting process for access types 5, and 6 and access that require a variance

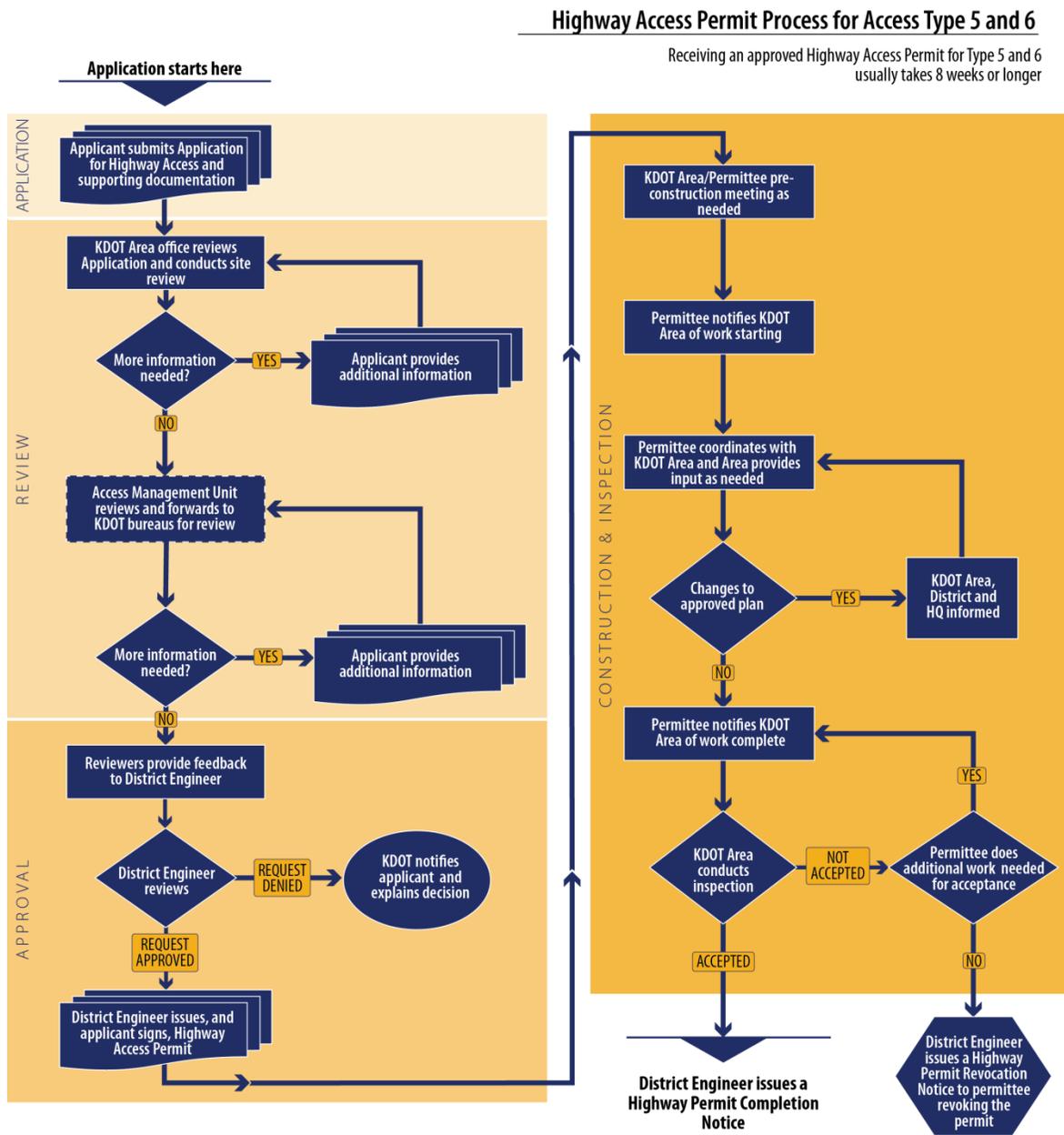


Table 5-2. Supporting documentation for Application for Highway Access by access type

| Access Type | Application | TIS | | Drainage Report | Site Plan | Plans for Construction | Environmental Considerations |
|-------------|-------------|-------|---------------|-----------------|-----------|------------------------|------------------------------|
| | | Basic | Comprehensive | | | | |
| 1 | ● | | | ▲ | | | ● |
| 2 | ● | | | ▲ | | | ● |
| 3 | ● | | | ▲ | ▲ | ▲ | ● |
| 4 | ● | ▲ | | ▲ | ▲ | ▲ | ● |
| 5 | ● | ● | ▲ | ▲ | ● | ▲ | ● |
| 6 | ● | | ● | ▲ | ● | ● | ● |

▲ Determined by KDOT on a case-by-case basis
 ● Always required

The KDOT Area office will coordinate with the applicant along with local officials and other stakeholders who may be impacted by the proposed access. Any application for access within a city requires a signature from the affected city.

When local governmental controls, laws, or orders of public authority prescribe a higher degree of protection than provided in this Policy, exception to this Policy will be made.

5.1.1.a Waivers

A *waiver* is obtaining KDOT’s permission to relinquish or “waive” a requirement of the application as shown above in Table 5-2. To request a waiver, the applicant should submit ample justification in writing (email is acceptable) to the Area office for consideration. The request will be reviewed and the final decision documented and returned to the applicant. Waivers not related to design, operation, or safety may be granted by the District or by the AMU with District concurrence. Waivers involving design, operation, or safety should be treated as a *variance* request (See section 5.1.5, below). If the waiver is related to the application materials, the waiver request should be submitted to KDOT for consideration prior to the application being submitted. If the waiver involves access on a *City Connecting Link*, a representative of the city must support the waiver prior to final decision by the District Engineer.

5.1.2 Review

The Area office conducts a site inspection to review the proposed access location. If additional information or supporting documentation is needed, KDOT will notify the applicant. The applicant must submit the additional documents for review by KDOT before the process continues.

- The application and supporting documentation are reviewed by the Area Engineer, Area Permit Coordinator and the District Engineer (or a designee). During the review, some issues KDOT may consider include:
- Current and existing access, alternatives to direct access to the highway, and traffic engineering factors

- Whether the access is permanent, interim (until future highway improvements are made), or temporary (limited to a specific period of time)
- Whether access is being changed or closed, including consolidation of access points
- Current and future use of the property
- For access types 5 and 6, the AMU also reviews the application and supporting documentation. All supporting documentation is forwarded to the appropriate KDOT bureaus by the AMU.
- Various KDOT bureaus provide feedback to the AMU, and the AMU coordinates the information to provide feedback to the Area Engineer. If additional information or supporting documentation is needed, KDOT will notify the applicant and explain the requirements. The applicant must submit additional information or supporting documentation for review by KDOT before the process continues.

5.1.3 Approval

The District Engineer (or designee) evaluates the application, supporting documentation, and feedback from the Area Engineer, the AMU along with various KDOT bureaus (when necessary), and local agencies. The District Engineer will determine whether or not to approve the application and issue a permit. The District Engineer also determines the conditions of the permit (e.g., require turn lanes, raised median, other). The Highway Access Permit (Form 309) is then approved by the District Engineer. The permit will then be sent to the City (if applicable) for signature. The property owner or owner's legal agent signs the Highway Access Permit and returns the form to the Area Office. The Area Office records the permit and issues a permit approval date. **The permit is not valid until signed by all Parties and returned to KDOT for Permit Approval Date.** The Area Office returns a copy of the executed permit to applicant, at which point an applicant becomes the *permittee*.

The Highway Access Permit is the document that establishes the relationship between the property owner or his or her agent and KDOT. The Highway Access Permit specifies the following conditions:

- Location of the access
- Access characteristics
- The number of days within which the property owner must complete construction of the access
- The type of use for which access is granted
- Any conditions or limitations that have been imposed by KDOT
- Traffic control required to be placed during construction

- Any required plans are incorporated by reference

5.1.4 Construction and inspection

KDOT verifies compliance throughout the construction process beginning with construction planning. KDOT can request a pre-construction meeting with the permittee to review construction plans, traffic control plans, and the construction schedule and to coordinate activities with local agencies and other stakeholders.

When construction starts, the permittee must notify the KDOT point of contact listed on the Highway Access Permit. The permittee maintains contact with the KDOT Area office and the Area office monitors construction through site visits and provides input and guidance as needed. If there are changes during construction that vary from the permitted plan, the permittee must inform the KDOT Area office. The Area office will inform the District Engineer and the AMU as needed. The AMU will inform other KDOT bureaus of changes that impact their areas of responsibility.

When construction is complete, the permittee notifies the KDOT point of contact listed on the Highway Access Permit. The KDOT point of contact will then conduct a site inspection to verify that the access is in compliance with the terms of the Highway Access Permit. If the access is accepted, the KDOT point of contact closes out the permit and completes the Highway Permit Completion or Revocation Notice (Form 309C). If the access is not accepted, KDOT will inform the permittee of the necessary modifications and will specify a time by which the modifications must be made. When the modifications are complete, the permittee notifies the KDOT point of contact for re-inspection. The inspections and modifications continue until the access is accepted or the permit is revoked. After the access is accepted by KDOT, the Area office closes the permit using form 309C. Upon receipt of the completed 309C form the permittee will no longer be required to provide insurance.

Specifics involved with the construction and inspection process are discussed further in Chapter 7.

5.1.5 Variance

A *variance* grants permission to depart from the criterion of this Policy due to unique circumstances or existing special conditions. Examples of items that would require a variance from the Policy include width, radius, spacing, pipe diameter, and other similar items. Sound engineering judgment will be used when considering any variance from this Policy and its guidelines. All variances will be approved or denied at the discretion of the District Engineer. A key factor in the consideration for a variance is the determination of necessity.

For *access types* 1 through 4 that do not require a TIS, the area permit coordinator will identify the need for a variance when processing the application. The area office will contact the applicant to determine if alternative access is available. For *access types* 4 through 6 that require a TIS, the need for a variance will be identified in the study. If reasonable access is not identified, the area engineer can either deny the access request or process a variance.

When a variance is needed, the KDOT Area office will process a Variance Report Form (Form 1404) (see Chapter 8). The area may request additional information from the applicant to assist in

processing the variance. The degree of justification and amount of supporting documentation will vary with the significance of the variance.

All permits that include a variance will be reviewed by the AMU. The AMU will review the variance justification and reason for consistency. Variances to the Policy are reviewed by the District Engineer. The District Engineer may approve the permit with the variance or deny the permit.

Variance from this Policy, in any case, KDOT does not waive the ability to enforce the provisions of a Highway Access Permit and any applicable criteria.

5.2 When to obtain a permit

A Highway Access Permit is required under the following circumstances:

- New access
- Improvement to existing access (including turn lanes and signal modifications)
- Relocation of existing access/consolidation of existing access points
- Change in access use
- Temporary access

Any activity listed above, occurring on or along state highway R/W and including CCLs, shall be the subject of a Highway Access Permit.

Cities and counties awarded a project under the Access Management Construction Project Program, as described in Chapter 3, must apply for a Highway Access Permit if the project includes any of the activities listed above and the project is being let by the locals.

Access along all frontage roads, and one-way connector roads, parallel and adjacent to the Interstate, U.S., and state routes that are within KDOT right-of-way, is required to meet the stipulations of the Highway Access Permit and this Policy. This is regardless of whether KDOT or a local jurisdiction (city or county) maintains the frontage road or one-way connector road. See Section 4.3.5. for access requirements along frontage roads and one-way connector roads.

5.2.1 Installation, relocation, or replacement of access

The installation of a new access connecting to a state highway (including CCLs) requires a Highway Access Permit.

Improvements including replacement, redesign, or change of surfacing material of an existing access connection to a state highway R/W (including CCLs) requires a Highway Access Permit.

Relocation of an existing access also requires the use of a Highway Access Permit. The work pertaining to the closure of the existing access will be included on the access permit associated with the relocation. A *Use of Right-of-Way Permit* will not be needed. The KDOT Area office will notify the AMU that the access has been removed and provide the GPS location of access and the original access permit number (if available).

5.2.2 Change of property use

Property owners who currently have an access onto a state highway and change the use of their property must notify KDOT in writing of the change. The KDOT Area office, in cooperation with the AMU, will review the change of use information to determine if a new Application for Highway Access is required based on the new property use. Depending on the finding, at the owner's expense, access reconstruction, removal, or relocation may be required. If KDOT personnel observe site changes that have not been reported to KDOT or are inconsistent with the current access permit, they will notify the property owner, developer, or lessee to submit a new Application for Highway Access to KDOT to address the site and driveway operation changes.

5.2.3 Temporary access (conditional)

A *temporary access* is when a connection to the state highway system is needed for a specified period of time or until alternative permanent access becomes available. This typically occurs when access is needed for construction. The expiration date for the temporary access will be shown on the Highway Access Permit. It will be the responsibility of the permittee to remove the temporary access once the permit has expired or the access is no longer needed. If the permittee needs to extend the duration of the temporary access, a request for a new permit is required.

5.2.4 Shared access connections

A *shared access* (also known as *joint-use*) is usually located on or near a property line shared by adjacent property owners. This access arrangement is preferable because it reduces the number of conflict points along a highway. **KDOT encourages the use of shared access points wherever practical.** When a shared access connection is requested, a copy of the easement or other legal document allowing the *joint-use* between the landowners **MUST** accompany this application. If federal land is involved, the applicant must provide the name of the relevant federal agency **AND** attach a copy of the federal authorization for property use.

5.2.5 Removal of an existing access

When the removal of an existing access is coordinated with the installation of a new access or relocation of an existing access, the removal will be captured with the Highway Access Permit. Removal of an existing access point that is not part of an access project requires a KDOT *Use of Right-of-Way Permit* (Form 304). KDOT may recommend removal of an abandoned or retired-in-place access when identified as part of a routine review of state highways, during the review of an Application for Highway Access, or when contacted by the local property owner. The process for removing an access is described in Chapter 7.

5.3 Requirements for permitting

This section describes the requirements for receiving a Highway Access Permit, including fees and insurance requirements.

5.3.1 Fee and access cost responsibility

There is no charge for processing an Application for Highway Access and issuing a Highway Access Permit.

The cost of constructing an access point and all related highway improvements is the responsibility of the property owner or his or her authorized agent. All materials used must be approved by KDOT prior to construction.

All cost associated with supporting documentation that is commonly needed to receive a Highway Access Permit, including Traffic Impact Studies (TIS), drainage reports, site plans and plans for construction, as determined necessary by KDOT shall be the responsibility of the property owner or his or her authorized agent.

5.3.2 Liability insurance

The permittee shall be subject to the liability and insurance provisions stated on the permit.

The petitioner shall carry insurance and shall furnish a *Certificate of Insurance* (COI) indicating the following minimum coverage before a permit will be issued:

Comprehensive Liability:

- Bodily injury and property damage for which the permittee is responsible with limits of \$250,000 per person and \$500,000 per occurrence (required for Access Types 1 through 4).
- Bodily injury and property damage for which the permittee is responsible with limits of \$1,000,000 per person and \$2,000,000 per occurrence (required for access Types 5 & 6).

The COI must indicate the dates for which coverage is valid. The insurance coverage period must cover the time period for construction up to and including the notice of completion by KDOT. The required insurance shall be maintained in force until Form 309C is issued upon completion of construction. If an extension of the construction period is required, an updated COI must be provided if the extension will go beyond the coverage period indicated on the COI on file.

Any entities working subject to a permit, including the permittee's contractors, subcontractors, and consultants, which are subject to workers compensation laws and regulations, must carry legally sufficient worker's compensation insurance.

Local governments requesting access to the state highway are not required to provide liability insurance.

5.4 Supporting documentation

This section describes the supporting documentation that is commonly needed to receive a Highway Access Permit. Described are *Traffic Impact Studies (TIS)*, *drainage reports*, *site plans* and plans for construction.

5.4.1 Traffic Impact Studies

A TIS is a specialized study that determines the following:

- The impacts a proposed development will have on the surrounding transportation system
- The improvements required to mitigate those impacts

If required, a TIS must be provided as part of the Application for Highway Access. The study area will vary depending upon the nature and intensity of the proposed development and will be defined by KDOT, in cooperation with affected local agencies, prior to the beginning of the study. Assumptions or special requirements should be discussed among the various parties and must be agreed upon prior to beginning the study. TIS recommendations should fully mitigate identified impacts. The property owner or its agent is responsible for providing the TIS and paying any associated costs. The TIS is subject to KDOT review and approval. KDOT will notify the property owner or its agent when the TIS has been approved.

A TIS is required for highway access applications in the following circumstances:

- Some access type 4 and all access type 5 or 6
- Any development in which a prior TIS is more than two years old or where increased land use intensity in the immediate area of the proposed development will result in an increase in traffic generation onto the surrounding transportation system by more than 10 percent
- Other circumstances deemed appropriate by a local unit of government, the KDOT District Engineer, or the KDOT AMU

The specific content of a TIS will vary depending upon the details of the area to be served by the proposed access facility.

The TIS must be **signed and sealed** by a registered Professional Engineer licensed to practice in the State of Kansas and qualified to conduct such work. Any TIS submitted without the required signature and seal **will be returned** to the petitioner without comment.

KDOT uses the most current edition of the *ITE Trip Generation Handbook* and *ITE Trip Generation* for procedures applicable to a TIS. The TIS must specify whether the peak-hour of generator or the peak-hour of adjacent highway is used. The peak hour of the generator should be used in most cases. On the occasion when the peak hour of the generator is not likely to occur during the same period as the peak hour of the highway, for example a school with a 3:00PM dismissal or a factory with a 2:30PM shift change, the peak hour of the highway may be used. If

the peak hour of generator creates a larger traffic impact to the system than during the peak of the adjacent street, this time period should be analyzed as well. For example, the highest traffic on the system may occur during a shift change instead of the peak of the adjacent street. Provide justification for using the peak hour of adjacent street instead of the peak hour of generator.

KDOT determines whether a Basic TIS or a Comprehensive TIS is needed based on the specific conditions involved with the request for access. Table 5-3 lists the TIS requirements for access types 4, 5, and 6.

Table 5-3. TIS required by access type

| Access Type | Volume | Trip Generation (trips/day) | Land Use Description | Basic TIS | Comprehensive TIS |
|-------------|--------|-----------------------------|--|-----------|-------------------|
| 4 | Low | 0–49 | Commercial—small business, cemetery, nursing home, other | ▲ | |
| 5 | Medium | 50–499 | Commercial—industrial, institutional, recreational, local road | ● | ▲ |
| 6 | High | 500 and over | Commercial—industrial, institutional, recreational, local road | | ● |

▲ Determined by KDOT on a case-by-case basis
 ● Always required

5.4.1.a Basic TIS contents

The purpose of a Basic TIS is to:

- Determine how a proposed **low** or **medium volume** commercial or industrial access will impact the surrounding transportation network
- Determine if any geometric improvements may be required
- Determine if a Comprehensive TIS is warranted

A Basic TIS should contain the following items and generally conform to the following outline. Supporting documentation may be requested by KDOT. The TIS can usually be provided in a three- to five-page document with supporting calculations and evaluation details included as appendices (if necessary). An example of a Basic TIS can be found in Chapter 8.

- Proposed development plan
 - Location description.
 - Land use—existing and proposed.
 - Site plan access—existing (if any) and proposed.
- Highway and area street characteristics
 - KDOT Access route classification—B through E (see Table 4-1).

- On the National Highway System?—yes or no (see KDOT District Access Management Plans, Chapter 8).
- Posted speed limit.
- Type of area—developed, central business district, or undeveloped.
- Roadway characteristics—number of lanes, divided or undivided, curb and gutter or open ditch.
- Existing transportation system plans (e.g., Area Transportation Plan, Corridor Management Plan) related to the highway?—yes or no (see Chapter 8).
- Existing traffic condition plus site generated traffic
 - Existing traffic volumes daily and peak hour (directional)
 - ITE daily trips and trips in the peak hour of the generator for the site¹
 - Driveway distribution if more than one access to site
 - ITE trip distribution entering and exiting in peak hour of the generator (at each access)
 - Of the trips entering (each access), estimate left and right-turn movements
 - Design vehicle
 - Percent trucks
- Proposed site access characteristics
 - Access type (see Table 5-1)
 - Access width and radii (see Section 4.4.1)
 - Access surfacing (see Section 4.4.11)
 - Drainage method and material (see Section 4.4.10)
 - Adjacent access spacing—upstation and downstation, both sides of highway
 - Intersection influence area (see Section 4.3.1)
 - Sight distance —upstation and downstation, vertical and horizontal (see Section 4.3.7)
 - Auxiliary lane warranted? —yes or no (see Section 4.5)
 - Shared?—yes or no
- Recommendations
 - Findings summary
 - Need for highway improvements (if any)

5.4.1.b Comprehensive TIS contents

The purpose of a Comprehensive TIS is to:

- Determine how a proposed **medium** or **high volume** commercial or industrial access will impact the surrounding transportation network

¹ If ITE data is not available for relevant sites, the applicant can provide data regarding typical vehicular use of his/her property. The closest relevant ITE estimates should be included as supplementary information.

- Determine if any geometric improvements may be required

A Comprehensive TIS contain the following items and generally conform to the following outline. Supporting documentation may be requested by KDOT. A Comprehensive TIS usually has multiple pages and appendices.

- Introduction and summary
 - Purpose of the report and study objectives
 - Executive summary
 - Site location and study area
 - Description of the proposed development
 - Principal findings of the study
 - Conclusions
 - Recommendations
- Proposed development (site and nearby areas)
 - Offsite development
 - Description of proposed onsite development
 - Land uses, zoning and proposed density
 - Location
 - Site plan
 - Anticipated phasing and timeline
- Existing conditions
 - Study area
 - Influence area
 - Area of significant traffic impact
 - Environmental considerations as applicable
 - Study area land uses
 - Existing land uses
 - Existing zoning
 - Anticipated future development
 - Site accessibility
 - Area street and highway characteristics
 - Existing (include items from Basic TIS “Highway and area street characteristics”)

- programmed improvements—capital improvement plan or other published improvement programs
 - future planned improvements
 - Alternate transportation mode choices
 - transit
 - pedestrian
 - bicycle
 - other
 - Existing transportation system plans (e.g., Area Transportation Plan, Corridor Management Plan) related to the highway (see Chapter 8)
- Existing and developed traffic
 - Existing traffic volumes (directional)
 - Site-generated traffic (each design year)
 - Trip generation, method, and calculations
 - Reductions for pass-by and diverted-link trips
 - Reductions for internal capture
 - Trip distribution
 - Modal split (if applicable)
 - Trip assignment
 - Through traffic (each design year)
 - Method of projection
 - Non-site traffic for anticipated development within the study area
 - method of projection
 - trip generation
 - trip distribution
 - modal split (if applicable)
 - trip assignment
 - Through traffic
 - Estimated combined volumes
 - Total site and through traffic (each design year)
- Traffic analysis
 - Proposed site access (see Basic TIS “Proposed site access”)
 - Capacity and level of service
 - Existing crash patterns
 - Traffic signals analysis (if applicable)

- Site circulation and parking
- Improvement analysis
 - Improvements to accommodate base traffic
 - Additional improvements to accommodate site traffic
 - Alternatives for improvements
 - Status of improvements already funded, programmed, or planned
 - Evaluation
- Summary
 - Findings
 - Site accessibility
 - Traffic impacts
 - Need for improvements (if any)
 - Compliance with applicable local codes
 - Recommendations
 - Site access/circulation plan
 - Roadway improvements
 - onsite
 - offsite
 - phasing (if applicable)
 - Transportation system management actions
 - offsite
 - onsite operational
 - onsite
 - other
 - Other
 - Conclusions

5.4.2 Drainage report

Some development activities may discharge stormwater directly onto the state highway, which can affect highway drainage. Therefore, the drainage reports for some developments, commonly related to access types 3 through 6, are required with access permit applications. Drainage reports may also be required at the discretion of the Area Engineer, District Engineer, or the AMU to determine potential impacts to the highway or highway drainage facilities. The developer and local governmental authority are responsible for complying with local policies for drainage design and flood protection for the development and surrounding properties.

Any proposed development or redevelopment design associated with an access permit application shall not increase the stormwater discharged directly onto the state highway R/W and must not adversely affect the existing drainage

KDOT requires that the characteristics of the highway drainage system, nor create undue hazards to the traveling public. **applicant follow KDOT Road Memorandum 08-01 entitled “KDOT Policy on Pipe Use & Preparation of Project Plans,” dated July 11, 2008 or the most recent version.** This memo describes the approved pipe types and when and where they can be used in the state based on soil conditions. The memo is available on KDOT’s website at <http://www.ksdot.org/burlocalproj/default.asp>.

The drainage report must be **signed and sealed** by a registered Professional Engineer licensed to practice in the State of Kansas and qualified to conduct such work. Any drainage report submitted without the required signature and seal **will be returned immediately** to the petitioner and without comment.

5.4.2.a Drainage report: contents

KDOT-approved methods are used to determine the impacts of the *design flow(s)* to existing highway drainage facilities. A design *return period* and corresponding design storm are selected based on guidance provided in KDOT’s Design Manual, Volume I (Part C), entitled “Elements of Drainage and Culvert Design,” dated May 2011 or the current edition. This is available for download at the KDOT website (<http://kart.ksdot.org/>). A KART service account (no charge) is needed to log in and access downloads. Often, more than one design storm is required to evaluate impacts on highway drainage system components (culverts, roadside ditches, channels, etc.). It is the applicant’s responsibility to comply with local policies and regulations.

Drainage design information must be submitted with the Application for Highway Access when a drainage report is required by the District Engineer or the AMU. Details regarding the requirements of a drainage report are available in Section 9.3, Design Procedure, of KDOT’s Design Manual, Volume I (Part C), entitled “Elements of Drainage and Culvert Design,” dated May 2011 or the current edition. KDOT reserves the right to require additional documentation regarding the hydrologic and hydraulic analyses and the basis of any assumptions.

5.4.3 Site plans

Site plans provide a development concept overview. The site plans are commonly one sheet and can include the property lines, site elevation, drainage, building locations and setbacks, utility locations, existing and planned landscape, the proposed access, and adjacent roadway.

When a site plan is available for access types 3, 4, 5, and 6, the applicant should provide one electronic copy to the KDOT Area office. The Area office will forward to the AMU for review.

5.4.4 Plans for construction

Plans for construction are documents used to construct the access. Final plans for construction are required in certain circumstances before the Application for Highway Access is approved and a Highway Access Permit is issued by the District Engineer.

Where required, the permittee shall make, or contract to have made, plans for construction. The permittee shall have the project designed in conformity with state and federal design criteria appropriate for the project in accordance with the current manuals, policies, and memos adopted by the Secretary of Transportation.

Plans for construction are required when one or more of the following circumstances are met:

- Turn lane improvements are needed on the highway
- Median improvements are needed on the highway
- Other highway improvements are needed
- Other circumstances deemed appropriate by a local unit of government, the KDOT District Engineer, or the KDOT AMU

The use of KDOT standard drawings to develop the plans is recommended. KDOT standard drawings are on the KDOT website (<http://kart.ksdot.org/>). City standard drawings may be used as approved by the District Engineer.

NOTE: KDOT Standard Drawings are updated as needed. The designer should check the KART website periodically so the latest standard drawings will be used in the final design plans.

5.4.4.a Plans for design review

Two sets of half-sheet (11-by-17-inch) scaled plans and one electronic set of scaled plans (in PDF format) will be submitted to the Area office. One set of half-sheet plans will be sent to the District Engineer, and the electronic set will be forwarded to the AMU for review (see Section 5.4.4.c). The AMU will coordinate the plan review with headquarters and field staff. It is recommended that all plans for design review be submitted to KDOT 6 to 8 weeks in advance of final preparation of the plan.

5.4.4.b Final plans

Upon completion of KDOT's review and permittee's revisions as needed, the permittee will submit one electronic set (in PDF format) of completed final plans. The final plans must be **signed and sealed** by a registered Professional Engineer licensed to practice in the State of Kansas and qualified to conduct such work.

5.4.4.c Electronic submittal

When electronic files are larger than 8 MB, the permittee will use the KDOT FTP site to submit files. The location of the KDOT FTP instructions is on the KDOT website at <http://www.ksdot.org/burlocalproj/default.asp>. Once the files are uploaded to the FTP site, the applicant will send an email to notify KDOT the plans are available.

5.4.4.d Design plans for construction contents

The contents of the design plans for construction may vary depending on the complexity of the access. Construction plans may include the following sheets:

- Plan and profile
- Pavement markings
- Permanent signing
- Traffic control

Additional sheets may be requested as necessary by the Area, District, or AMU, including, but not limited to, traffic signal details, pavement details, inlet and manhole details, erosion control,² and cross sections.

Plan and profile

Plan and profile sheets need to include, at a minimum, the vertical and horizontal alignments, existing R/W, and access control, if present. Access locations that are part of larger developments or municipal roads may need to include intersection details. Typical section sheets should include surfacing details and soil compaction information. Asphalt and concrete requirements may be verified with the KDOT Bureau of Materials and Research, Geotechnical Unit—Soils and Pavement Section, to determine whether the materials are compliant with KDOT criteria.

Pavement markings and permanent signing

Typical pavement marking and permanent signing details are provided in KDOT's standard drawings and can be used for most access-related projects (see standards TE306 through TE311). Pavement marking and permanent signing treatments must be compliant with the latest adopted edition of the MUTCD or current edition that has been adopted by the Secretary.

Traffic control

Temporary traffic control (TTC) plans must be in accordance with the latest adopted edition of the MUTCD. Typical TTC applications are provided in KDOT standard drawings and can be used for most access-related projects (see standards TE720 through TE790). Specific TTC plans are needed for configurations not found in standard drawings or complex work zones, such as work on four-lane roadways or high volume two-lane highways in metropolitan areas. The contractor is required to comply with the TTC plans as approved by the District Engineer.

² Erosion control standard sheets LA850 through LA880 can be downloaded from the Landscape section of the KART website.

5.4.5 Environmental considerations

Many access projects require environmental considerations prior to construction. The two most prominent considerations for access management projects are erosion control and the discharge of waste material, which are discussed below. The permittee is responsible for obtaining all permits needed for the project from the appropriate permitting agency. These permits may include, but are not limited to:

- Kansas Department of Agriculture, Division of Water Resources
- U.S. Army Corps of Engineers
- Kansas Department of Wildlife Parks
- Kansas Department of Health and Environment
- U.S. Fish & Wildlife Service

5.4.5.a Local government floodplain permit—erosion control

Areas of highway R/W disturbed by the installation, construction, maintenance, removal, or relocation of driveways should be kept to a minimum. KDOT’s policy is that in areas that are susceptible to erosion, the property owner is required to provide adequate protection against erosion. Such protection may be in the form of aggregate ditch lining, hay cover, or other material that is approved by the District Engineer and does not interfere with highway maintenance operations. If the area of disturbance is over one (1) acre, more detailed plans may be required to reduce erosion.

Some of the more developed areas of the state may have municipal stormwater runoff plans that need to be considered as part of any erosion control. All stormwater runoff plans should be compliant with EPA requirements.

5.4.5.b Discharge of waste material

New accesses that discharge materials into the nation’s waters, as defined by the Corps of Engineers, must comply with the requirements of the Corps of Engineers and federal, state, or local environmental protection agencies. KDOT’s policy is that evidence of compliance must accompany the Application for a Highway Access Permit.

The Kansas Department of Health and Environment (KDHE) issues permits for stormwater discharges associated with construction. Owners or operators of any project or combination of projects whose construction activities will disturb one or more acres must have authorization to discharge stormwater runoff under the construction stormwater National Pollutant Discharge Elimination System (NPDES) general permit.

Information regarding the specific requirements for the Construction Stormwater Program at KDHE and the NPDES general permit can be obtained through the KDHE website (www.kdheks.gov/stormwater/).

5.5 Permit forms

Copies of access permit forms are included in Chapter 8. Electronic versions of the forms are available through KDOT's website at www.ksdot.org/accessmanagement. Permit forms are also available at KDOT Area and District offices. Below is a brief description of each form and its use.

5.5.1 Form 827—Application for Highway Access

The *Application for Highway Access* is completed and signed by the applicant requesting new access to state highways or a change to existing access. After completing Form 827, the applicant submits the information to the local KDOT Area office for processing. The KDOT Area office can provide assistance to prepare Form 827.

5.5.2 Form 309—Highway Access Permit

The *Highway Access Permit* outlines the requirements of the permit, including type of access, location, use, design, additional roadway improvements, and other important information. The permit is approved or denied by the District Engineer and signed by the applicant at the end of the process.

5.5.3 Form 334—Access Permit Work Details Sheet

The *Access Permit Work Details Sheet* provides detailed information about the design of an access point, including access width, radius, spacing and sight distances along with highway characteristics. This form is completed by the Area Permit Coordinator and is required for all access types. Information to complete this form is found in the Application for Highway Access and supporting documentation..

5.5.4 Form 309C— Highway Access Permit Completion or Revocation Notice

The *Highway Access Permit Completion or Revocation Notice* is completed by the Area and provided to the permittee to inform them of either completion of the permit or revocation of the permit due to non-compliance. More information can be found in Chapter 7.

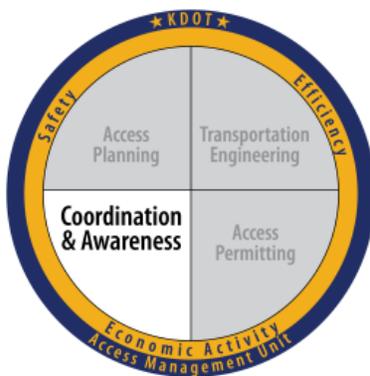
5.5.5 Form 304—Use of Right-of-Way Permit

The *Use of Right-of-Way Permit* is required for any improvements made to the highway beyond improvements directly related to new access or changes in access under a Highway Access Permit. Form 304 is submitted through the local Area office.

Acronyms and Definitions: Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in section 8.1 of Chapter 8. Italicized terms signify terms defined in section 8.2 of Chapter 8.

Chapter 6

Coordination and awareness



Access decision-making can include multiple units of local government and private entities—some of which may not be familiar with Access Management or its benefits. Therefore, promoting meaningful *coordination* between transportation partners and raising *awareness* for Access Management are necessary elements of achieving well-managed access on Kansas roadways. KDOT strongly believes a coordinated process and informed stakeholder base contributes to the successful implementation of access management strategies thereby maintaining safety and efficiency on the roadway network which supports economic activity.

KDOT has long recognized the importance of coordination in transportation decision-making. The importance of intergovernmental coordination was underscored in the National Cooperative Highway Research Program’s (NCHRP) *Synthesis 289, Corridor Management* (Synthesis). The Synthesis found that many successful corridor management programs had formal intergovernmental cooperation as a basis of access management planning. KDOT’s *Access Management Unit* (AMU) has capitalized on this knowledge and continues to maintain formal *cooperation instruments* with *local public authorities* (LPAs) and regional areas. The AMU also understands the importance of informal cooperation with all transportation partners.

Regardless of whether communication channels are formal or informal, developers, consultants, and businesses who understand access management are more likely to collaborate with each other and government agencies when making decisions regarding access to a state highway. For this reason the AMU has identified “Coordination and Awareness” as a core area and will continue to emphasize outreach and support cooperation and awareness of access management among all transportation partners.

6.1 Coordination through development review

KDOT encourages local governments and developers to submit plats, development proposals, and site plans that affect state highways for review early in the development process. Early reviews offer an opportunity for coordination before the development is approved at the local level and facilitate information sharing between agencies. Early reviews also allow state-of-the-practice access management techniques to be considered during the development review process. Early coordination reduces the possibility that a proposed development will negatively impact a *state highway*.

The KDOT development review process is similar to the permitting process, whereby information is submitted to the *Area Office* for initial review and then forwarded to the AMU for review by KDOT planning and engineering staff. The AMU reviews the information for access-related issues and forwards to other affected KDOT staff, such as the Traffic Engineering Section and Bureau of Road Design. Proposals that include traffic impact studies are often reviewed by KDOT’s Models and Forecasting Unit.

6.2 Coordination through access planning

KDOT’s formal access planning instruments provide a cooperative intergovernmental process for transportation partners to achieve a unified transportation vision. Access management plans, area transportation plans, and corridor management plans, described in detail in Chapter 3 Access Planning, lead stakeholders through a process of input, analysis, and consensus building. An *interlocal cooperation agreement* is the culmination of that coordination and recognizes a commitment between local partners and KDOT to consider the plan when making decisions. The interlocal cooperation agreements provide the framework for decision-making by local agencies in



developing transportation priorities and determining how new development and its transportation demands will be accommodated.

In addition to formal cooperation agreements, the AMU strives to forge working relationships with transportation partners across the state. Through these relationships, open lines of communication provide another mechanism for

cooperation and coordination. The AMU and KDOT District and Area offices strive to maintain regular communication with transportation stakeholders to provide support and guidance on access-related issues. The Area offices, in particular, provide opportunities for one-on-one interface with stakeholders regarding access issues.

6.3 Raising local awareness

One of the methods the AMU uses to build awareness is through presentations at city council and county commission meetings as well as regional conferences and seminars. The AMU seeks opportunities to share current best practices and procedures with local government staff, elected officials, and transportation partners within the state and on a national level. KDOT staff can provide tailored presentations on such topics as the benefits of access management, access management principles, access planning, and access permitting. The AMU can also provide resources, such as training materials and hand-outs, to support transportation partners who want to share access management awareness. For example, the staff of a municipality may present an access management overview to the city council in advance of corridor planning so the city council has an understanding of the basis for and importance of the planning.



6.4 Available resources

A tri-fold brochure regarding access management and the *Highway Access Permit* is available at KDOT *District* and *Area offices* and can be provided to transportation partners upon request. Developers, real estate agents, and consultants interested in receiving copies of the brochure may obtain copies from the AMU or KDOT District and Area offices.

The AMU also hosts an access management website (www.ksdot.org/accessmanagement) that provides opportunities for knowledge-sharing 24 hours a day. The website features this *Policy* and its complete appendices, the KDOT *Tool Box of Implementation Strategies*, and additional information about how to gain access to state highways.

Acronyms and Definitions—Common acronyms and abbreviations used in this Policy are generally capitalized and are listed in Section 8.1 of Chapter 8. Italicized terms signify terms defined in Section 8.2 of Chapter 8.

Chapter 7

Construction and maintenance of access

Verifying that an *access point* is constructed according to the provisions of the *Highway Access Permit* and monitoring its use and maintenance are necessary to preserve operation of the *access*. Location, geometrics (width, radius, grade, etc.), drainage, material, specifications, the use of temporary traffic control, and other variables are inspected through the construction process. Construction and maintenance of the access, in accordance with the terms of the permit, help to achieve the balance of safety, efficiency and access for economic development which serves both the travelling public and business needs into the future.

7.1 Construction process

After the Highway Access Permit has been signed by KDOT's *District Engineer* and the *permittee*, the access should be constructed according to the requirements outlined in the permit. Construction must be completed within the time specified on the permit. If work has not started before the completion time and the District Engineer does not extend the time, the permit becomes null and void.

Construction of the access, and any improvements required as a result of the access, should be completed in accordance with this Policy and in substantial compliance with KDOT's *Standard Specifications for State Road and Bridge Construction* (2007 Edition) (<http://www.ksdot.org/burconsmain/specprov/specifications.asp>). KDOT reserves the right to rescind the permit if the work is not completed on time or in accordance with the conditions of the permit. The construction process has three phases—pre-construction, construction and inspection, and notice of completion or revocation.

7.1.1 Pre-construction

As part of the access permit process, the permittee will furnish the District Engineer one hard copy and, if possible, one electronic copy (in PDF format) set of design plans or sketches of the proposed work. The plan will include the location of the property, building, parking on the site, existing and proposed utilities (gas, water, electric, telephone lines), adjacent streets, access on adjacent properties, proposed access, sidewalks, approved traffic control, and existing and proposed site drainage. KDOT can request a pre-construction meeting with the permittee to review design plans, traffic control plans, the construction schedule, and to coordinate activities with local agencies and other stakeholders. The permittee is required to present a Certificate of Insurance, if required as outlined in the permit, prior to beginning construction.

Prior to beginning construction, the permittee must notify KDOT’s point of contact listed on the *Highway Access Permit*. An approved signed copy of the permit shall be on the premises during any work that is performed.

7.1.2 Construction and inspection

The permittee is responsible for compliance with KDOT (and city) policies and criteria as stated in the permit (Figure 7-1). KDOT monitors construction through site visits and contact with the permittee and provides input and guidance as needed. KDOT recommends that permittees notify and discuss changes to construction plans with the Area office prior to construction. If there are changes during construction that vary from the permitted design plans, the permittee must inform the KDOT Area office. The Area office will inform the District Engineer and the Access Management Unit (AMU) as needed.

Figure 7-1. Construction of an access in Cloud County, Kansas



The AMU will inform other KDOT bureaus of changes that impact their areas of responsibility.

All temporary traffic control (as shown on design plans and as implemented during construction) used during the installation or modification of an access point shall be compliant with the latest adopted edition of the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), KDOT Traffic Engineering standards, or city standards, whichever is most rigorous.

All construction equipment including vehicles, materials, and debris should be stored out of the *clear zone*. The clear zone, or buffer area, along a *property frontage* should be in compliance with the roadside clearance requirements outlined in AASHTO’s *Roadside Design Guide*. Where this is not possible, the permittee (or their contractor) shall place traffic control signs and devices as designated by the District Engineer. Any equipment or materials that cannot be removed from the clear zone must be approved by the District Engineer.

Areas of the highway right-of-way (R/W) disturbed by the installation/construction, maintenance, removal, and relocation of access shall be minimized. Disturbed areas outside the access construction should be returned to normal grade and elevation, and excess or undesirable material should be removed by the permittee (or their contractor). Destroyed vegetation should be replaced by the permittee (or their contractor) by sodding, seeding, fertilizing, mulching, and watering as required by the District Engineer. Disturbed areas should be restored within 14 days of completion of work. If there is a pause longer than 14 days between construction phases, the area needs to be restored between phases. Exceptions may be made in the event of weather delays. The permittee (or their contractor) is responsible for erosion control during construction.

Prior to final inspection of the work performed within the highway R/W, the permittee (or their contractor) should restore disturbed areas, remove unused material/debris from the site, and have the R/W in a clean, presentable condition.

7.1.3 Notice of completion or revocation

This section describes the process for notice of completion or revocation and outlines the process if the access is not accepted.

7.1.3.a Notice of completion

KDOT will perform a final inspection of the installation or modification of access and confirm that the construction is in compliance with the Highway Access Permit, project plans, standards, specifications, and special provisions. The Area Engineer will complete Form 309C (Completion Notice) to document notice of completion and close out the permit through the KDOT Electronic Permit System. The District Engineer reviews and approves the close-out. If the access is on a *City Connecting Link* and the highway is maintained by the city, the City Engineer, or appointed representative, will sign Form 309C recommending approval.

Then, the District Engineer or designee will sign for the Secretary of Transportation of the State of Kansas recognizing the completion of the permit. Upon notice of completion of the access permit, the permittee's obligation to assume all risk, liability and insurance requirements shall end.

An accurate "as-built" construction plan (in PDF format) shall be provided to the District Engineer if there are deviations from the approved plans. The insurance release will not be granted if there is a deviation and the "as-built" plans have not been provided to the Area office.

7.1.3.b Notice of revocation

If the constructed access is non-compliant, the Area Engineer will complete Form 309C (Revocation Notice) to revoke the permit. This is reviewed and approved by the District Engineer. Non-compliance with any of the terms of this Policy or *Highway Access Permit* may be considered as cause for shutting down construction or use of the access point until it is compliant or the permit is revoked. The cost of any work required by KDOT, including the removal of non-complying construction, will be assessed against the permittee.

7.1.3.c Form 309C—Highway Access Permit Completion Notice or Revocation Notice

Form 309C, Highway Access Permit Completion Notice or Revocation Notice, is included in Chapter 8. Form 309C is completed by the Area Engineer and provided to the permittee to inform

them of either notice of completion and completion of the permit or revocation of the permit due to non-compliance.

7.2 Maintenance of access

KDOT is responsible for the maintenance of access on state highways (private access and public side road intersections) from the edge of the traveled way to the R/W line (in undeveloped, developed, and Central Business District areas), as stated in KDOT’s *Highway Maintenance Manual*, Section 3.31. In undeveloped areas, KDOT is responsible for the maintenance of drainage ditches and pipes, mowing, and other items within the highway R/W. When within city limits, maintenance responsibilities are defined as part of a City Connecting Link Resolution or Maintenance Agreement

(<https://idmweb.ksdot.org/IDMWS/kdot/12/resolutions/cclresolution.asp>). City Connecting Links (Figure 7-2) are either state maintained (by KDOT) or city maintained.

If it is unclear who is responsible for maintenance along a City Connecting Link, contact the local KDOT Area Engineer. KDOT (or city) has jurisdiction to perform normal maintenance, such as installing or replacing signs, cleaning existing ditches, and performing other public services, planned or not, without written notification to the permittee.

KDOT reserves the right to make any alterations or improvements along or upon the highway R/W, including, but not limited to, relocation or complete eradication of an access. KDOT will either, assume the actual construction costs related to said relocation or perform the relocation itself. In the event of relocation, KDOT has complete and full discretion regarding the location of the new permitted access point.

7.2.1 Snow and ice removal

KDOT does not assume responsibility for the removal or clearance of snow and ice from highway access, including the opening of wind rows across access points as a result of normal winter maintenance operations. It is the responsibility of the permittee to keep their access clear of snow and ice. KDOT makes a reasonable effort not to block private access or public side road intersections during highway snow and ice removal. If the *permittee* receives notice from KDOT (or city) for lack of snow and ice removal, the permittee will have a specified number of days from the date of the notice to perform snow removal and maintain the access (as defined in the Highway Access Permit). If the permittee fails to properly remove snow and ice or otherwise maintain the access as needed, KDOT (or city) reserves the right to perform the maintenance activities at the permittee’s expense.

Figure 7-2. US-81 City Connecting Link in Concordia, Kansas



7.2.2 Inactive access

Many times, a permittee will change the use of a property, which results in an access being temporarily unused or “inactive.” As described in Chapter 5, the permittee shall notify KDOT in writing of the change of use (property and access) to determine if a new *Highway Access Permit* is required by KDOT. On occasion, the permittee may request that an access remain in place and become “inactive” for the duration of the change in land use. One example is a corner development that changes from a small retail business to a used car dealership where vehicles are parked for display across an existing access (Figure 7-3). If KDOT agrees that an existing access can remain inactive for the specified land use, KDOT generally

Figure 7-3. Inactive access at the corner of 17th Street and Fairlawn Road in Topeka, Kansas



Source: Google Earth Pro

allows the permittee to install Type 4 object markers (at the permittee’s cost) across the entire inactive driveway, at 5-foot intervals, so it is evident to a driver that the access is not in use (Figure 7-4 and Figure 7-5). The Type 4 object markers should be installed with at least 4 feet between the pavement surface and the bottom of the sign per the MUTCD. The Type 4 object markers should be installed on the permittee’s property at the end of the radius point so that drivers cannot enter the property. If the radius point is located within KDOT R/W, the Type 4 object markers should be placed at the end of the driveway on the permittee’s property. In developed areas, markers will be installed behind the sidewalk. Alternative devices proposed by the permittee to block the inactive access point need to be reviewed and approved by KDOT (through the access permitting process) prior to installation.

Figure 7-4. Type 4 object markers installed across inactive access (5-foot spacing), US-56 in Gardner, Kansas



Figure 7-5. Type 4 object markers installed at back of sidewalk (developed area), US-56 in Gardner, Kansas



7.2.3 Abandoned or retired-in-place access

KDOT removes abandoned or retired-in-place accesses to improve the safety and maintainability of the adjacent roadway. In accordance with the Highway Access Permit, the permittee will notify KDOT (or city) in writing when an access has been abandoned or retired-in-place and is responsible for all costs associated with removal or closure of the access.

Access removal begins with the identification of an abandoned or retired access. KDOT or the land owner can identify the access to be removed. The KDOT Area office coordinates with the land owner or authorized agent to identify the existing conditions and impacts of removing the access. KDOT documents the GPS coordinates of the access location in the access database records. If the access is to be removed, the land owner completes a Use of R/W permit (Form 304). The permittee removes the access in accordance with the conditions and within the number of days specified in the *Use of Right-of-Way Permit*. The permittee will conduct this work outside of construction or other work being performed by KDOT (or city) or its contractors in the vicinity of the access.

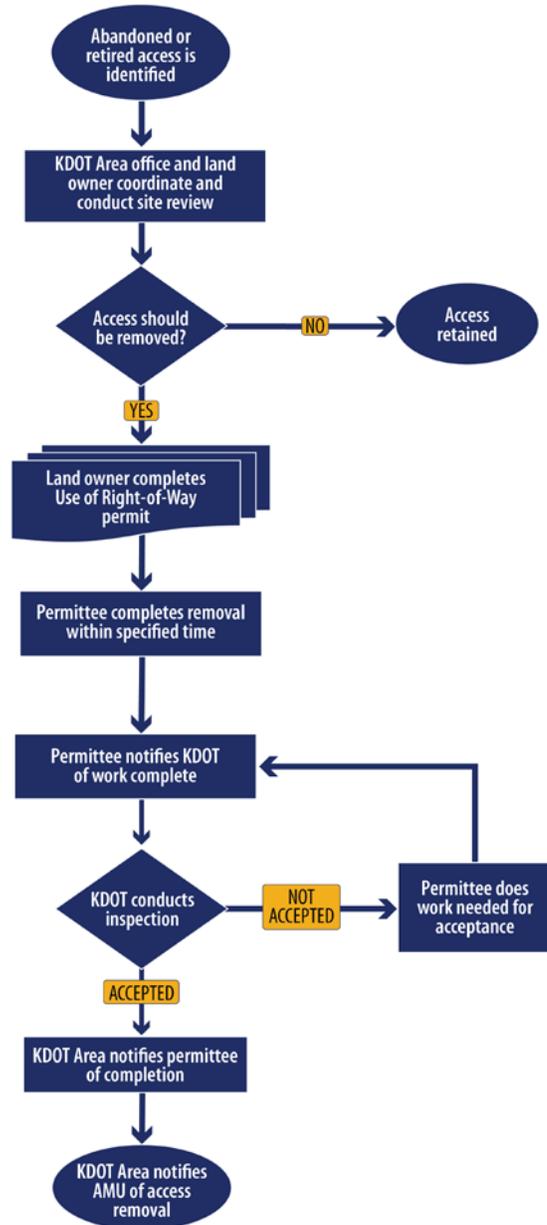
Should the permittee fail to properly remove the access and restore as required in their Use of Right of Way permit, KDOT (or city) reserves the right to remove or close the access at the permittee’s expense.

After the access has been removed according to the conditions of the permit, KDOT notifies the permittee in writing that the work has been completed. The KDOT Area office notifies the AMU that the access has been removed and provides the GPS location of access and the original access permit number (if available).

KDOT may recommend removal of an existing access during the review of an *Application for Highway Access*. In this event, the KDOT Area office will follow the access removal process described in this section. The process is diagrammed in Figure 7-6.

A special circumstance may occur when KDOT identifies access for removal and the access was not constructed under a *Highway Access Permit*. In this case, the KDOT Area office will notify the

Figure 7-6. Highway access removal process



landowner of KDOT's intention to remove the access. After the time specified in the notice to the landowner, KDOT will remove the access and notify the landowner of the completion. The KDOT Area office notes the GPS coordinates of the access so that it is removed from the highway access database and notifies the AMU.

7.2.4 Modified access—Highway improvements or maintenance

KDOT (or the *local public authority*) reserves the right to make alterations or improvements on or along the state highway R/W, including the relocation or complete eradication of an access.

If KDOT (or the local public authority) believes it is necessary to relocate an *access point* along a state highway, KDOT will pay construction costs to relocate the access or perform the work with KDOT Maintenance personnel. KDOT has full discretion regarding the location of the new permitted access point.

If KDOT determines it is necessary to completely remove an access point and revoke the permit, KDOT will pay construction costs related to the removal or perform the work with KDOT Maintenance personnel.

7.2.5 Modified access—Other circumstances

Modifications to a highway access as a result of other circumstances (identified safety need, reoccurring congestion, land use changes, new landowner, other) will be facilitated by the responsible KDOT Area office. The KDOT Area office will document the GPS coordinates of the new access location and delete or relocate the access in the KDOT access database records.

KDOT will determine financial responsibility for the access modifications based on other circumstances on a case-by-case basis.

7.3 KDOT Construction Projects

Access should be considered during KDOT projects. When access is relocated, removed, or modified, including changes to surfacing, pipe size/type or width/radius, a permit should be processed. The Designer can provide the necessary information to the Area office to facilitate the initiation of a permit. Any access that does not currently have a permit should be issued one, including those that do not change as a result of the project.

Chapter 8

Appendices

8.1 Acronyms, abbreviations, and definitions

8.1.1 Acronyms and abbreviations

| | |
|-----------|--|
| AASHTO | American Association of State Highway and Transportation Officials |
| ADA | Americans with Disabilities Act |
| ADT | average daily traffic |
| AMU | KDOT's Access Management Unit |
| BNSF | Burlington Northern Santa Fe |
| BRAC | <i>Base Realignment and Closure Plan</i> (U.S. Department of Defense) |
| CBD | central business district |
| CCL | city connecting link |
| COI | Certificate of Insurance |
| Committee | Kansas Department of Transportation Access Management Advisory Committee |
| DDHV | directional design hourly volumes |
| DDI | diverging diamond interchange |
| EPA | U.S. Environmental Protection Agency |
| FHWA | Federal Highway Administration |
| ITE | Institute of Transportation Engineers |
| K.S.A. | Kansas Statutes Annotated |
| KDHE | Kansas Department of Health and Environment |
| KDOT | Kansas Department of Transportation |
| KHP | Kansas Highway Patrol |
| KTA | Kansas Turnpike Authority |
| LOS | level of service |

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| MASH | <i>Manual for Assessing Safety Hardware</i> |
| MOU | memorandum of understanding |
| mph | miles per hour |
| MPO | metropolitan planning organization |
| MUTCD | <i>Manual of Uniform Traffic Control Devices</i> (2009 or most current edition) |
| NCHRP | National Cooperative Highway Research Program |
| NHS | National Highway System |
| NPDES | National Pollutant Discharge Elimination System |
| Policy | Kansas Department of Transportation Access Management Policy |
| R/W | right-of-way |
| RCP | reinforced concrete pipe |
| RSA | Road Safety Audit |
| SOM (S.O.M.) | Standard Operating Manual |
| SPUI | single point urban diamond interchange |
| SSD | stopping sight distance |
| Synthesis | <i>Synthesis 289, Corridor Management</i> (National Cooperative Highway Research Program) |
| TIS | traffic impact study |
| TRB | Transportation Research Board |
| TTC | temporary traffic control |
| TTI | Texas Transportation Institute |
| TUDI | tight urban diamond interchange |
| TWLT | two-way left-turn lane |
| USPS | U.S. Postal Service |
| veh/ln | vehicles per lane |
| VPD | vehicles per day |
| VPH | vehicles per hour |

8.1.2 Definitions

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| AASHTO | See <i>American Association of State Highway and Transportation Officials</i> . |
| AASHTO Road Design Guide | See <i>Road Design Guide</i> |
| A Policy on Geometric Design of Highways and Streets | Often referred to the Green Book it is a book produce by AASHTO that contains the current design research and practices for highway and street geometric design |
| abandoned access | An existing access that is no longer used by a property owner or tenant for the current purpose of development or land use and is no longer needed to accommodate future development or land use. |
| acceleration lane | A speed-change lane, including tapered areas, that enables a vehicle entering a roadway to increase its speed to a rate that allows it to merge with through traffic. See <i>auxiliary lane</i> . |
| access | The vehicular movement to and from property abutting the highway. |
| access angle | The angle between the access centerline and the edge of the highway. |
| access control | The condition in which the right of access of owners or occupants of land abutting a roadway is controlled by a public authority. |
| access grade | The vertical alignment of the centerline of the access point. |
| access management | The systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. |
| Access Management Construction Project Program | A KDOT program designed to assist local agencies in the implementation of a KDOT <i>planning instrument</i> . Agencies eligible to participate in the program will have an executed agreement as part of a plan and a project that implements the recommendations of the plan. The program functions as a state reimbursement program. |
| Access Management Manual | See <i>TRB Access Management Manual</i> |
| access management plan(s) | One of the four instruments of access management planning, it is a plan showing the location, and in some cases the design, of access for every parcel on a roadway segment. This type of plan is initiated by the local government in and around smaller communities (e.g., populations of less than 25,000) with support from KDOT before new or potential development along a highway. |

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| Access Management Unit (AMU) | The unit located at headquarters that is responsible for administering the Access Management Policy. The AMU provides coordination and awareness regarding access within KDOT and with transportation partners, transportation planning expertise, assistance with the application of transportation engineering criteria in the Policy and oversees the <i>access permitting process</i> . |
| access permit | A permit issued by KDOT for the construction, maintenance, and use of an access point (driveway or public road) that connects to a highway. See <i>Highway Access Permit</i> . |
| Access Permit Work Details Sheet | KDOT form 334. This form provides detailed design information about an <i>access point</i> along with highway characteristics at the location of an access point. |
| access permitting process | The internal process KDOT uses for reviewing and evaluating a <i>Highway Access Permit</i> . |
| access point | The connection of a driveway or public road at the highway right-of-way line. See <i>driveway</i> . |
| access rights | The legal ability of a property owner to access (or not access) an adjacent roadway. |
| access road | A public road located adjacent to a freeway or arterial highway to serve abutting property and local areas. See <i>frontage road</i> and <i>backage road</i> . |
| access route classification system | A classification system used for making access decisions. This is the same as KDOT's Route Classification System unless the route is part of the <i>National Highway System</i> (NHS) or is part of a planned area or corridor in which case it will be upgraded to a Class B. If a <i>frontage road</i> is within KDOT ROW, the Access Route Classification designation is Class E. |
| access side slopes | The difference in the horizontal distance to vertical drop of the ground line that extends perpendicularly away from the edge of the access. |
| access taper | A triangular pavement surface on approach to and exiting from an access point which provides a transition to enter and exit the highway at a higher speed. |

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| access types | <p>low volume—0–49 vehicles per day (VPD) maximum, in/out bound traffic count</p> <p>Type 1: Non-commercial—Farm, agriculture, field, timber, cultivated, pasture, duplex, single-family residential/home, apartment building containing five or fewer dwelling units, other</p> <p>Type 2: Special-use—City water treatment plant, microwave station, pipeline checkpoint, telephone repeater stations, utilities (electric, gas, telephone and water) check/maintenance stations and Corps of Engineers dike roads, other</p> <p>Type 3: Emergency facility—Fire station, paramedic facility</p> <p>Type 4: Commercial—Small business, cemetery, nursing home, or other</p> <p>medium volume—50–499 VPD or less than 50 vehicles per peak hour of the highway (in/out bound traffic count)</p> <p>Type 5: Commercial, industrial, institutional, recreational, local road connections, including joint-use/shared access—Commercial uses relate to the exchange of goods or services. Industrial uses relate to the production of material goods. Institutional uses include religious, educational, research, health care, military, and financial. Recreational uses include parks, trails, public spaces, entertainment centers, and amusement/theme parks, other.</p> <p>high volume—500 or more VPD or 50 or more vehicles per peak hour of the highway (in/out bound traffic count)</p> <p>Type 6: Commercial, industrial, institutional, recreational, local road connection, including joint-use/shared access—Commercial uses relate to the exchange of goods or services. Industrial uses relate to the production of material goods. Institutional uses include religious, educational, research, health care, military, and financial. Recreational uses include parks, trails, public spaces, entertainment centers, and amusement/theme parks, other.</p> |
| access width | The narrowest width (throat) of an access point measured perpendicular to the access centerline. |
| access window(s) | A window is the space available for an access point between existing intersections or access points. |
| Access Permit Coordinator | A person in headquarters who is responsible for reviewing all type 5 and 6 <i>Highway Access Permits</i> and all variances. |
| alternative access | The ability of any vehicle to enter a roadway indirectly through a roadway of lower functional classification. |

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| American Association of State Highway and Transportation Officials (AASHTO) | A standards setting body which publishes specifications, test protocols and guidelines which are used in highway design and construction throughout the United States. |
| applicant | The person, company, agency, or designated representative applying for a <i>Highway Access Permit</i> . |
| Application for Highway Access | KDOT form 827 is completed and signed by the applicant requesting new access to state highways or a change to existing access |
| approach | The set of lanes making up one leg of an intersection. |
| Area/Area office | A division within a KDOT <i>District</i> established for maintenance and administrative purposes, and administered by an <i>Area Engineer</i> . Each Area has an <i>Area Office</i> where the <i>Area Engineer</i> and <i>Area Permit Coordinator</i> are located. |
| Area Engineer | A manager and licensed engineer within KDOT who supervises a KDOT <i>Area Office</i> . All Highway Access Permits are reviewed by the Area Engineer and sent to the <i>District Engineer</i> . |
| Area Permit Coordinator | Each Area office has an Area Permit Coordinator, who is the first point of contact for questions or concerns about the highway access permitting process. |
| area transportation plan(s) | One of the four instruments of access management planning, it is initiated by KDOT when the District/Area identifies a potential for high growth development along a highway or local officials identify an area targeted for development. Often the area is in and around larger communities (e.g., populations over 50,000) where the potential for high-growth development is in a condensed area, such as near an interchange or around a future planned development. It is more detailed than an Access Management Plan and focuses on a specific area of the highway. |

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| area type | <p>central business district (CBD)—An officially or unofficially designated area throughout which there is a relative concentration of established businesses and commercial services, usually characterized by limited access, low speed limits, on-street parking, and higher volumes of pedestrian/bicycle traffic.</p> <p>developed—Must meet at least one of the following three criteria: (1) The area is within the corporate limits of a municipality, regardless of posted speed limit; (2) an area where the street or highway abutting the area has a speed limit of 40 miles per hour or less; or (3) an area where at least 50 percent of the frontages abutting the highway have been developed with residences, businesses, or industry for a distance of a quarter-mile or more.</p> <p>undeveloped—The area outside the corporate limits of a municipality, it includes all other locations not included in the <i>central business district</i> or <i>developed</i> definitions and is characterized by higher roadway speed limits.</p> |
| arterial | A major roadway intended primarily to serve through traffic, where access is carefully controlled; generally roadways of regional importance, intended to serve moderate to high volumes of traffic traveling relatively long distances and at higher speeds. |
| auxiliary lane(s) | A lane striped for use but not for through traffic. See <i>acceleration lane</i> , <i>deceleration lane</i> , and <i>turn lane</i> |
| auxiliary lane taper | A triangular pavement surface that transitions the highway pavement to accommodate an auxiliary lane. |
| average annual daily traffic (AADT) | The total two-way yearly traffic volume on a section of roadway divided by 365; often referred to as average daily traffic (ADT). |
| backage road(s) | Function the same as <i>frontage roads</i> but are located at a greater distance from the highway to allow for development between the two roadways. See <i>Frontage Road</i> . |
| bay taper | The section of a <i>auxiliary lane</i> that moves the driver from the through lane into the <i>auxiliary lane</i> , normally at the same speed of through traffic |
| buffer area | The area along the property frontage between the edge of a highway and the right-of-way line. |
| capacity | The maximum rate of flow at which vehicles can reasonably be expected to traverse a point on a lane or road during a specified period under prevailing traffic, roadway, and signalization conditions, usually expressed as vehicles per hour; most often considered the maximum amount of traffic that can be accommodated by a roadway during peak hours of demand. |
| Certificate of Insurance (COI) | A document issued by an insurance company that is used to verify insurance. It should list the effective date of the policy, and the types and dollar amount of applicable liability. |

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| channelize | The separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement marking to facilitate safe and orderly movements of both vehicles and pedestrians. See <i>islands</i> . |
| city connecting link (CCL) | A route inside the city limits of a city which (1) connects a state highway through a city; (2) connects a state highway to a City Connecting Link of another state highway; (3) is a state highway which terminates within such city; (4) connects a state highway with a road or highway under the jurisdiction of the Kansas Turnpike Authority (KTA); or (5) begins and ends within a city's limits and is designated as part of the national system of interstate and defense highways. |
| clear zone | The unobstructed, traversable area provided beyond the edge of the through travel way for the recovery of errant vehicles. This area may consist of a shoulder, bike lanes, auxiliary lanes, recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired minimum width is dependent upon traffic volumes and speeds and on the roadside geometry. |
| collector | A road intended to move traffic from local roads to secondary arterials. |
| conflict | A traffic event that causes a driver to take evasive action to avoid collision with another vehicle—usually causes the driver to apply the brakes or make an evasive lane change. |
| conflict point | An area where intersecting traffic merges, diverges, or crosses. |
| connection | Any driveway, street, turnout, or other means of providing for the movement of vehicles to or from the public roadway system. |
| continuous right-turn lane | A turn lane that allows right turns by vehicles at two or more access connections. |
| cooperation agreements | The agreement signed by KDOT and local officials when completing one of the KDOT planning instruments in which they stat support for the plan and willingness to consider its provisions and recommendations as part of the decision-making process. |
| corner clearance | The distance from an intersection of a public or private road with a highway to the nearest access connection on the crossroad, measured from the closest edge of the pavement of the highway to the closest edge of the pavement of the connection along the crossroad. |
| corridor | A stretch of the highway that has been identified for a specific purpose. |
| corridor management | The coordinated application of multiple strategies to achieve specific land development and transportation objectives along segments of a transportation corridor. |

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| corridor management plan | One of the four instruments of access management planning, it is initiated by KDOT when the District/Area identifies a potential for high-growth development along a highway or local officials identify a corridor targeted for development. A corridor plan covers a corridor that involves complex growth, is several miles long, and usually involves multiple jurisdictions (cities/counties). Similar level of detail to an area transportation plan. |
| corridor management planning | The process for identifying and addressing issues of strategic importance to the long-term functioning and character of a transportation corridor; typically includes elements such as corridor designation, partnering agreements, visioning, corridor analysis, alternative development and selections, and an implementation plan and agreements. |
| corridor preservation | The coordinated application of access management tools and techniques to preserve a corridor by obtaining control or protecting the right-of-way for a planned transportation facility and preserving the capacity of existing roadways. |
| crossroad | A lower-functioning roadway that crosses a main higher-functioning roadway. |
| curb return | The geometric treatment that changes your direction from the highway to an access. |
| deceleration lane | A speed-change lane, including tapered areas, that enables a turning vehicle to exit a through lane and slow to a safe speed to complete its turn. See <i>auxiliary lane</i> . |
| design exception | KDOT's intentional permission for allowing a specific design element involving access that does not meet the latest edition of AASHTO's <i>A Policy on Geometric Design of Highways and Streets</i> for the 13 controlling criteria for geometric design (stopping sight distance, lane width, cross slopes, etc.). |
| design flow | Associated with a specific recurrence interval that is appropriate for the particular situation. The discharge for which a drainage structure is designed. |
| developed | See <i>area type</i> . |
| District | KDOT has divided the State of Kansas into six <i>Districts</i> for maintenance and administrative purposes. Each District is administered by a <i>District Engineer</i> . |
| District Access Management Plan | A summary of the <i>Access Management Plans</i> for a particular <i>District</i> . See <i>Access Management Plan, District</i> . |
| District Engineer | A senior manager and licensed engineer within KDOT who has been given the authority to make access decisions for the Secretary. All Highway Access Permits are approved by the District Engineer or his/her designee. |
| diverging | The dividing of a single stream of traffic into separate streams. |

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| divided roadway | A roadway on which traffic traveling in opposite directions is physically separated by a median. |
| downstream | The exiting side of an <i>intersection</i> . |
| Drainage Report(s) | A report that determines the impact of the <i>design flow(s)</i> to existing highway drainage facilities |
| driveway | Every entrance or exit used by vehicular traffic to or from properties abutting the highway. See <i>access point</i> . |
| egress | The act of leaving a place or exiting; the exit of vehicular traffic from abutting properties to a roadway. |
| expressway | A principal arterial roadway designed for relatively uninterrupted, high volume mobility between areas with limited access points; may include a mixture of intersections (at grade) and interchanges (grade-separated). |
| freeway | A principal arterial roadway designed for uninterrupted, high volume mobility between areas with access points limited to grade-separated interchanges only. Interstate highways are freeways. |
| frontage | The length between the property lines of a single property, tract, or roadside development area that fronts the right-of-way line. |
| frontage road | An access road that generally parallels a major public roadway between the right-of-way of the major roadway and the front building setback line; provides access to private properties while separating them from the principal roadway. See <i>access road</i> . |
| full access control | A route access control designation that addresses all existing or future freeway sections. Access to the highway is only permitted via grade-separated interchanges. |
| full shadow | A left-turn lane design that fully protects a vehicle while in the turn lane. |
| functional area | The area approaching and leaving each leg of the intersection which should be free of access. |
| gated access | An access point that controls entry and exit by installing a gate on private property near the right-of-way line. |
| grade separation | A crossing of two roadways at different elevations. |
| grade | The rate or percentage change in slope, measured along the centerline of the roadway or access point, either ascending or descending from or along the highway. |
| Green Book | See <i>A Policy on Geometric Design of Highways and Streets</i> . |
| highway | The entire area within the right-of-way dedicated as a public way for the purpose of vehicular travel. |

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| Highway Access Permit | KDOT Form 309. See <i>access permit</i> . |
| Highway Access Permit Completion of Revocation Notice | KDOT Form 309C is completed by the Area and provided to the permittee to inform them of either completion of the permit or revocation of the permit due to non-compliance. This form releases the permittee from all insurance requirements. |
| Highway Use of Right of Way Permit. | KDOT Form 304. See <i>Use of Right of Way Permit</i> . |
| improvement | The original work on a road and subsequent repairs. Consists of location, grading, surface and subsurface drainage provisions, including curbs, gutters, catch basins, foundations, shoulders and slopes; wearing surface, bridges, culverts, retaining walls, intersections, private entrances, guardrails, shade trees, illumination, guideposts, and signs. Also may consist of alterations to access points, acquisition of right-of-way, construction of access roads, and other actions designed to enhance the functional integrity of a roadway. |
| ingress | Entry into a place; the entrance of vehicular traffic into abutting properties from a roadway. |
| inactive access | An existing access that is no longer used by a property owner or tenant for the current purpose of development or land use, but may be used in the future to accommodate a change in development or land use. |
| inside radius | The curve utilized by left-turning traffic entering or exiting one-way access. See <i>radius</i> . |
| interchange | A grade-separated system of access to and from highways that includes directional ramps for access to and from crossroads. |
| interim access (conditional) | Access that is permitted for use until highway improvements require alternative access. |
| interlocal cooperation agreements | See <i>cooperation agreement</i> . |
| intersection | Any at-grade connection with a roadway, including two roads or an access point and a road. |
| intersection sight distance | The length of roadway ahead that is visible to the driver of a vehicle approaching an intersection. The driver should have an unobstructed view of the entire intersection and an adequate view of the intersecting highway to permit control of the vehicle to avoid a collision |
| island | See <i>median, traversable (nonrestrictive median)</i> . |

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| ITE Trip Generation Manual | See <i>Trip Generation Manual</i> |
| joint-use | See <i>shared access</i> . |
| landlocked | A lot or parcel of land without access to a public road. |
| level of service (LOS) | A qualitative measure describing the operational conditions within a stream of traffic with factors that include speed, travel time, ability to maneuver, traffic interruptions, safety, waiting time periods (delay), and driver comfort and convenience. Represented by letters A through F. A is the freest flowing, while F is the least free flowing. |
| limited-access roadway | A roadway especially designed for through traffic and where owners or occupants of abutting land have no right or easement of access. |
| local public authority (LPA) | The governing body for a city, county, or municipality having authority to adopt ordinances or regulations relating to vehicular traffic under the constitution and laws of this state. This includes a board of county commissioners if the access is to be located in the unincorporated area of a county or the governing body of the municipality if the access is to be located within the city limits of an incorporated municipality. |
| local road | Any street or road, which is not a state highway or city connecting link. |
| lot | A designated parcel, tract, or area of land established by plat, subdivision, or as otherwise permitted by law, to be separately owned, used, developed, or built upon. |
| major traffic generator | A land use that generates a high traffic volume to and from a site, usually defined in terms of vehicles per hour or vehicles per day. |
| median | The segment of a highway that separates opposing traffic flows, not including center two-way left-turn lanes; may be traversable or non-traversable. |
| median opening (directional) | An opening in a restrictive median that provides for specific movements and physically restricts other movements. |
| median opening (full) | An opening in a non-traversable median that provides for crossing and turning traffic. |
| median, restrictive | A physical barrier in the roadway that separates traffic traveling in opposite directions, such as a concrete barrier or landscaped island. |
| median, nonrestrictive | A median that by its design does not physically discourage or prevent vehicles from entering upon or crossing over it, including painted medians. |
| memorandum of understanding (MOU) | A written document describing a bilateral or multilateral agreement between parties regarding future land use and access along a highway area or corridor. It expresses a common line of action between all parties involved. |

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| merge | The process by which two separate traffic streams moving in the same direction combine or unite to form a single stream. |
| Metropolitan Planning Organization (MPO) | Are a federally mandated and federally funded transportation policy-making organization made up of representatives from local government and governmental transportation authorities. MPO's are formed for any urbanized area with a population greater than 50,000. |
| minor traffic generator | A land use that generates a low traffic volume to and from the site, usually defined in terms of vehicles per hour or vehicles per day. Volumes used to differentiate minor versus major vary widely. |
| mound entrance | An access that does not require a pipe/culvert to accommodate ditch drainage. |
| MUTCD | Manual of Uniform Traffic Control Devices (2009 or latest edition); published by the Federal Highway Administration, and adopted by the Secretary of Transportation. |
| National Highway System (NHS) | A network of strategic highways within the United States, including the Interstate Highway System and other roads serving major airports, ports, rail or truck terminals, railway stations, pipeline terminals and other strategic transport facilities. |
| non-compliance | A failure to follow the terms and conditions of the <i>Highway Access Permit</i> . |
| one-way access | An access point that allows traffic flow entering or exiting the property, but not both. |
| one-way frontage road | A <i>frontage road</i> where traffic flows in one direction. |
| parkway | A type of limited-access roadway that typically includes a landscaped median and landscaping or an open space on either side. |
| Partial Access Control 1 | A route access control classification that applies to expressways or two-lane highways on four-lane right-of-way with potential to upgrade to a freeway. It allows for upgrading sections or the entire facility to full access control, if necessary. |
| Partial Access Control 2 | A route access control classification that applies to expressways or major urban streets, but are not intended to become a future freeway. Projects may allow for future interchanges at selected locations. |
| Partial Access Control 3 | A route access control classification that applies to arterial highways within or approaching an urban area or rural highways that are likely to remain two-lane for the foreseeable future. |
| partial shadow | A left-turn lane design that partially protects or “shadows” the turn lane. |
| peak hour | The largest number of vehicles passing over a designated section of a street during the busiest 60-minute period within a 24-hour period. |

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| permittee | The person, company, agency, or designated representative granted an approved <i>Highway Access Permit</i> . |
| phase (signal) | That portion of a traffic signal cycle allocated to a specific traffic movement or combination of movements. |
| physical area | The area in an intersection that connects the outer <i>radius</i> of each approach including the center of the intersection which contains both crossing and turning conflict points |
| plat | An exact and detailed map of the subdivision of land. |
| property line | A line dividing two adjacent properties or separately owned tracts. |
| property frontage | See <i>frontage</i> . |
| queue | A series of vehicles arranged in a continuous line. |
| radii / radius | The curve on the side of an access point that is used by right-turning vehicles. See <i>inside radius</i> . |
| return period (Recurrence Interval) | (1) The average time interval between floods that equal or exceed a specified magnitude, or (2) the reciprocal of the probability that a flood of a specified magnitude will occur in any given year. The first definition is used for rainfall depth-duration frequency estimates such as those published in the NWS rainfall frequency atlases and the KDOT Rainfall Tables for Counties in Kansas. The second definition is used for flood discharge frequency applications. The two definitions are essentially equivalent for recurrence intervals of 10 years or greater. |
| reverse frontage road | See <i>backage road</i> |
| right of way line | The boundary line of a right-of-way. |
| right of way (R/W) | A general term denoting land, property, or interest therein, usually in a strip acquired for or devoted to highway transportation purposes. |
| Road Design Guide (AASHTO) | A manual developed and maintained by the AASHTO that presents a synthesis of current information and operating practices related to roadside safety. |
| roadway | A general term denoting the portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways. |
| <i>Route Access Control Designations</i> | Designations that identify existing and planned access control classifications on state highways to assist KDOT in determining the appropriate <i>access control</i> for highway improvements and access management |
| <i>Route Classification System</i> | A classification system that ranks highways based on <i>roadway</i> types, significance to the national and regional highway network, traffic volumes, and posted speed limits |

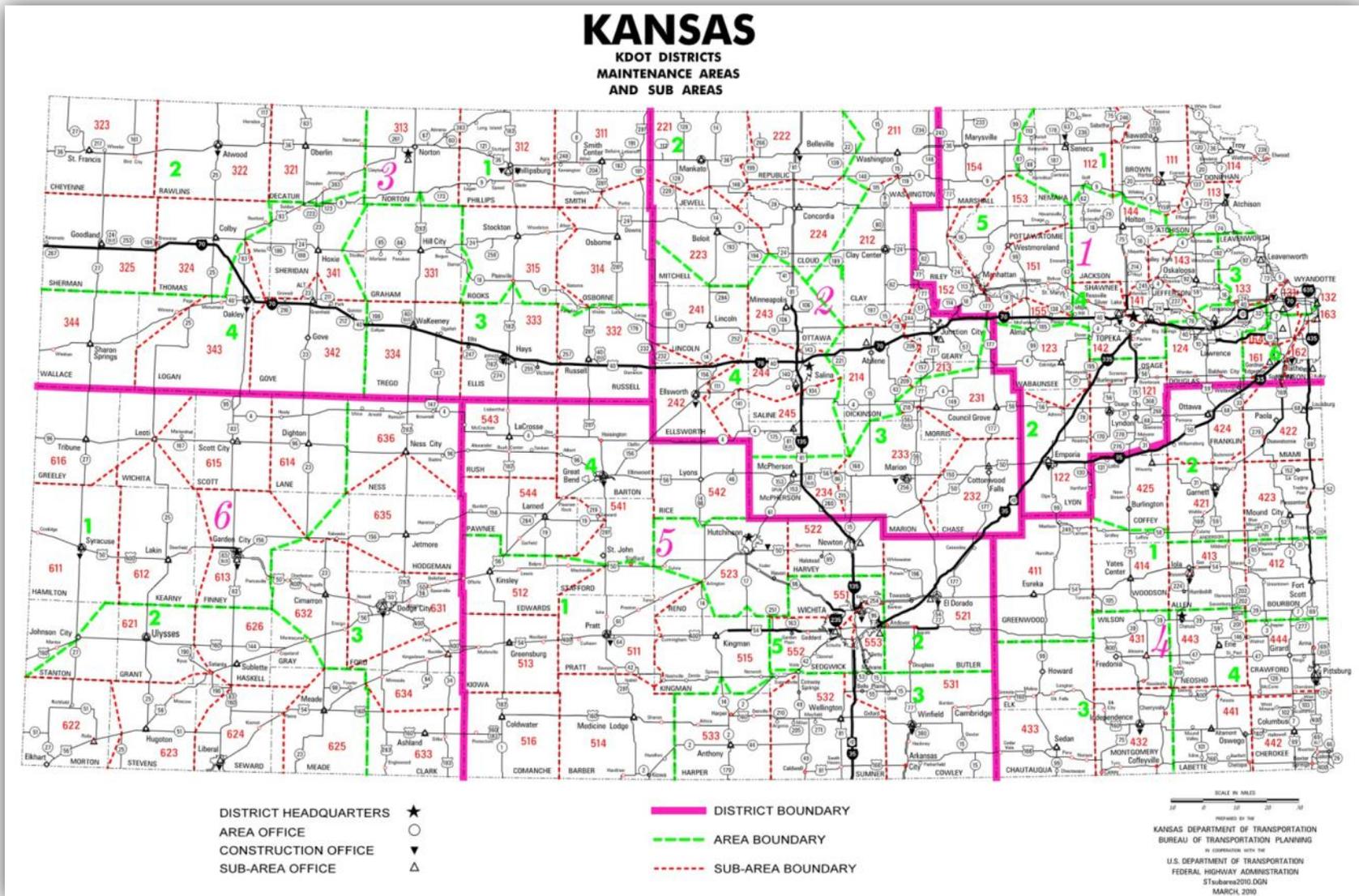
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| Secretary of Transportation | The governing authority for State Highways of the State of Kansas. Often referred to as “the Secretary” within written documents. |
| setback | The shortest distance between a right-of-way line and a building or other objects on private property. |
| shared access | A single access point connecting two or more contiguous sites to a public roadway, including property in different ownership or in which access rights are provided in legal descriptions. |
| shoulder | The portion of the roadway that lies between the edge of the traveled way and curblines, excluding turn lanes. |
| sight distance | The distance visible to the driver of a passenger vehicle measured along the normal travel path of a roadway from a designated location and to a specified height above the roadway, when the view is unobstructed by traffic. |
| sight triangle | An area of unobstructed sight distance along both approaches of an access connection. |
| signal progression | The progressive movement of traffic, at a planned rate of speed without stopping, through adjacent signalized locations within a traffic control system. |
| signal spacing | The distance between traffic signals along a roadway. |
| site plan | A plan that provides a development concept overview. The site plans are commonly one sheet and can include the property lines, site elevation, drainage, building locations and setbacks, utility locations, existing and planned landscape, the proposed access, and adjacent roadway. |
| spacing criteria | Centerline to centerline spacing criteria for direct access connections to the highway. Charts provide criteria for signalized and unsignalized intersections. See <i>signal spacing</i> |
| state highway/ state highway system | Any highway, road, or street that is a part of the official State Highway System of the State of Kansas. |
| stopping sight distance (SSD) | The distance required by a driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object on the roadway becomes visible, including the distance traveled during the driver’s perception and reaction times and the vehicle braking distance. |
| storage length | Lane footage added to a deceleration lane to store the maximum number of vehicles likely to accumulate during a peak period, so as not to interfere with the through-travel lanes. |
| temporary access (conditional) | Access that is permitted for use until alternative permanent access becomes available. Usually associated with conditions involving roadway construction. |

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| throat length | The distance parallel to the centerline of an access to the first on-site location at which a driver can make a right turn or a left turn. Measurements on roadways with curb and gutter are from the face of the curb; while on roadways without a curb and gutter, from the edge of the shoulder. |
| through lane taper | This is the taper needed to move through traffic over to create the auxiliary lane. |
| through movement | The predominant direction of traffic flow through an intersection; straight on most major roads, although the predominant flow of traffic occasionally is in a right- or left-turning direction. |
| Toolbox of Implementation Strategies | A list of tools that offer information on corridor preservation strategies, access management strategies, financing strategies, and interlocal cooperation agreements that are generally included in <i>access management plans</i> , <i>area transportation plans</i> , and <i>corridor management plans</i> . |
| traffic control devices | All signs, signals, pavement markings, and devices that conform to the MUTCD, placed or installed by the authority of the public body or public agency having jurisdiction, for the purpose of regulating, warning, or guiding traffic. |
| traffic control plans | A plan for controlling traffic when work is being performed on the highway or within the clear zone. The plan will be in accordance with the MUTCD. When appropriate, the plan will address the storage of materials and parking for work crew vehicles on the right-of-way. |
| traffic count | A tabulation of the number of vehicles or pedestrians passing a certain point during a specified period of time. |
| traffic impact study | A specialized study of the impact a certain type and size of development will have on the surrounding transportation system. |
| Transportation Research Board (TRB) | TRB is one of six major divisions of the National Research Council—the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. |
| TRB Access Management Manual | A manual developed by TRB that provides technical information on access management techniques, together with information on how access management programs can be effectively developed and administered. |
| Trip Generation Handbook | Handbook produce by ITE that include guidelines for estimating site trip generation |
| traveled way | The portion of the roadway designated for the movement of through vehicles. This does not include shoulders or auxiliary lanes. |

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| trip | A single- or one-directional vehicle movement with either the origin or the destination inside a study area. A vehicle leaving the highway and entering a property is one trip, and the vehicle leaving the property is a second trip. |
| trip distribution | The number of vehicles or passenger movements that are or will be made between geographic areas. |
| truck | Vehicles in the truck class normally have 9,000 pounds or greater gross vehicle weight rating of the manufacturer and vehicles having dual tires on the rear axle. This definition includes all buses, single-unit trucks, and truck combinations except light delivery trucks. A light delivery truck is a single-unit truck style, such as a van or pickup, with size and operating characteristics similar to those of a passenger car commonly used for short-haul, light delivery services. |
| turn lane | An auxiliary/added lane, including tapered areas, primarily for the acceleration or deceleration and storage of vehicles entering or exiting the through traffic lanes. See <i>auxiliary lane</i> . |
| turnout | A widening of the road in a spot location that allows a vehicle to move from the driving lanes so they can stop without disrupting traffic flow, typically for busses and mailboxes. |
| two-way access | An access point that accommodates vehicles entering and exiting the access at the same time. |
| two-way left-turn lane, continuous (TWLTL) | A continuous lane located between opposing traffic streams that provides a refuge area for vehicles to complete left-turns from both directions. |
| undeveloped | See <i>area type</i> . |
| undivided roadway | A roadway that has no directional separator, natural or structural, to separate traffic moving in opposite directions. |
| uninterrupted flow | The category of traffic flow that occurs on roadways having no fixed cause of delay (e.g., freeways and unsignalized sections of rural highways). |
| upstream | The entering side of an <i>intersection</i> . |
| Use of Right-of-Way Permit | A permit issued by KDOT to a permittee who wishes to do work in the KDOT right-of-way but does not include the construction of an access. See <i>Highway Use of Right-of-Way Permit</i> |
| variance | Permission granted to depart from the criteria and requirements of the <i>Access Management Policy</i> due to unique circumstances or existing special conditions. Examples include permission to reduce access spacing, access width, pipe size, and other design elements not specifically discussed in the latest edition of AASHTO's <i>A Policy on Geometric Design of Highways and Streets</i> (KDOT Form 1404). |

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| vehicles per hour (VPH) | The number of vehicles per hour, usually referring to vehicles in a peak hour. |
| waiver | KDOT's permission to relinquish or "waive" a requirement (usually process or non-engineering requirement) within this Policy. An example includes waiving the requirement for the applicant to perform a comprehensive TIS as part of the permitting process. |
| warrant | The criteria by which the need for a safety treatment or roadway improvement can be considered. |
| weaving | The crossing of two or more traffic streams traveling in the same general direction along a significant length of highway, without the aid of traffic control devices. Weaving areas are formed when a merge area is closely followed by a diverge area, or when an entrance ramp is closely followed by an exit ramp and the two ramps are joined by a turn lane. |
| wind row | A long line of material heaped in a row; can be snow, ice, or debris left along a roadway after snow removal. |

8.2 KDOT maintenance areas



8.3 KDOT District and Area Contact Information

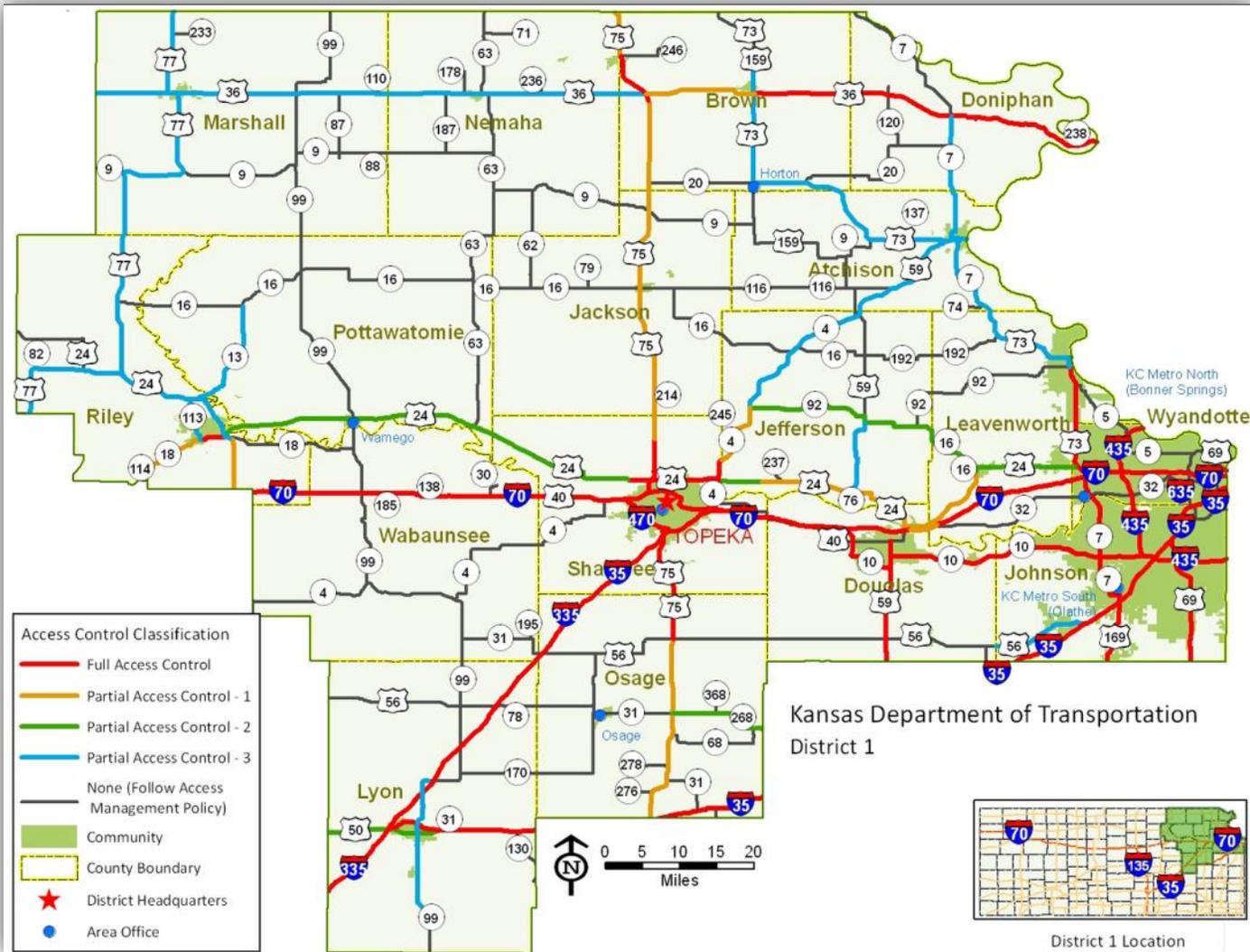
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| <p>District 1 – Northeast Kansas</p> <p>District Engineer - Topeka 121 S.W. 21 St Street Topeka, Kansas 66612-1429 Phone: (785) 296-3881</p> | <p>Area 1 – Horton 1686 1st Ave East Horton, KS 66439 (785) 486-2142 Phone (785) 486-3788 Fax D1HortonPermits@ksdot.org</p> | <p>Area 2 – Osage 322 S Martin Osage City, KS 66523 (785) 528-3128 Phone (785) 528-3803 Fax D1OsagePermits@ksdot.org</p> |
| | <p>Area 3 – KC Metro North/Bonner Springs 650 N K-7 Hwy Bonner Springs, KS 66012 (913) 721-2754 Phone (913) 721-2873 Fax D1BonnerSpringsPermits@ksdot.org</p> | <p>Area 4 – Topeka 101 Gage Blvd Topeka, KS 66606 (785) 296-3986 Phone (785) 296-1096 Fax D1TopekaGagePermits@ksdot.org</p> |
| | <p>Area 5 – Wamego 1425 W US-24 Wamego, KS 66547 (785) 456-2353 Phone (785) 456-9851 Fax D1WamegoPermits@ksdot.org</p> | <p>Area 6 – KC Metro South/Olathe 1290 South Enterprise Olathe, KS 66061 (913) 764-4525 Phone (913) 764-7409 Fax D1OlathePermits@ksdot.org</p> |
| <p>District 2 - North Central Kansas</p> <p>District Engineer - Salina 1006 N. Third P.O. Box 857 Salina, Kansas 67402-0857 Phone: (785) 823-3754</p> | <p>Area 1 – Clay Center 731 W Crawford Clay Center, KS 67432 (785) 632-3108 Phone (785) 632-3337 Fax D2ClayCenterPermits@ksdot.org</p> | <p>Area 2 – Mankato 725 East South St / PO Box 220 Mankato, KS 66956 (785) 378-3166 Phone (785) 378-3800 Fax D2MankatoPermits@ksdot.org</p> |
| | <p>Area 3 – Marion 1021 N Cedar St Marion, KS 66861 (620) 382-3717 Phone (620) 382-2339 Fax D2MarionPermits@ksdot.org</p> | <p>Area 4 – Ellsworth 202 W 15th / PO Box 147 Ellsworth, KS 67439 (785) 472-4447 Phone (785) 472-4676 Fax D2EllsworthPermits@ksdot.org</p> |

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| <p>District 3 – Northwest Kansas</p> <p>District Engineer - Norton 312 S. Second P.O. Box 350 Norton, Kansas 67654-0350 Phone: (785) 877-3315</p> | <p>Area 1 – Phillipsburg 1777 Hwy 183 Phillipsburg, KS 67661 (785) 543-2163 Phone (785) 543-5914 Fax D3PhillipsburgPermits@ksdot.org</p> | <p>Area 2 – Atwood 21051 Hwy 36 / PO Box 156 Atwood, KS 67730 (785) 626-3258 Phone (785) 626-3185 Fax D3AtwoodPermits@ksdot.org</p> |
| | <p>Area 3 – Hays 1811 W Frontier Rd / PO Box 760 Hays, KS 67601 (785) 625-9718 Phone (785) 625-3846 Fax D3HaysPermits@ksdot.org</p> | <p>Area 4 – Oakley 3501 Hwy 40 / PO Box 130 Oakley, KS 67748 (785) 672-3113 Phone (785) 672-4985 Fax D3OakleyPermits@ksdot.org</p> |
| <p>District 4 – Southeast Kansas</p> <p>District Engineer - Chanute 411 W. Fourteenth Chanute, Kansas 66720-2894 Phone: (620) 431-1000</p> | <p>Area 1 – Iola 1720 N State St Iola, KS 66749 (620) 365-2161 Phone (620) 365-2402 Fax D4IolaPermits@ksdot.org</p> | <p>Area 2 – Garnett 507 N Maple Garnett, KS 66032 (785) 448-5446 Phone (785) 448-2486 Fax D4GarnettPermits@ksdot.org</p> |
| | <p>Area 3 – Independence 3097 W Main Independence, KS 67301 (620) 331-3760 Phone (620) 331-7017 Fax D4IndependencePermits@ksdot.org</p> | <p>Area 4 – Pittsburg 1813 W 4th St Pittsburg, KS 66762 (620) 231-7560 Phone (620) 231-1149 Fax D4PittsburgPermits@ksdot.org</p> |
| <p>District 5 – South Central Kansas</p> <p>District Engineer - Hutchinson 500 N. Hendricks P.O. Box 769 Hutchinson, Kansas 67504-0769 Phone: (620) 663-3361</p> | <p>Area 1 – Pratt 309 Iowa Pratt, KS 67124 (620) 672-7494 Phone (620) 672-7678 Fax D5PrattPermits@ksdot.org</p> | <p>Area 2 – El Dorado 205 Oil Hill Rd El Dorado, KS 67042 (316) 321-3370 Phone (316) 321-1702 Fax D5ElDoradoPermits@ksdot.org</p> |

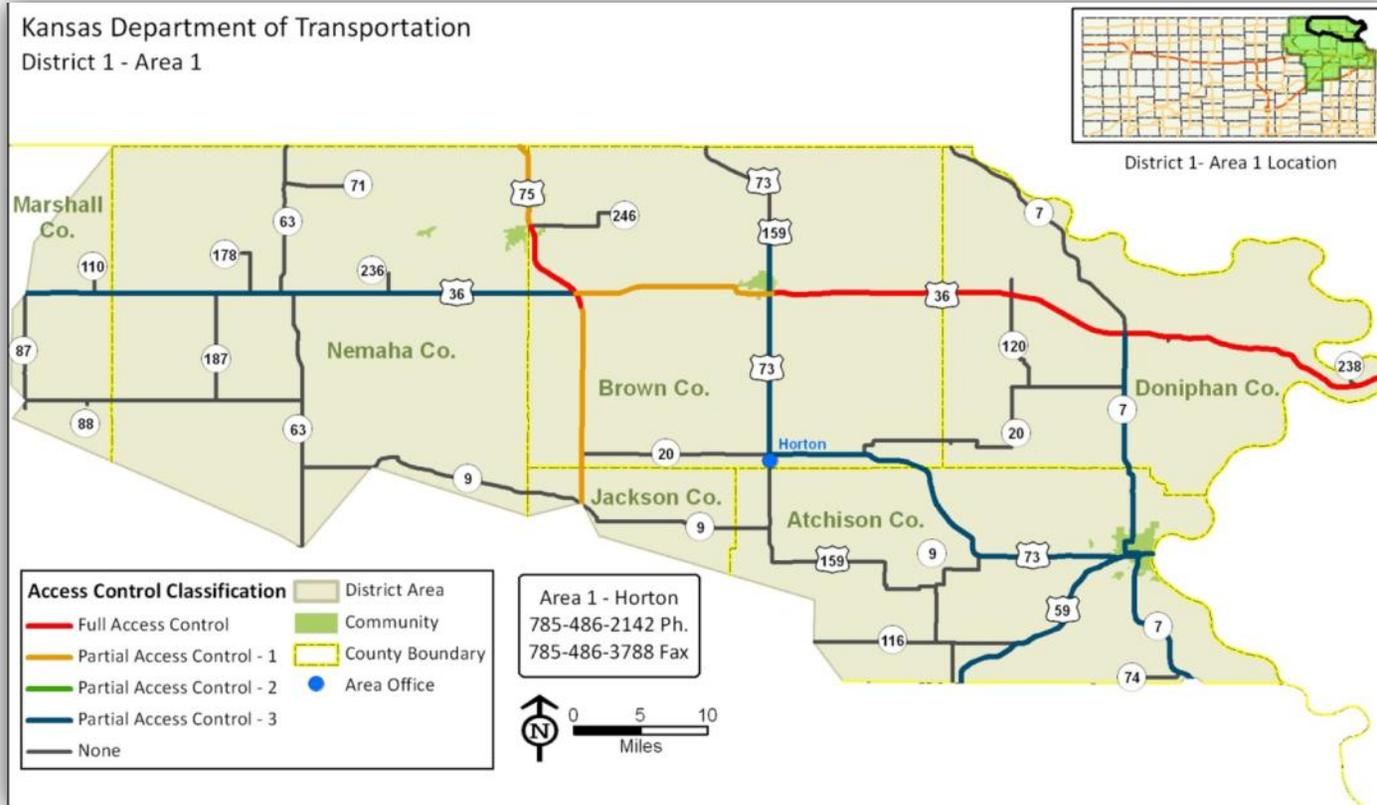
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| <p>District 5 – South Central Kansas</p> <p>District Engineer - Hutchinson 500 N. Hendricks P.O. Box 769 Hutchinson, Kansas 67504-0769 Phone: (620) 663-3361</p> | <p>Area 3 – Winfield 7093 US 160 / PO Box 639 Winfiled KS, 67156 (620) 221-3370 Phone (620) 221-1633 Fax D5WinfieldPermits@ksdot.org</p> | <p>Area 4 – Great Bend 204 E Hwy 56 / PO Box 86 Great Bend, KS 67530 (620) 793-5408 Phone (620) 793-6216 Fax D5GreatBendPermits@ksdot.org</p> |
| | <p>Area 5 – Wichita 3200 E 45th St N Wichita, KS 67220 (316) 744-1271 Phone (316) 744-3064 Fax D5WichitaPermits@ksdot.org</p> | |
| <p>District 6 – Southwest Kansas</p> <p>District Engineer – Garden City 121 N. Campus Drive Garden City, Kansas 67846-6603 Phone: (620) 276-3241</p> | <p>Area 1 – Syracuse 910 N Main / PO Box 1417 Syracuse, KS 67878 (620) 384-7821 Phone (620) 384-7687 Fax D6SyracusePermits@ksdot.org</p> | <p>Area 2 – Ulysses 325 W Oklahoma Ter Ulysses, KS 67880 (620) 356-1531 Phone (620) 356-4361 Fax D6UlyssesPermits@ksdot.org</p> |
| | <p>Area 3 – Dodge City 11310 E Wyatt Earp Blvd Dodge City, KS 67801 (620) 227-6122 Phone (620) 227-2537 Fax D6DodgeCityPermits@ksdot.org</p> | |

8.4 District route access control designations

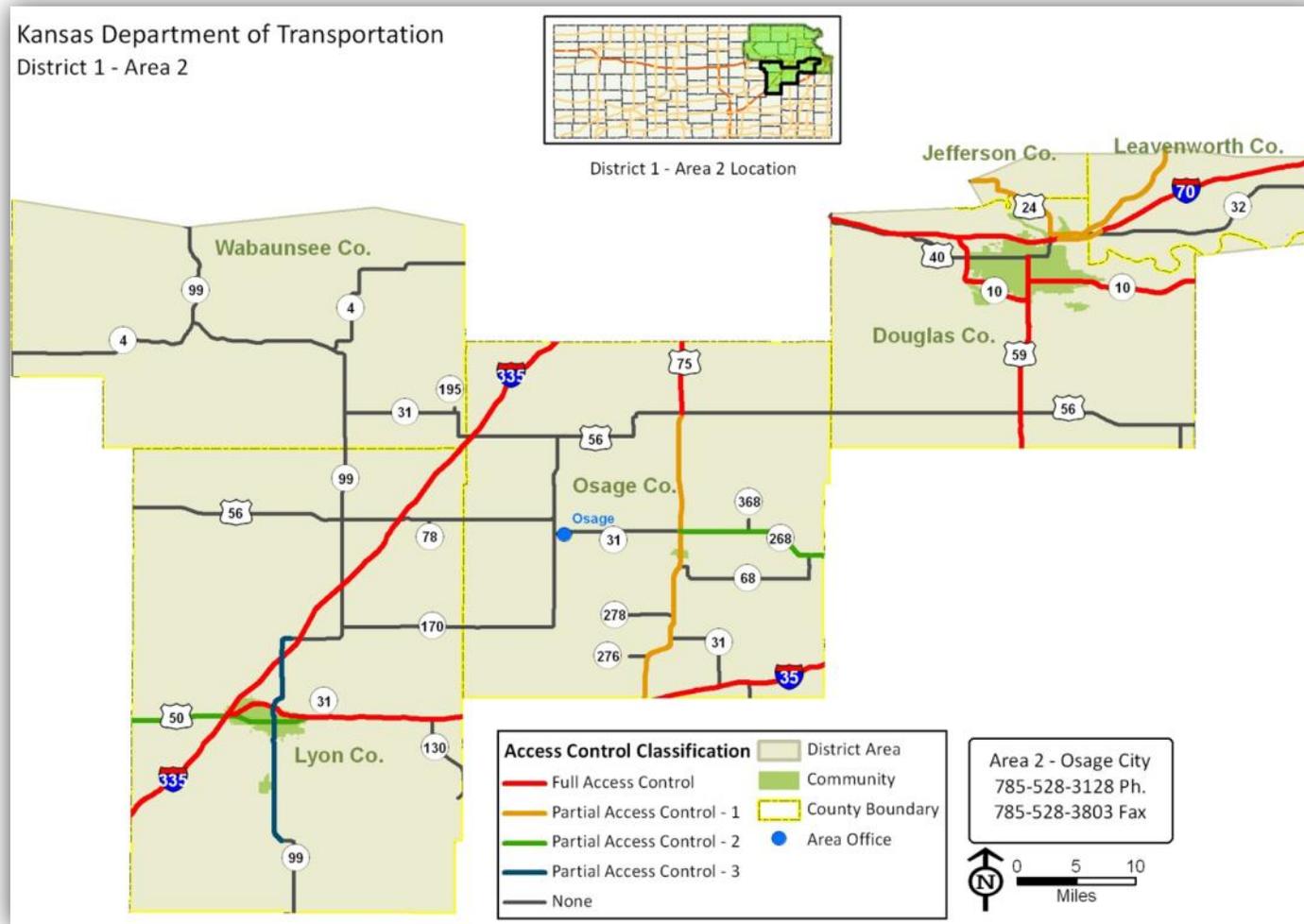
8.4.1 District 1



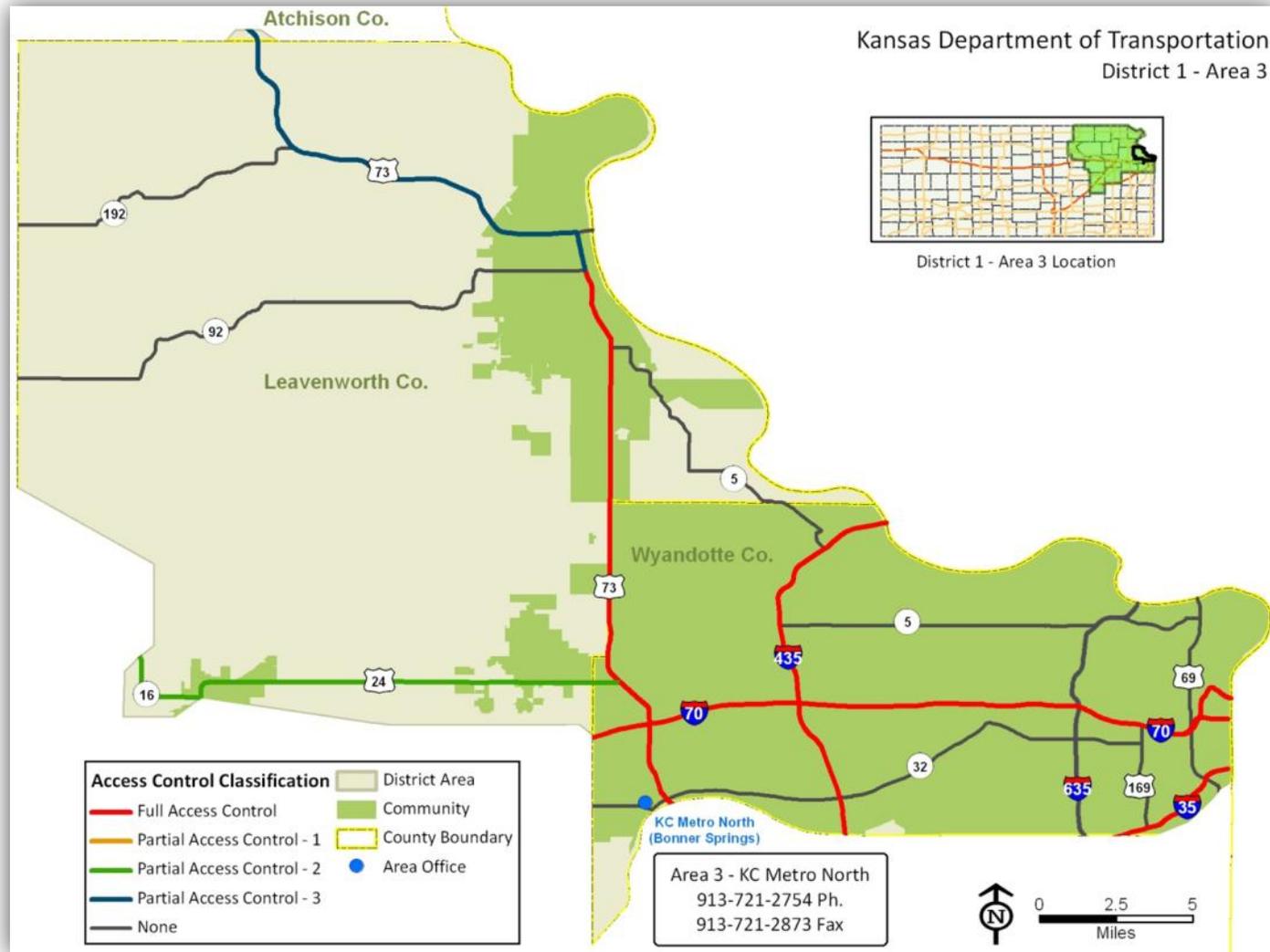
8.4.1.a District 1 – Area 1



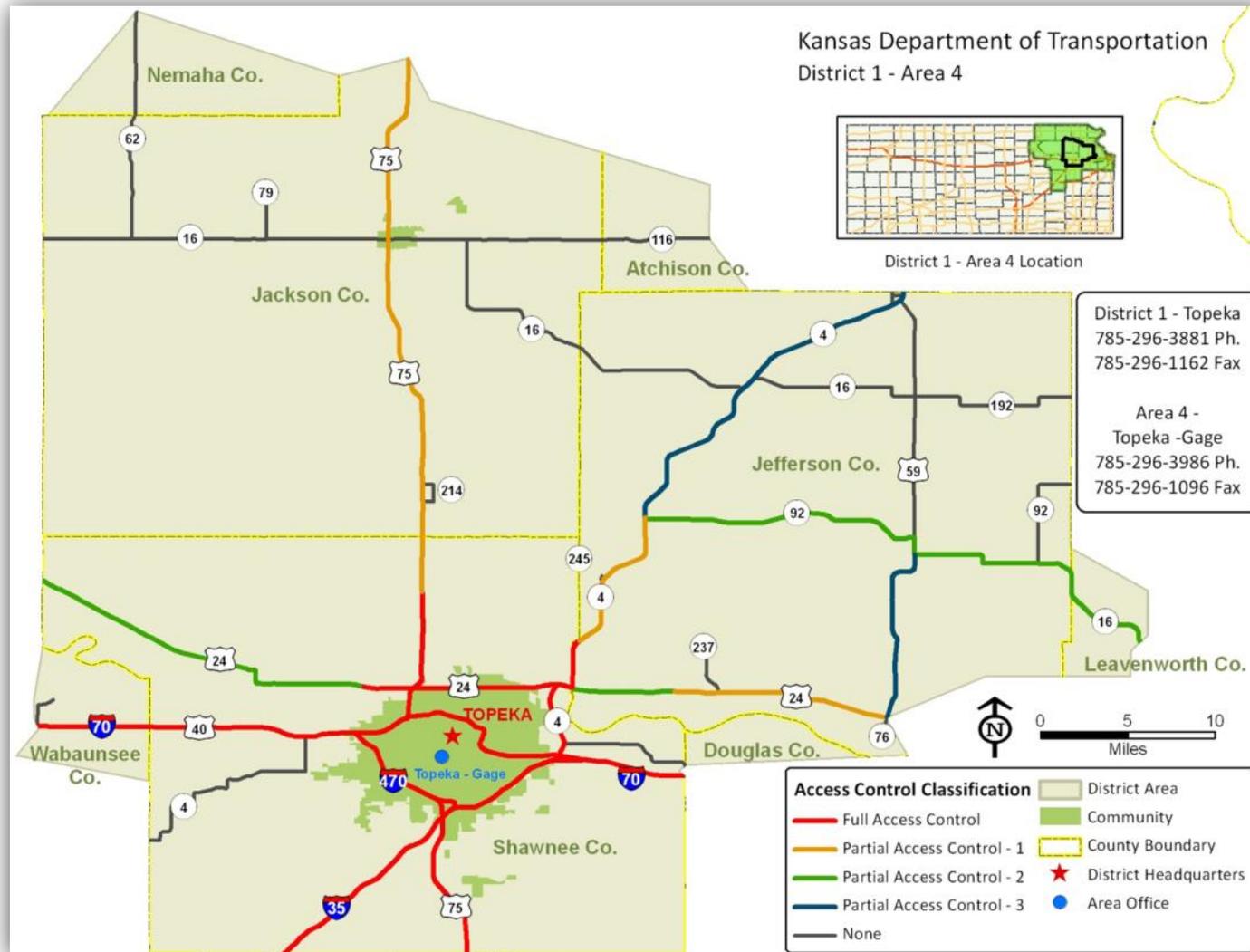
8.4.1.b District 1 – Area 2



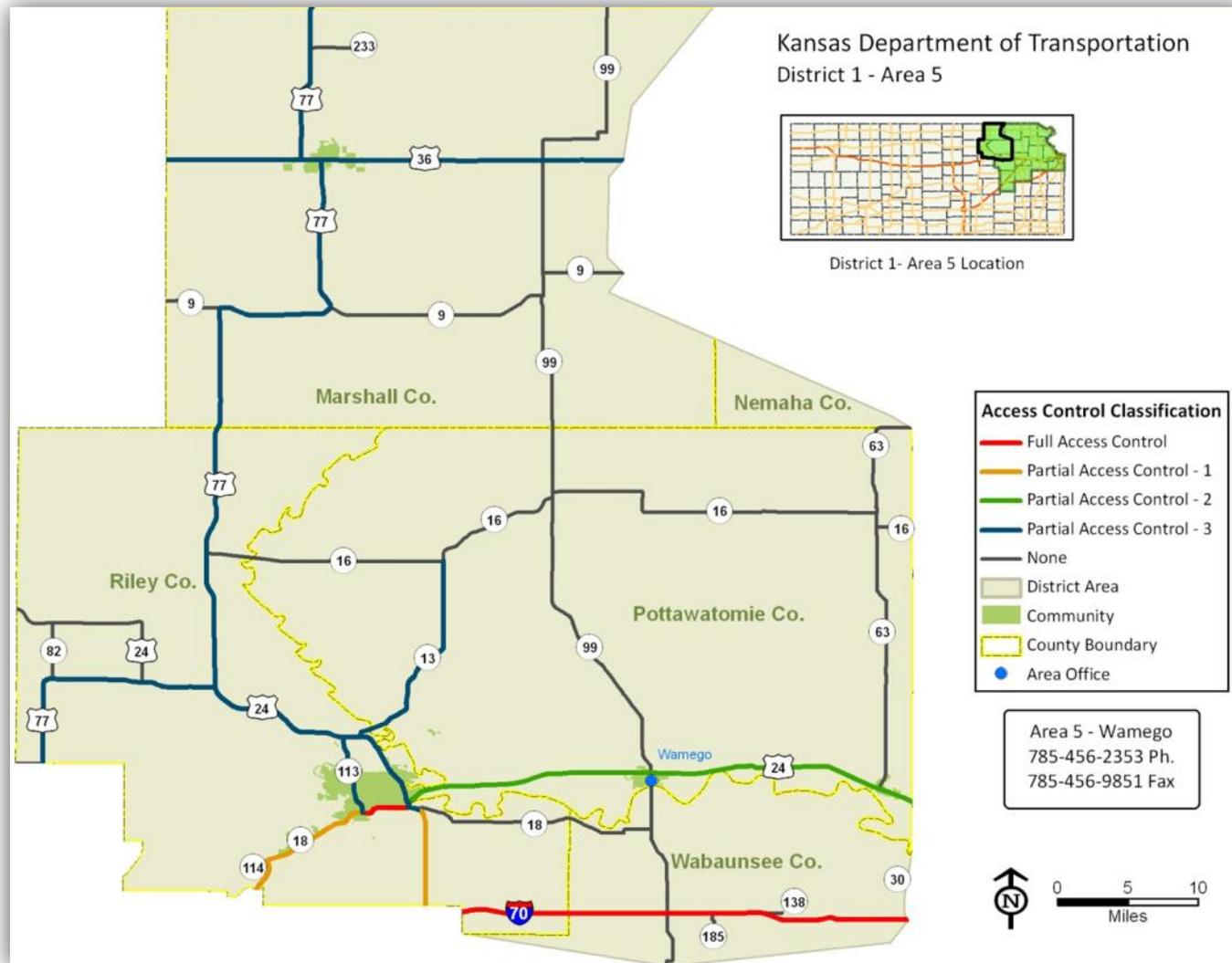
8.4.1.c District 1 – Area 3



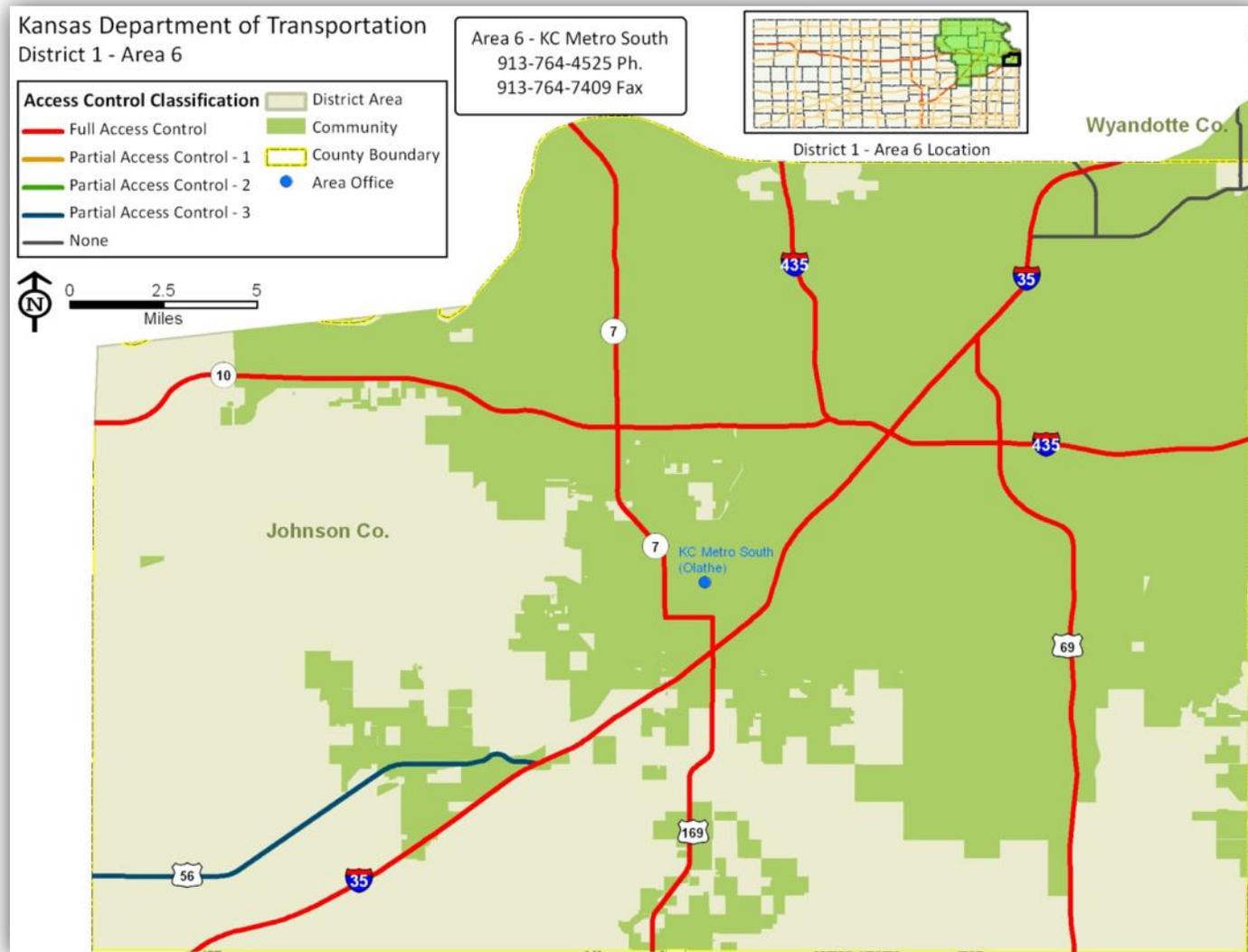
8.4.1.d District 1 – Area 4



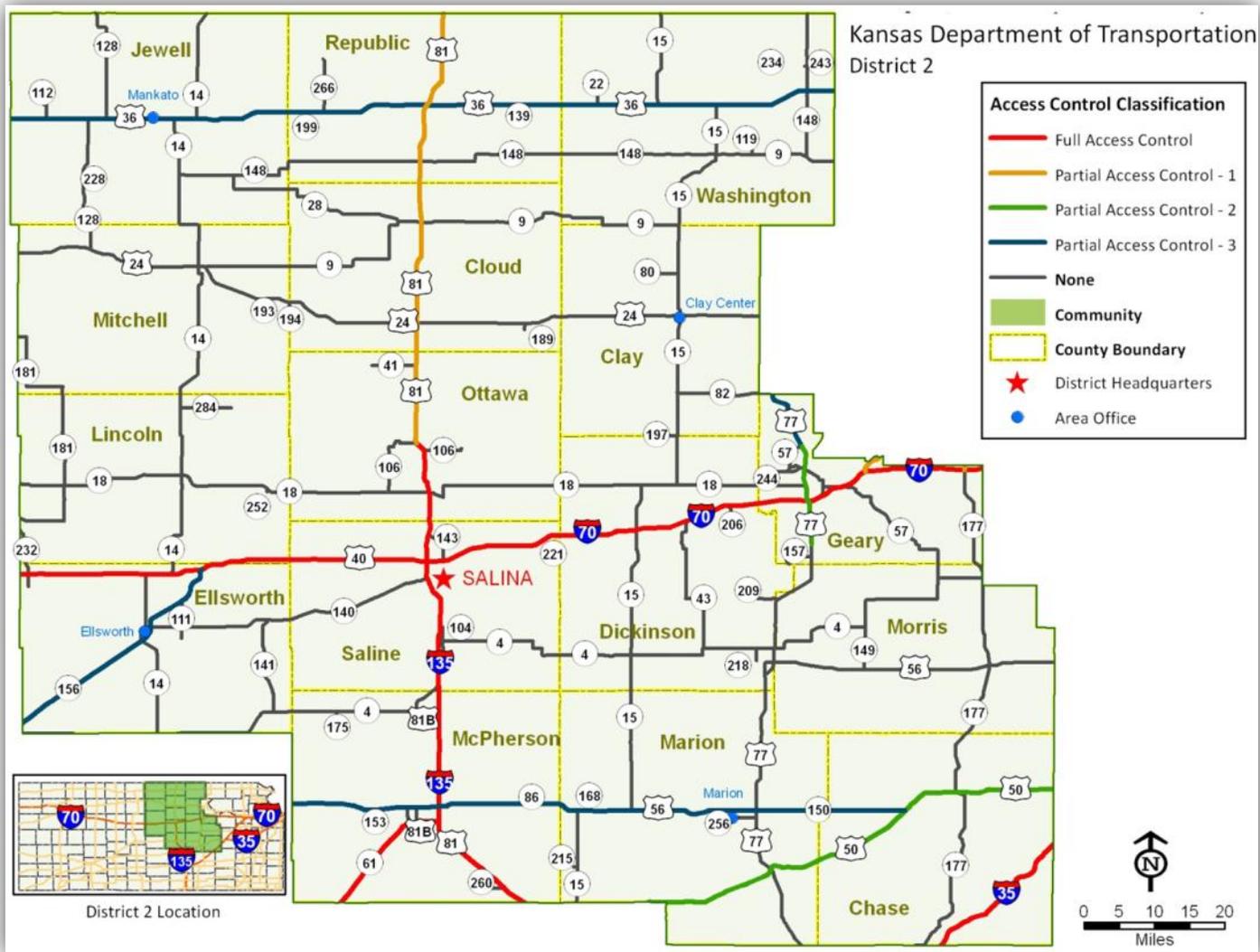
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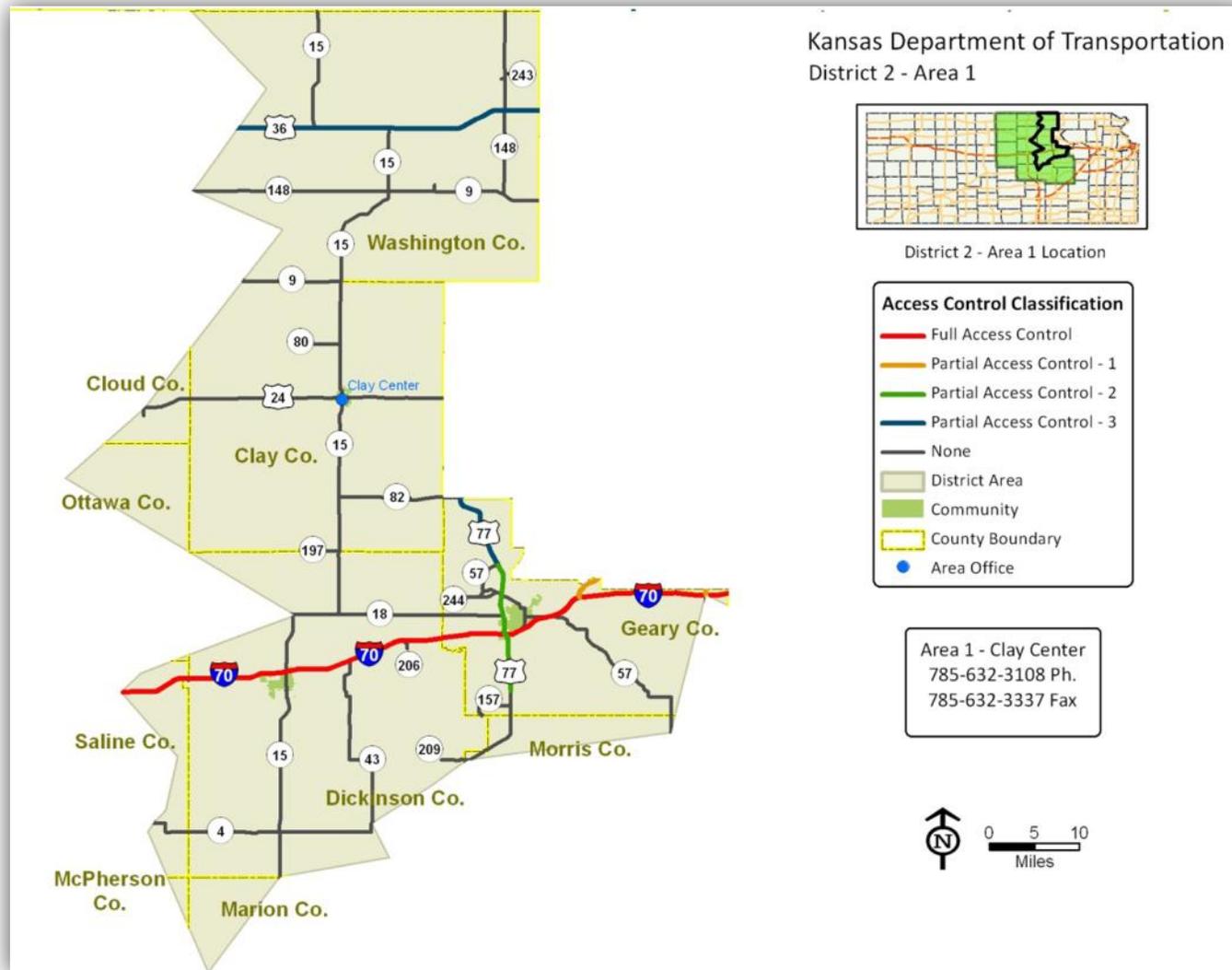
8.4.1.f District 1 – Area 6



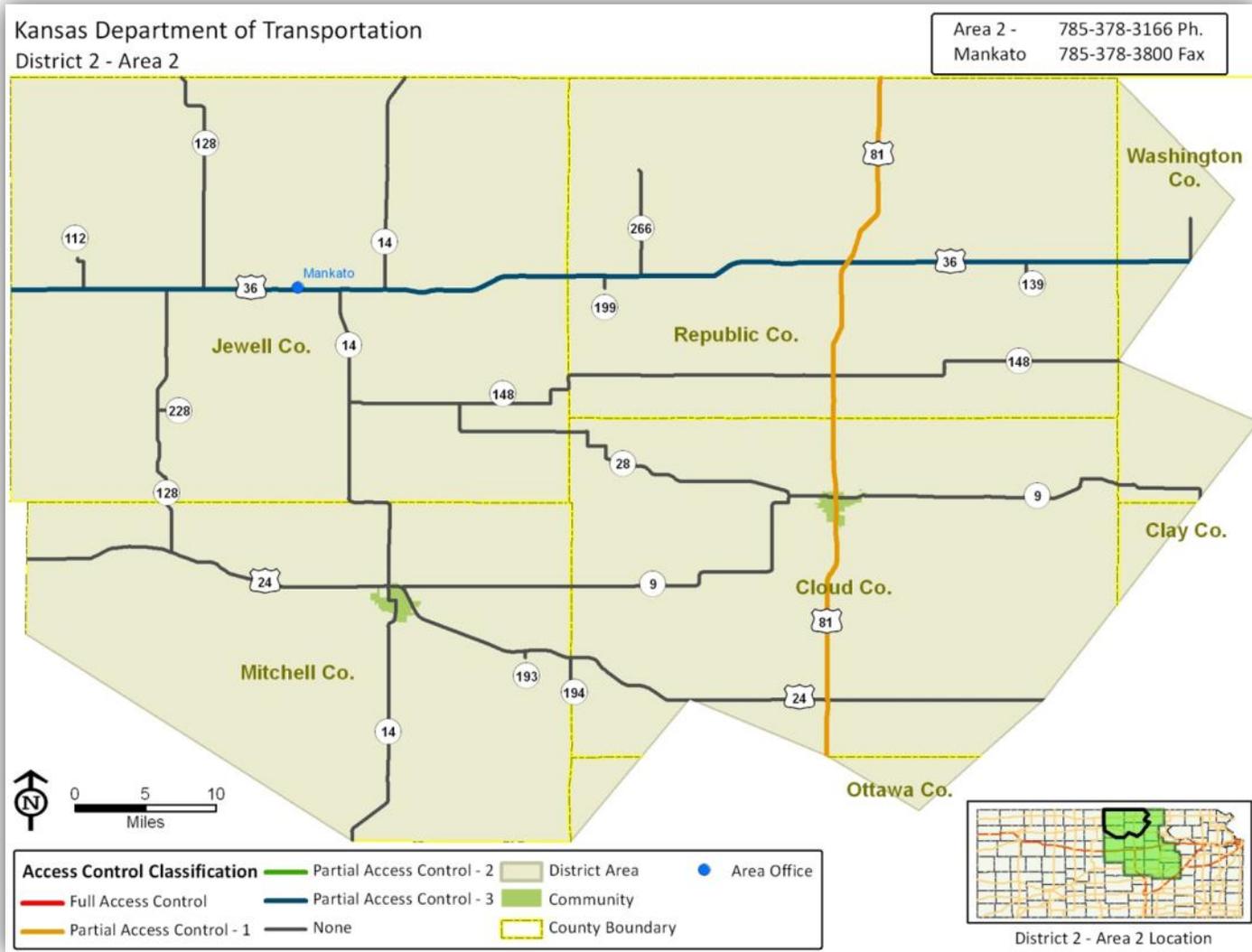
8.4.2 District 2



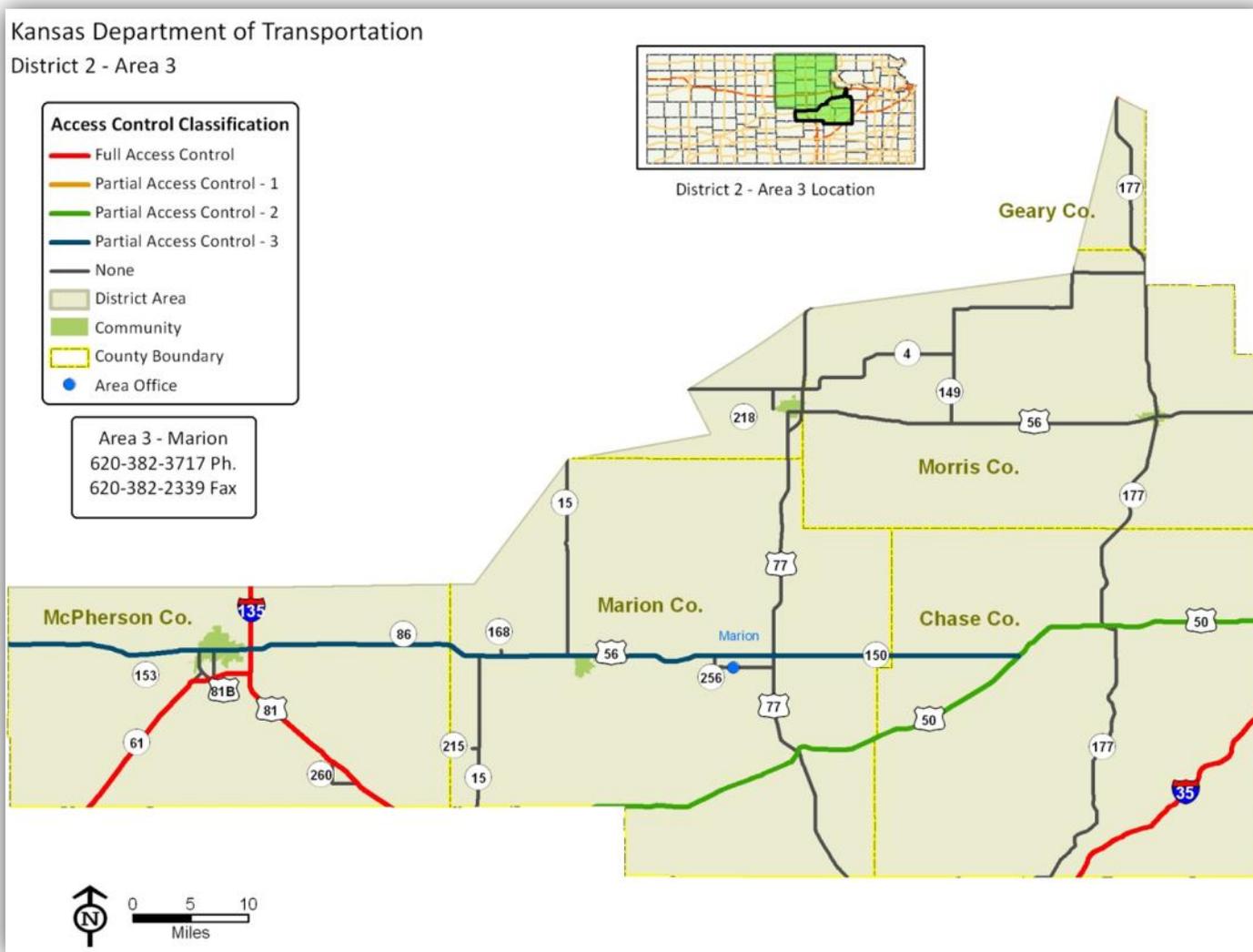
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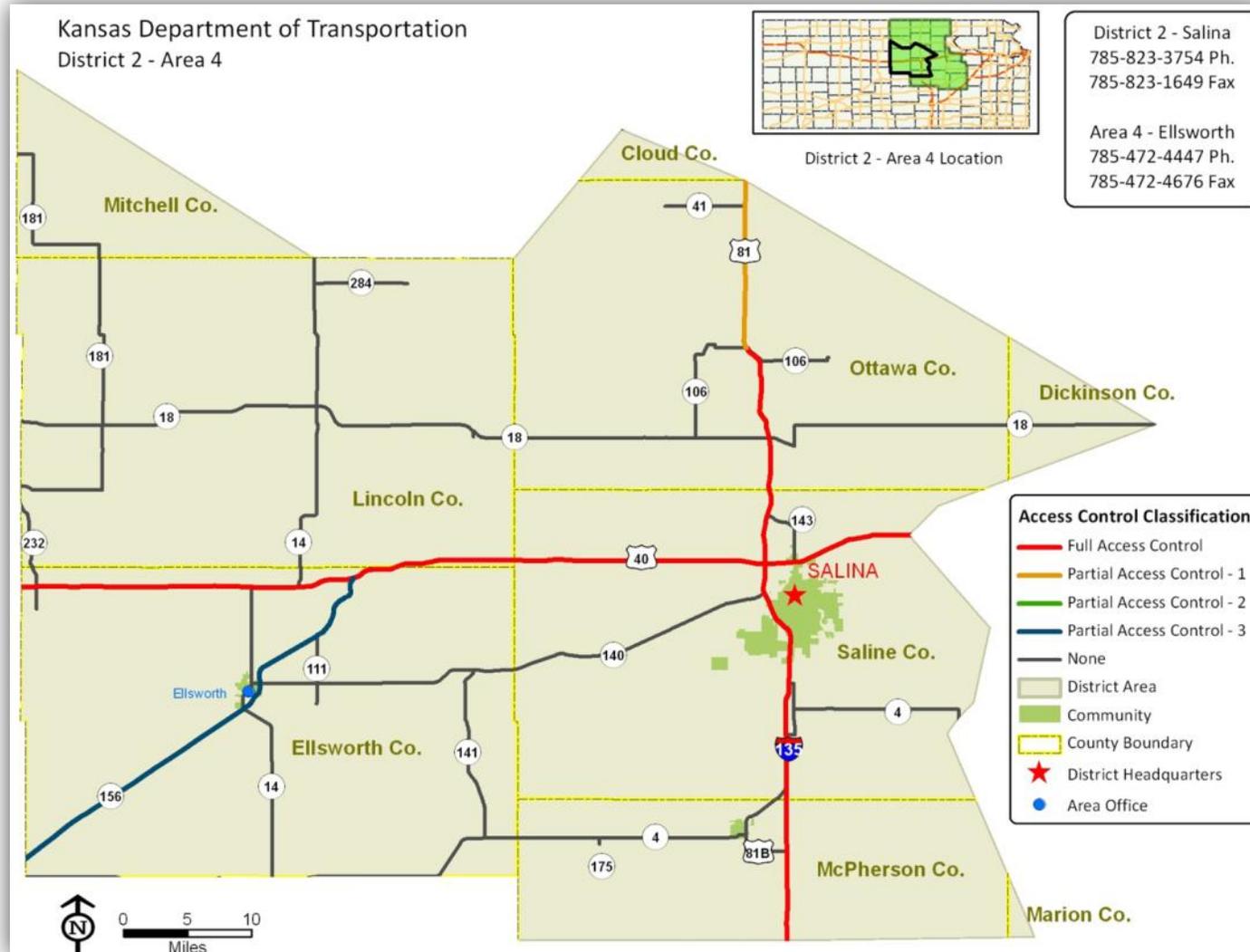
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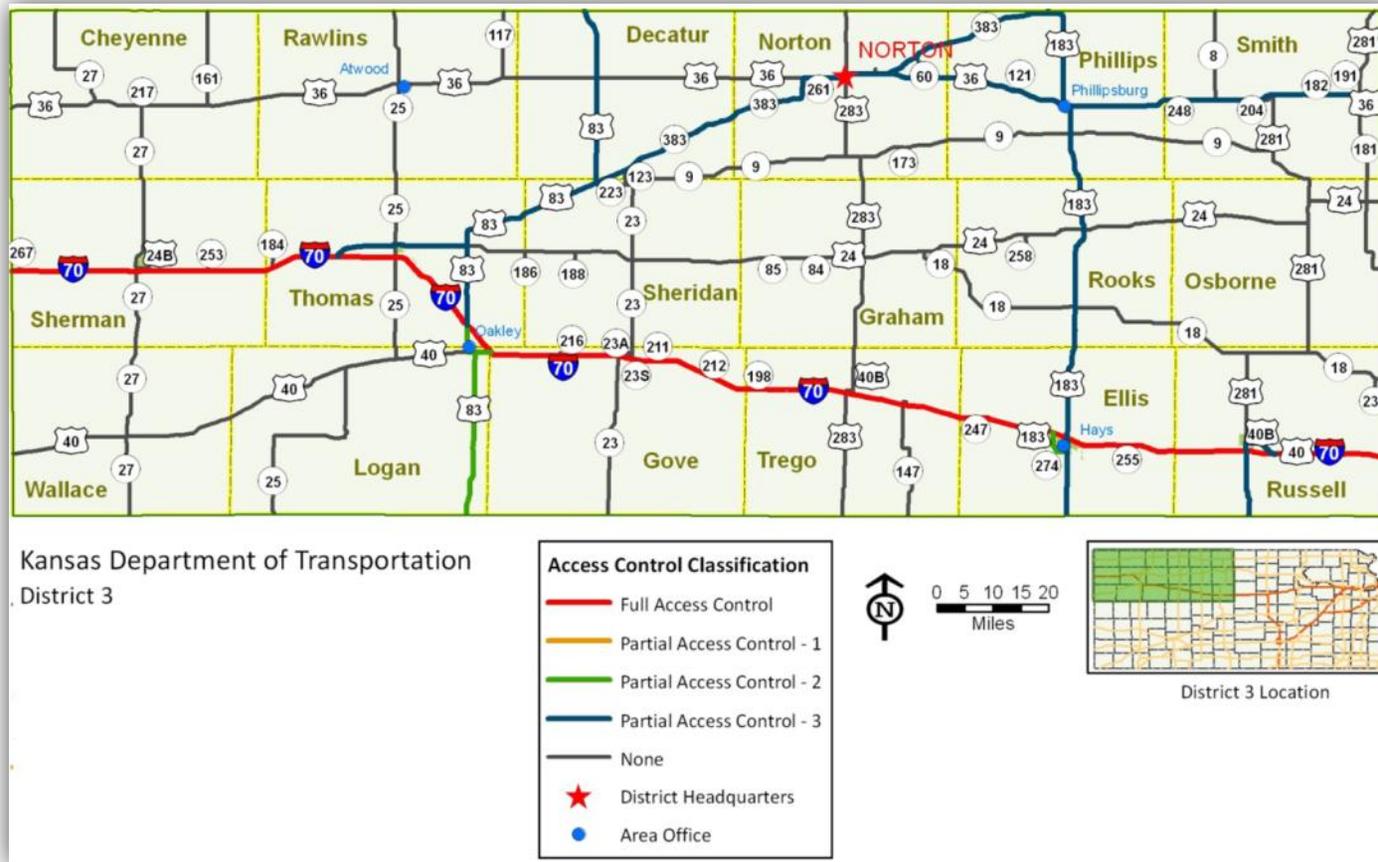
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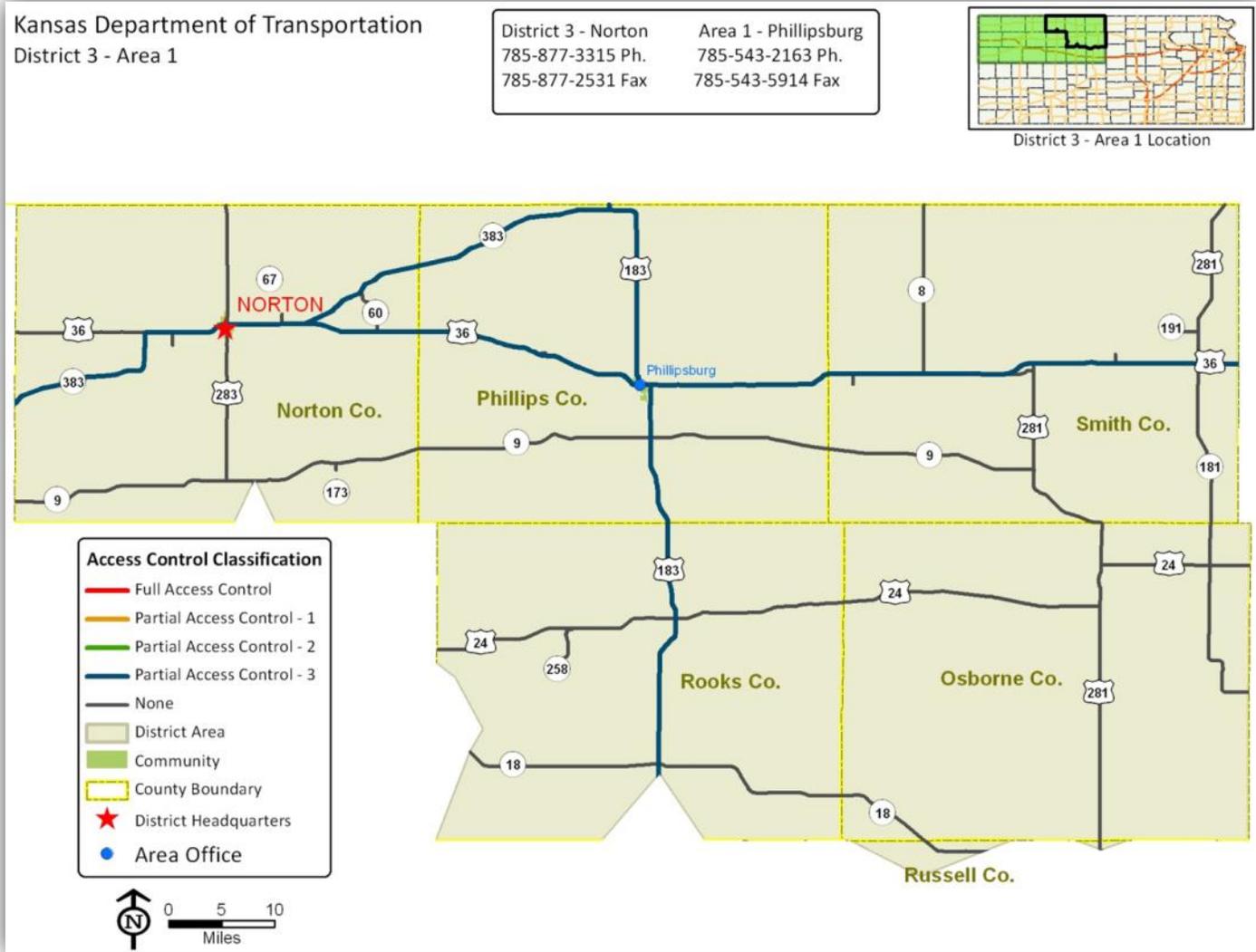
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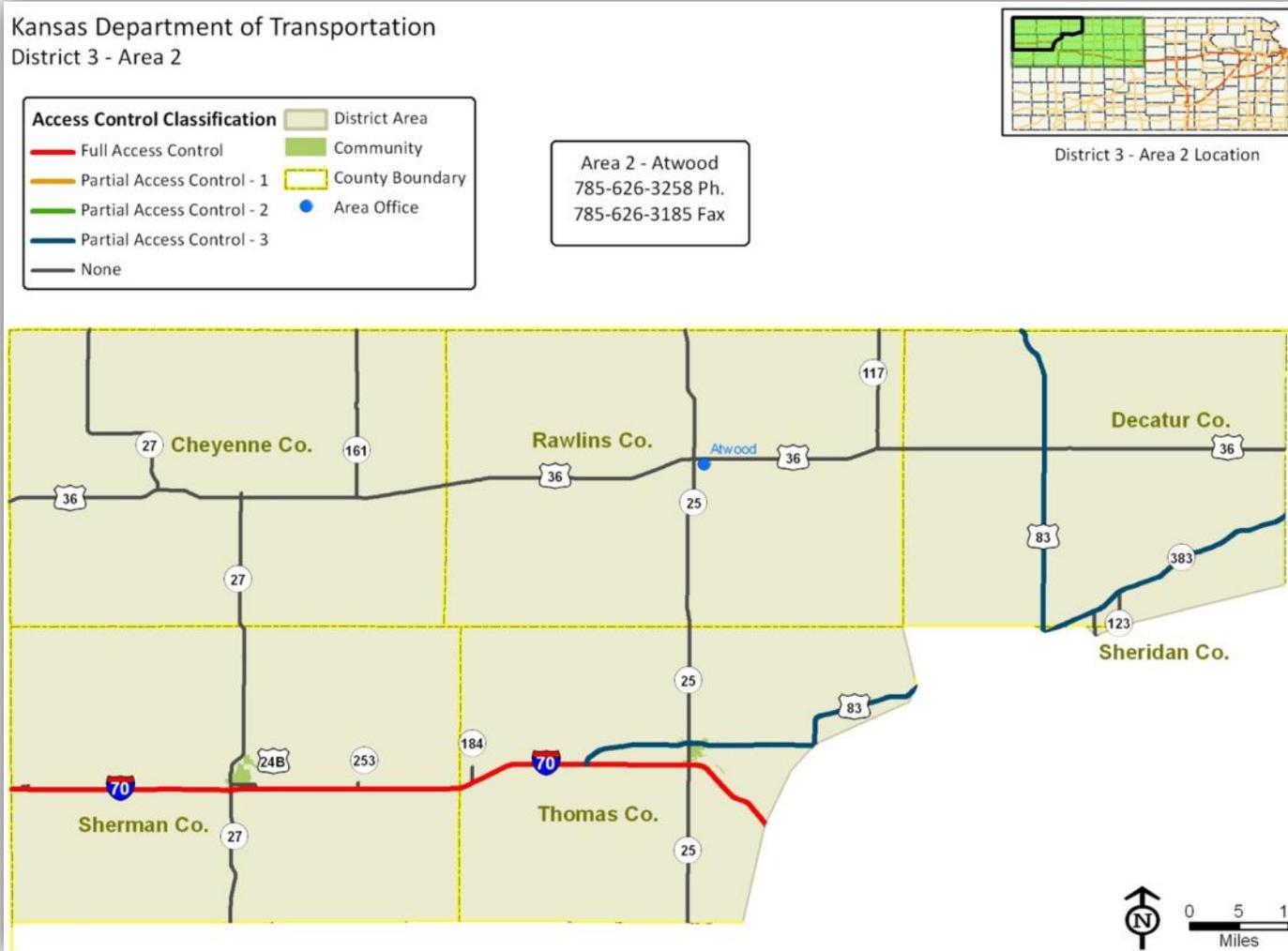
8.4.3 District 3



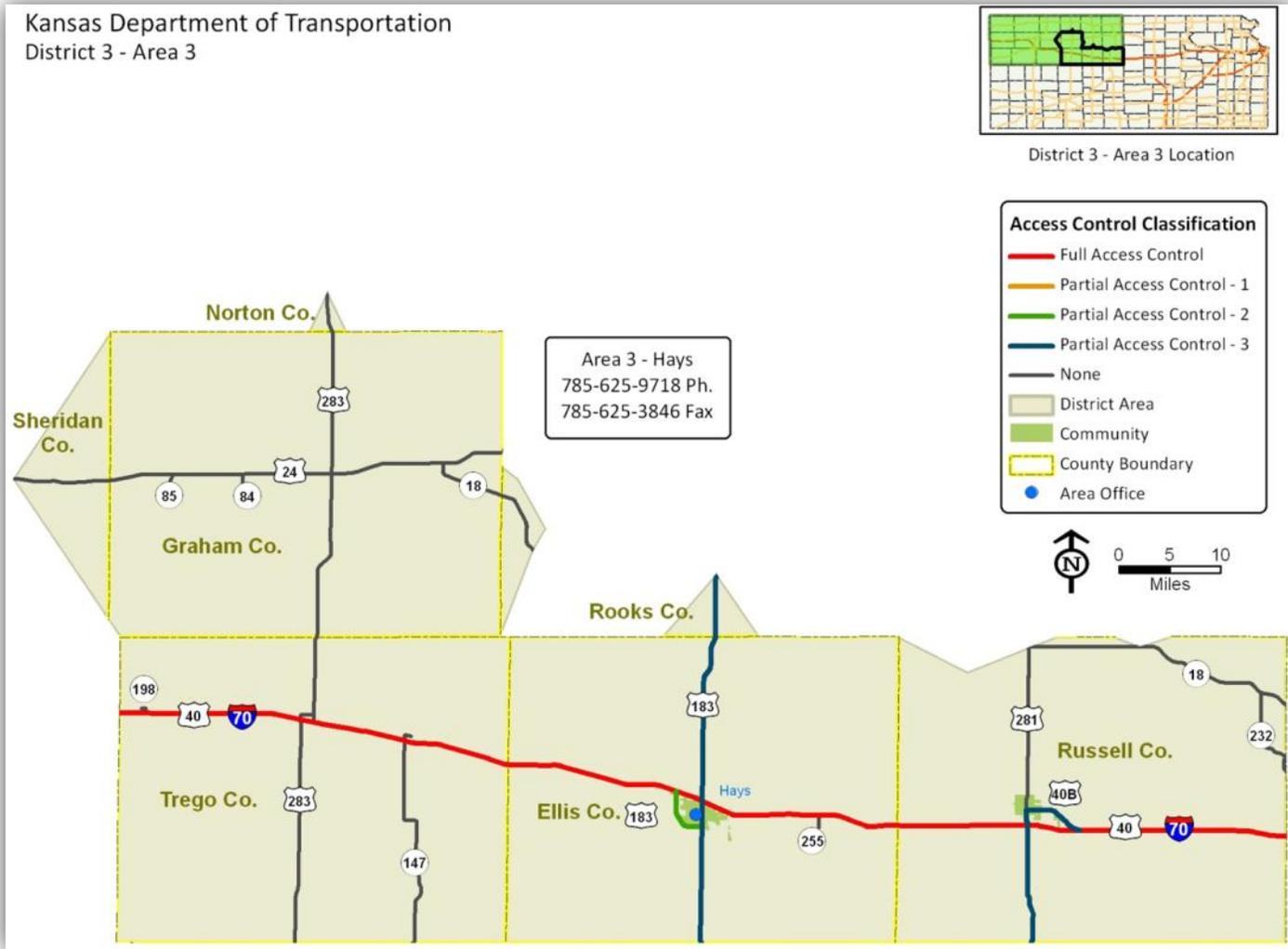
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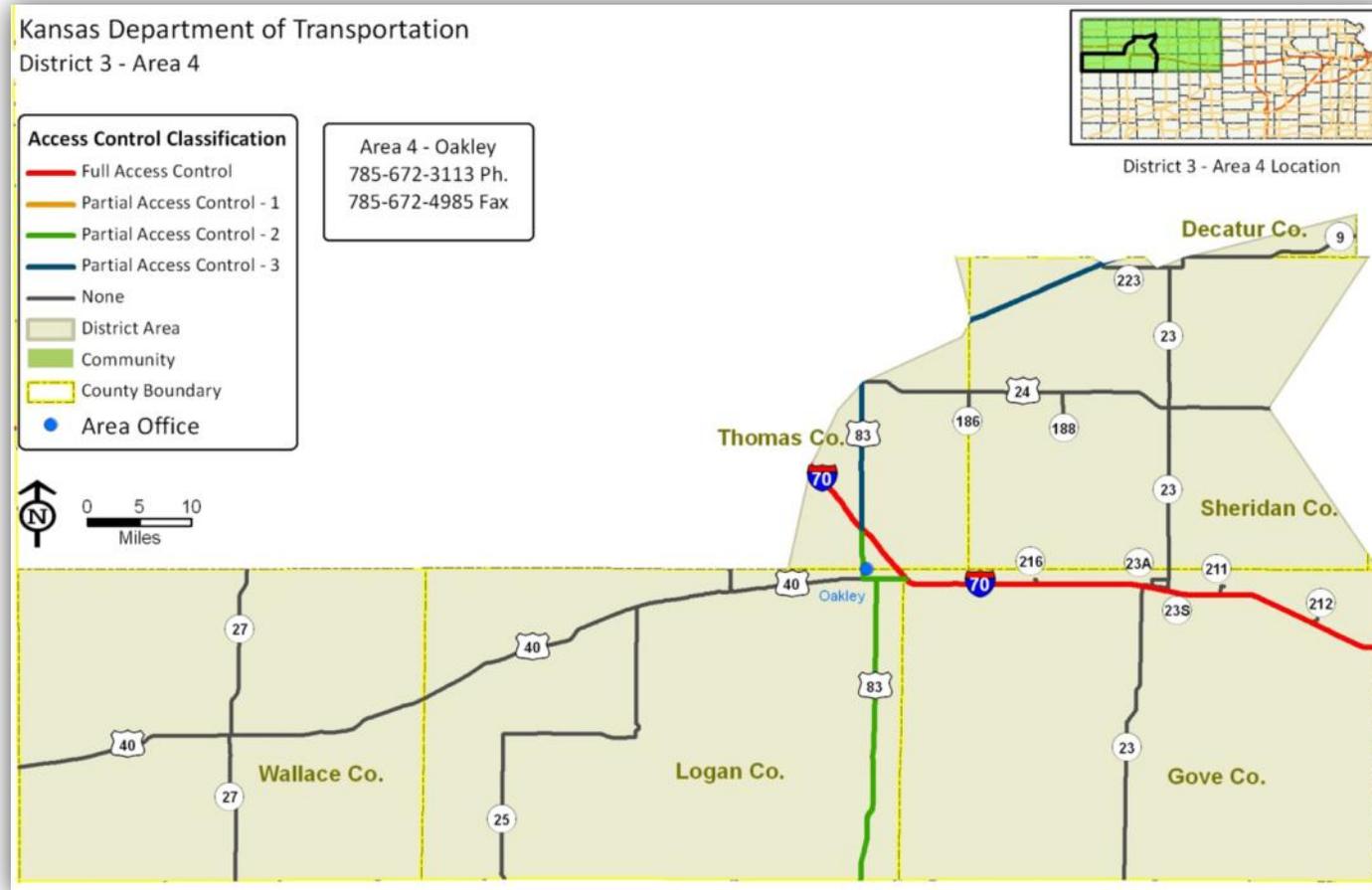
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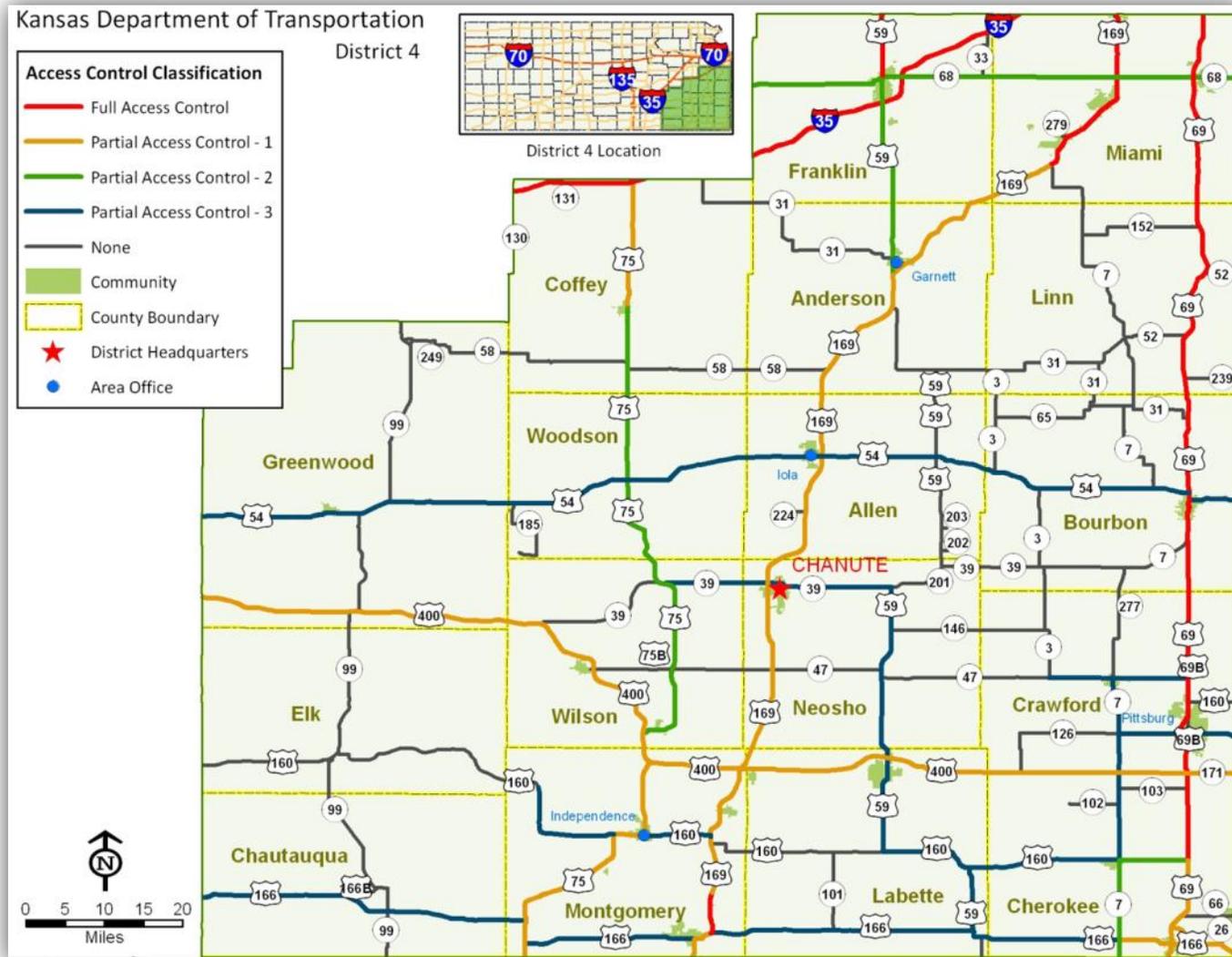
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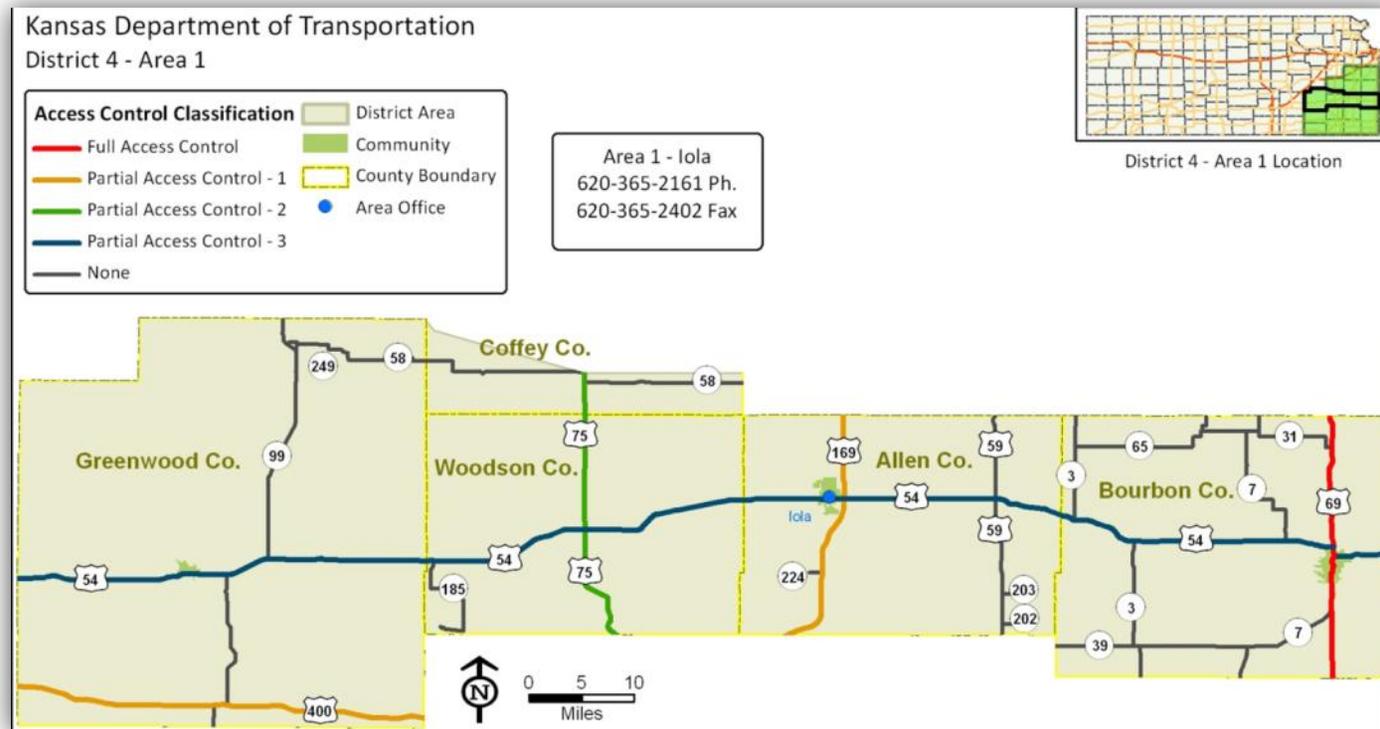
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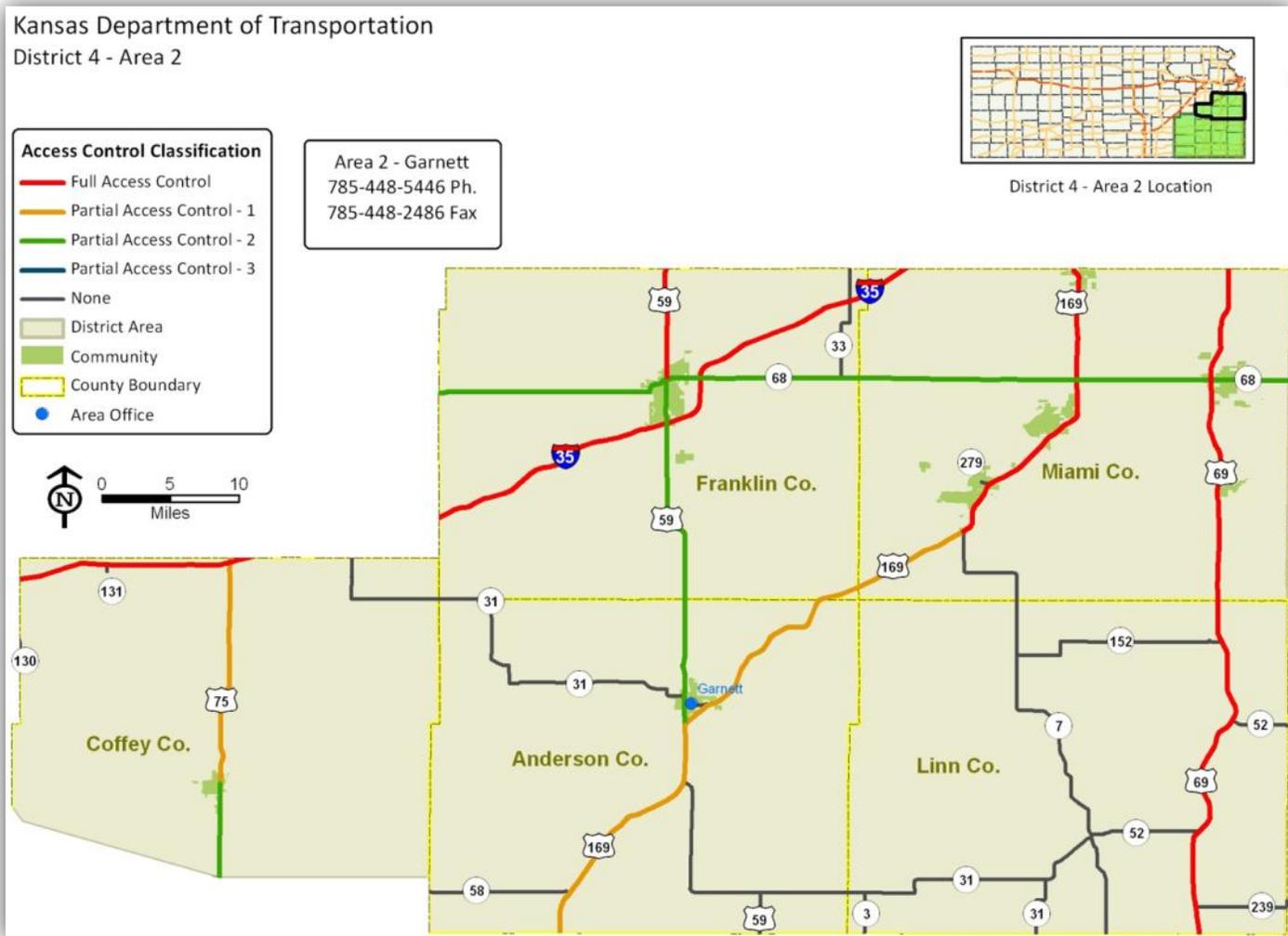
8.4.4 District 4



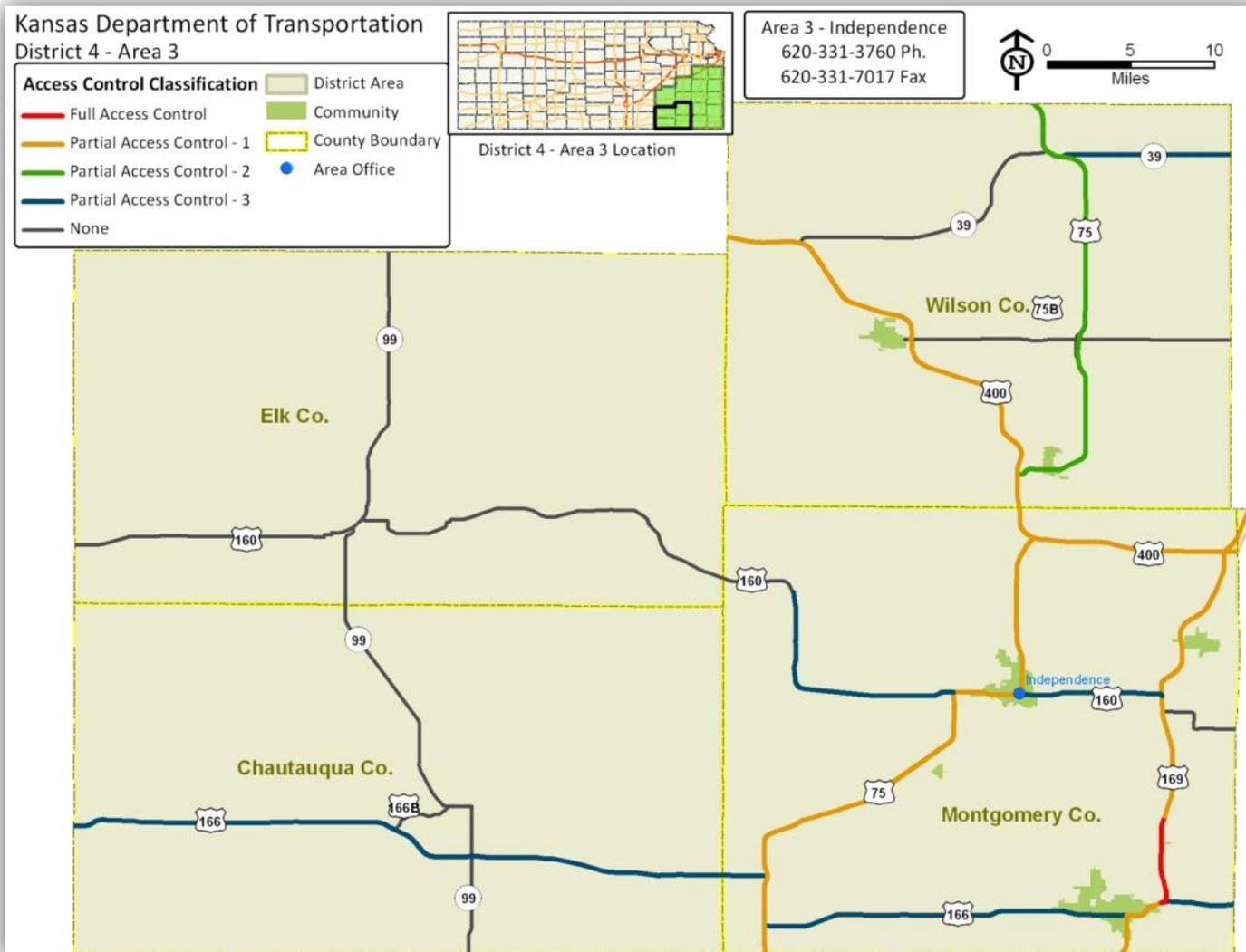
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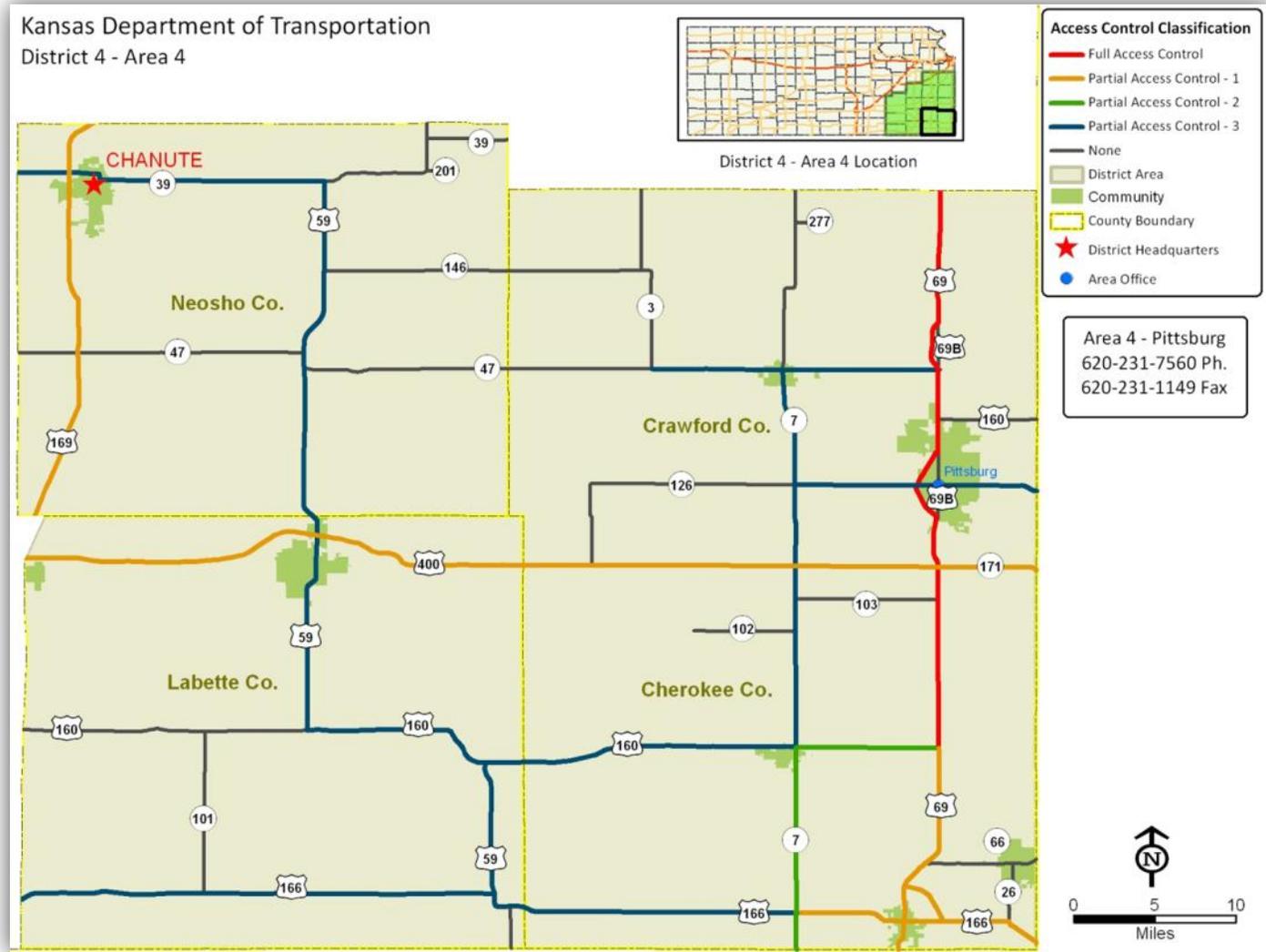
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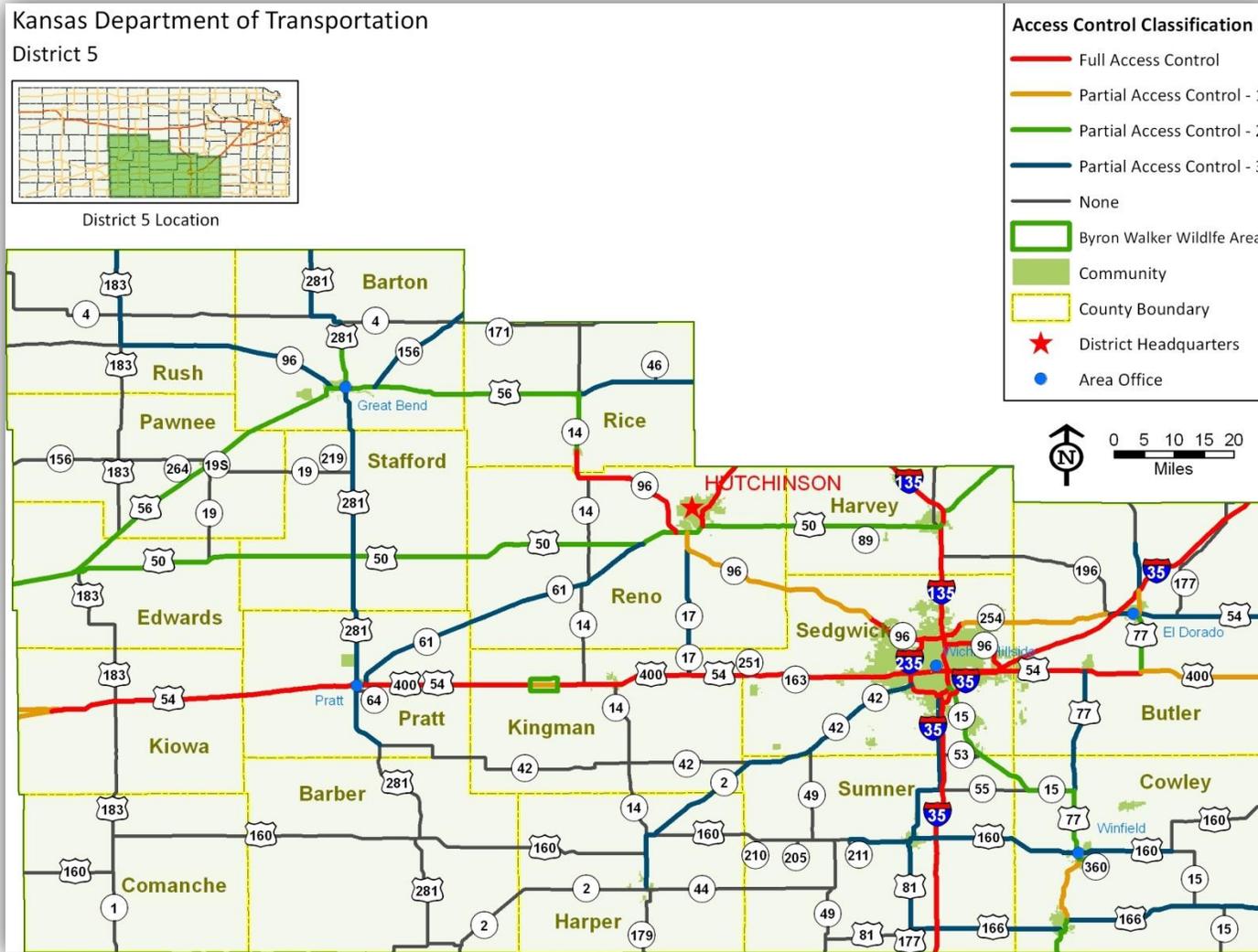
8.4.4.c District 4 – Area 3



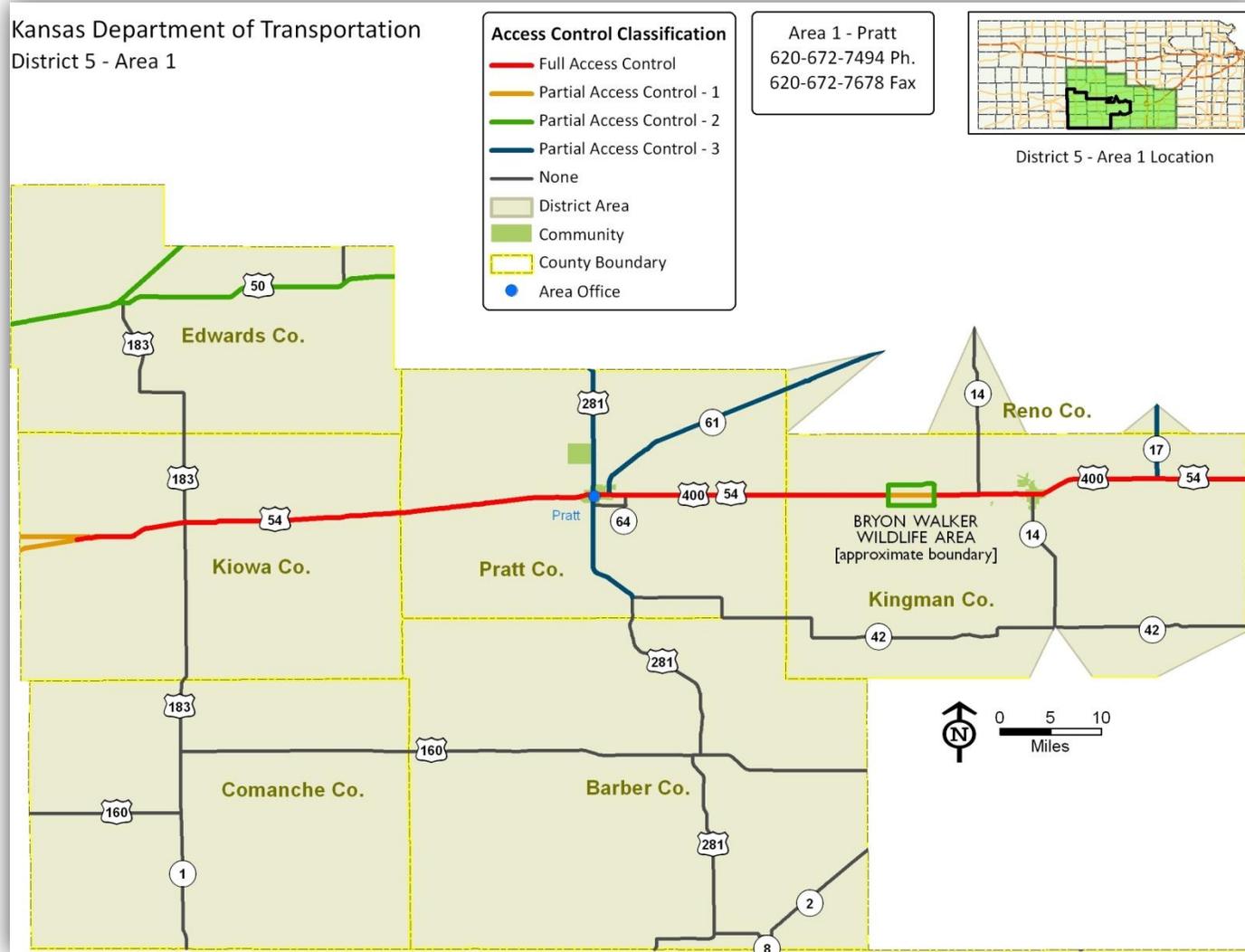
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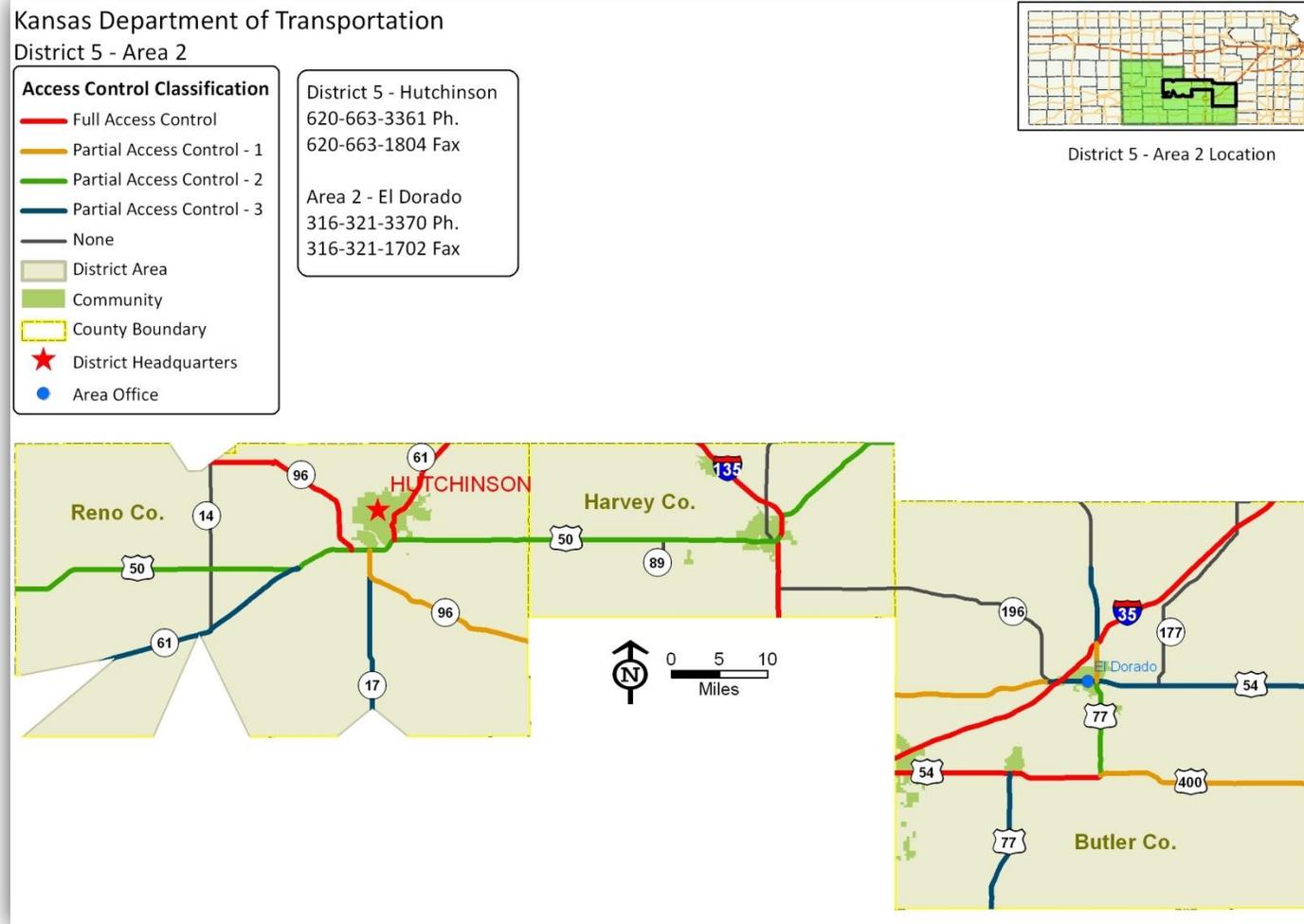
8.4.5 District 5



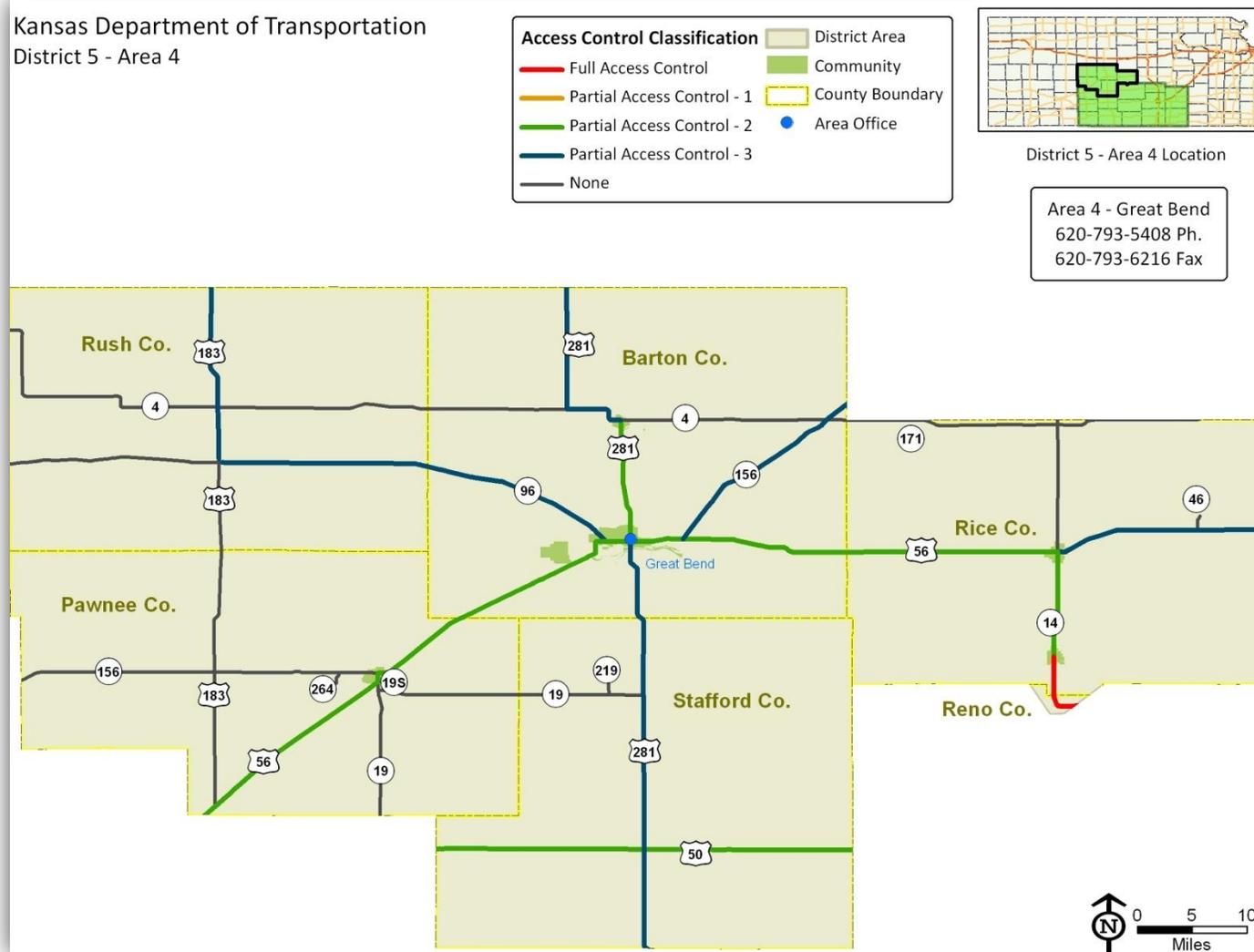
8.4.5.a District 5 – Area 1



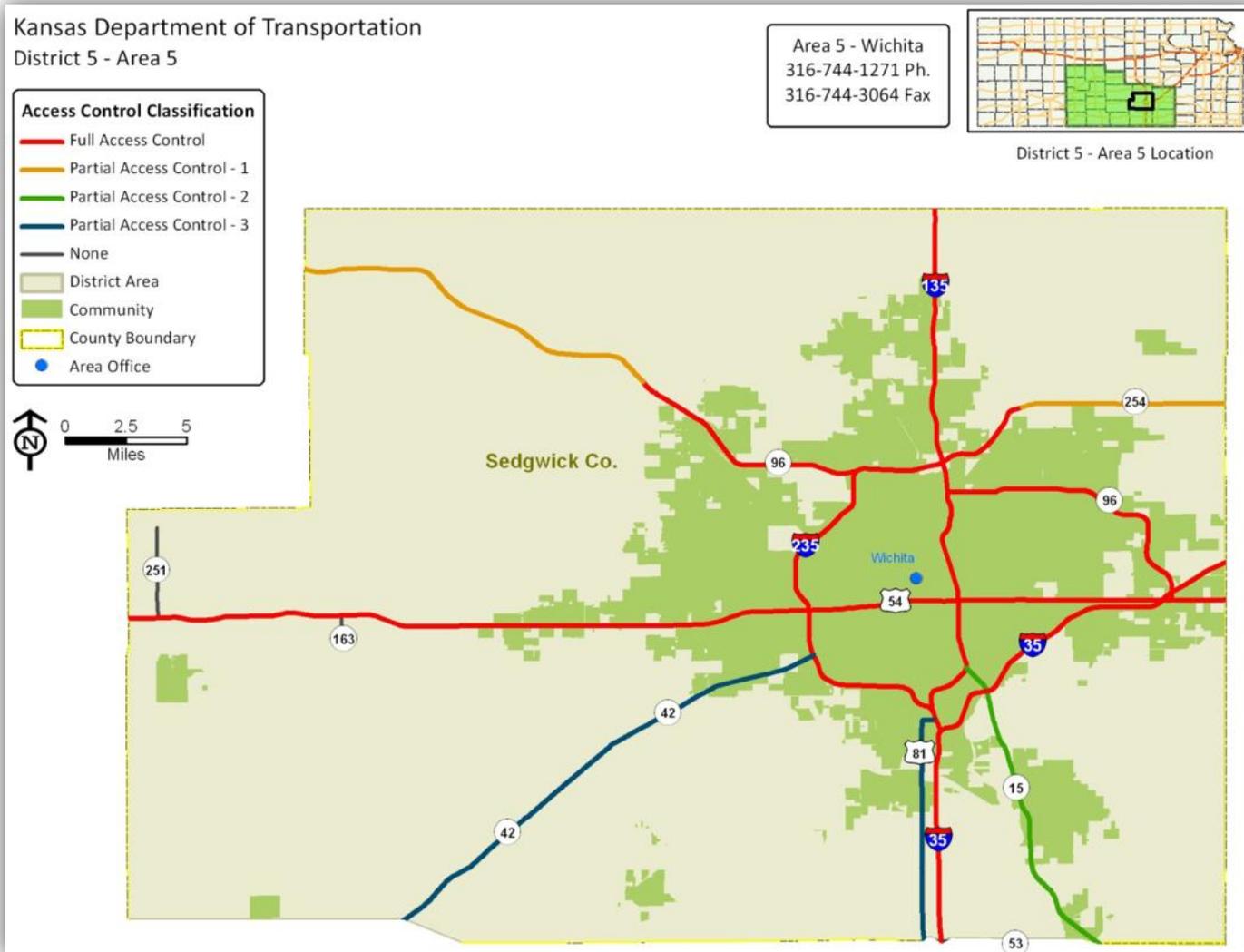
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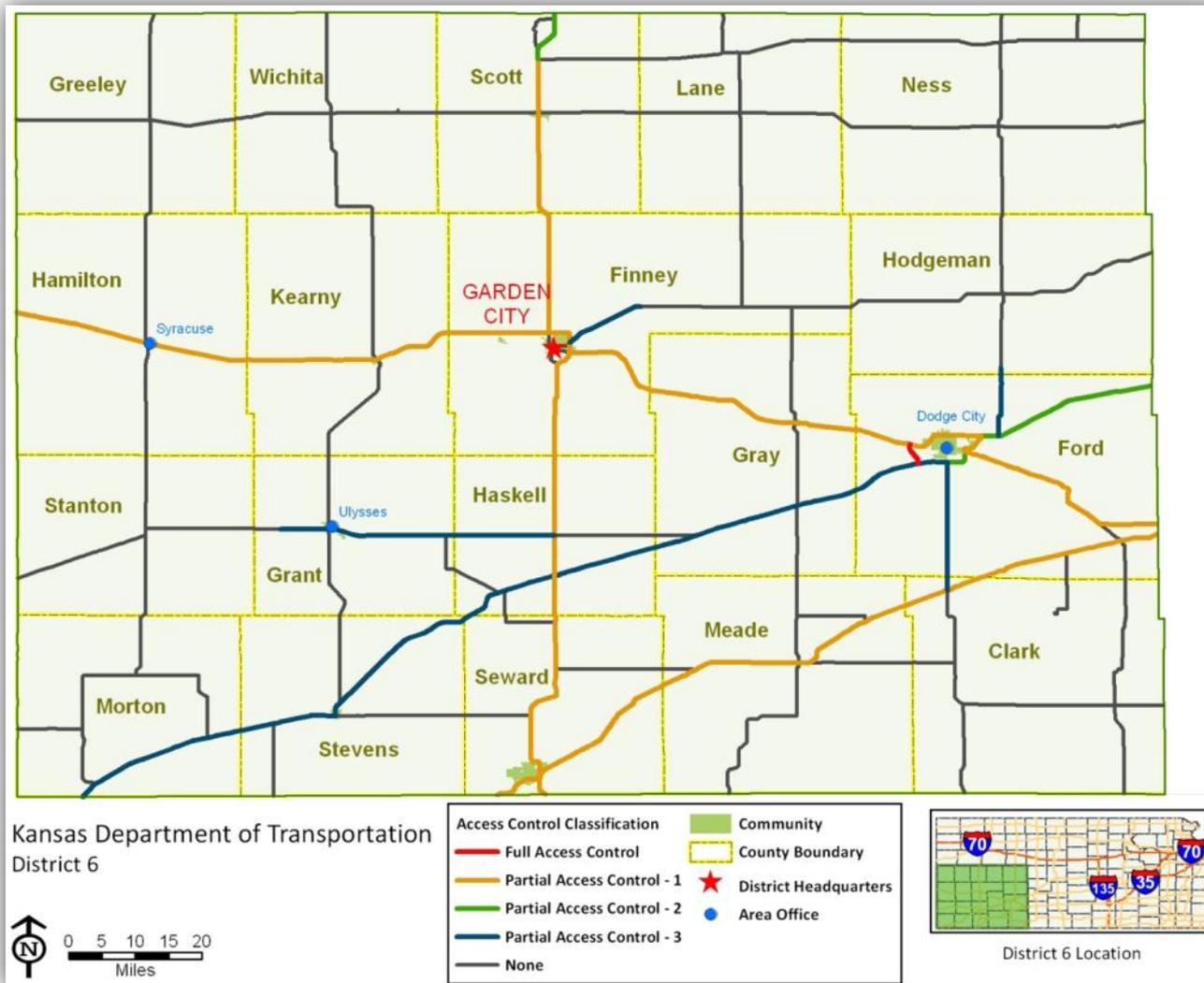
8.4.5.d District 5 – Area 4



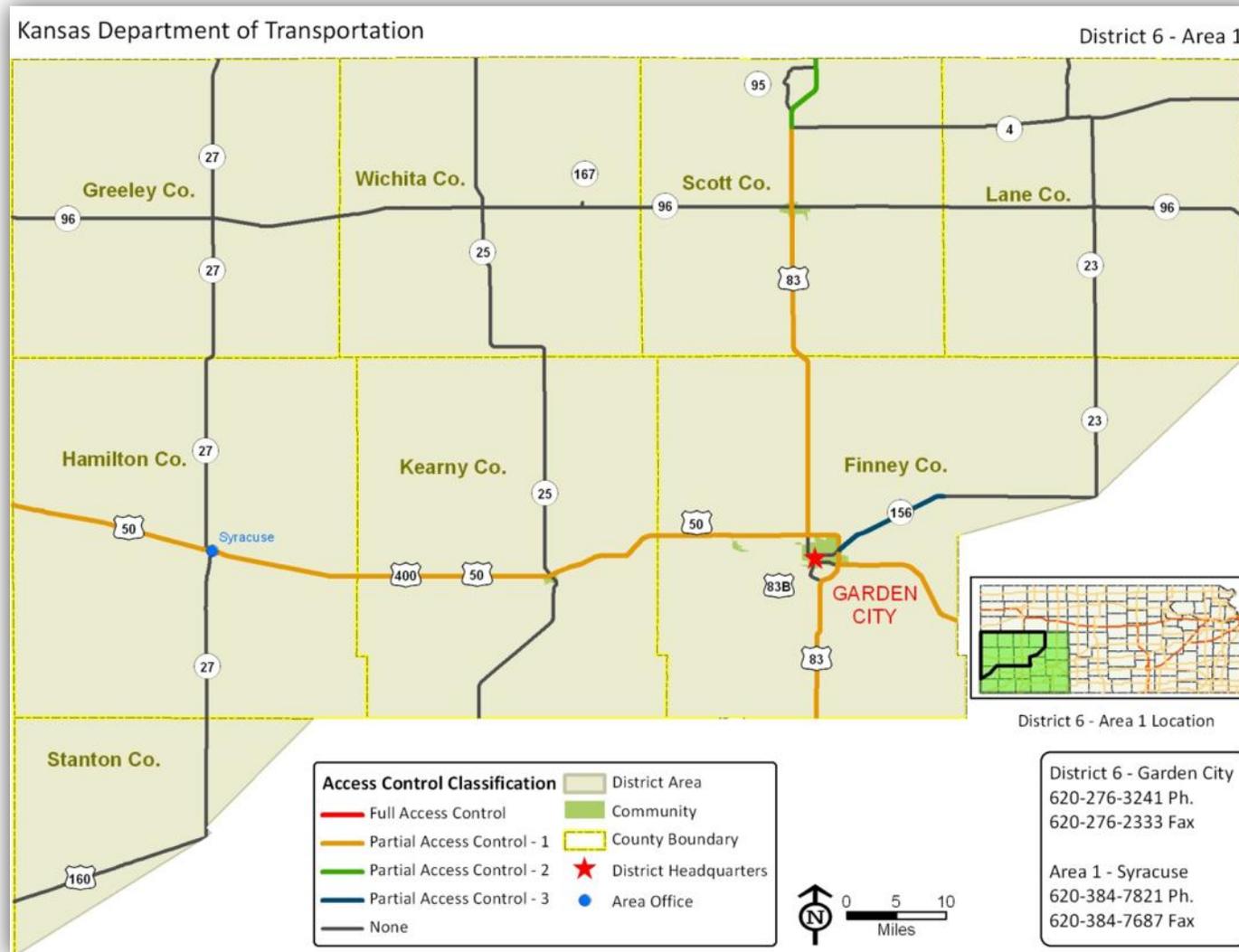
8.4.5.e District 5 – Area 5



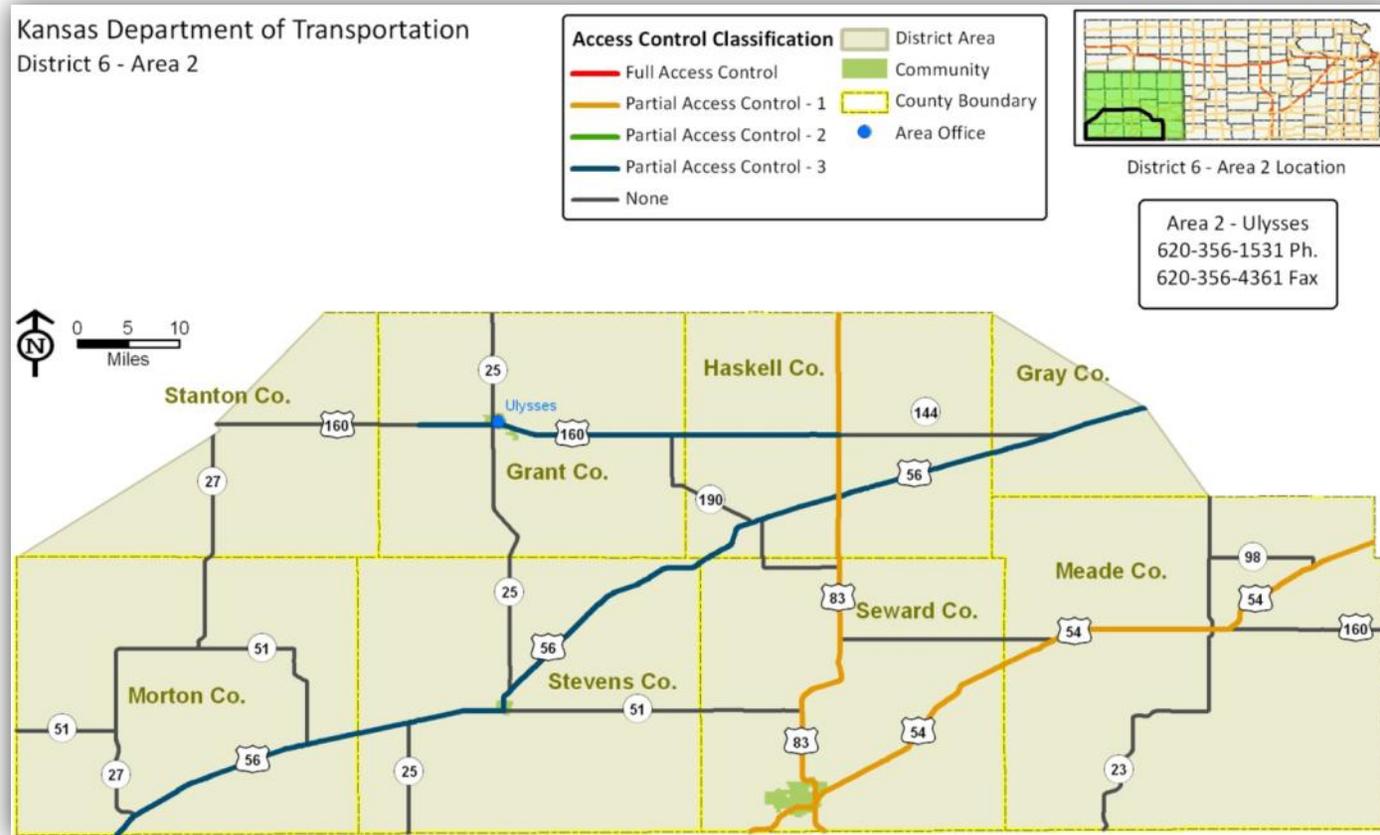
8.4.6 District 6



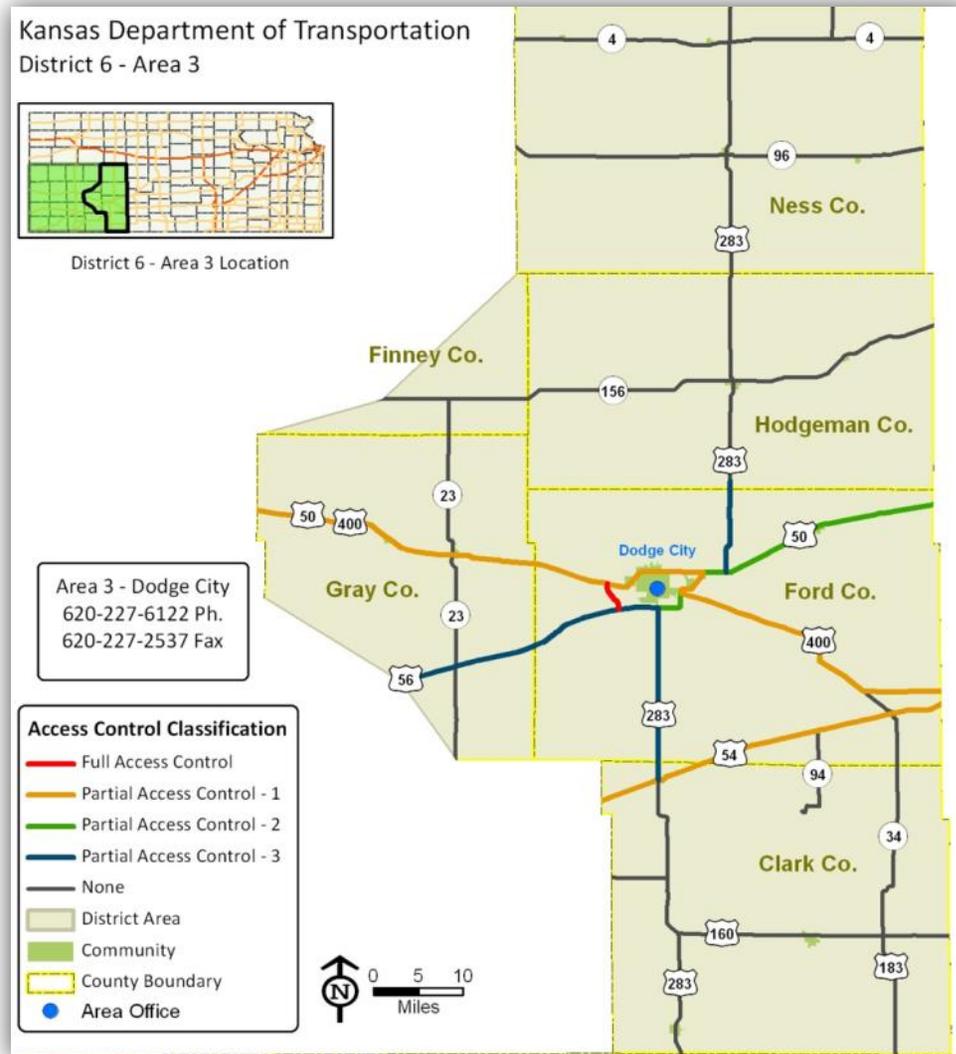
8.4.6.a District 6 – Area 1



8.4.6.b District 6 – Area 2



8.4.6.c District 6 – Area 3



8.5 KDOT District Access Management Plans

8.5.1 Northeast Kansas (District 1) Access Management Plan

District 1 has ten access management plans for corridors and areas throughout the district that contribute to the *District Access Management Plan*. Each plan is described in this section.

8.5.1.a K-7 Corridor (Johnson, Wyandotte, and Leavenworth Counties)

This corridor consists of a segment from the Johnson/Miami county line north to the K-7/K-5 junction within the city of Leavenworth incorporated limits. This corridor is designated because the growth of the incorporated areas that it serves has very large traffic generators. This route carries a C route classification and is part of the National Highway System. It also carries a mixture of configurations, including an expressway with at-grade public street intersections and grade-separated interchanges. Development in the area includes employment generators at the K-7/K-10 interchange, possible commercial development of the Sunflower area, and the Kansas Speedway in Wyandotte County. These developments will increase demand within the corridor that already serves between 16,800 and 23,100 ADT (2011 KDOT Traffic Count Map). Additional demand for the area should be assumed as K-7 presents undeveloped areas near some of the state's largest residential, business, and commercial centers.

The *K-7 Corridor Management Plan* (www.ksdot.org/projects.asp) was conducted between January 2004 and February 2006 along the entire corridor. The study extended from 223rd Street in Miami County to K-5/Muncie Road in Leavenworth (approximately 40 miles). The study concluded that K-7 should move toward a freeway section.

8.5.1.b US-75 (Jackson County)

This corridor consists of the segment from the Shawnee/Jackson county line north to the junction of K-16 highway within the city of Holton incorporated limits. This segment was reconstructed as a four-lane divided facility with access control that limits connections, for the most part, to half-mile spacing. This corridor is designated not out of a need for transportation improvement, but rather out of a need for land use management. To that end, a partnership has been entered into between the Secretary, the Jackson County Commission, and the cities of Hoyt, Mayetta, and Holton. The purpose of the partnership is to create a corridor overlay zone. This corridor overlay zone will be written as a special zoning district and will include such things as setbacks, especially at county arterial intersections, access connections to county arterials, and intersection improvements on US-75. The purpose of the overlay zone is to help development proceed in an orderly fashion to protect the investment already in place. Once developed and adopted, the overlay zone becomes, by reference, the access criteria for US-75 highway within the defined limits.

8.5.1.c K-4 (Jefferson County)

This corridor designation consists of the segment from the Shawnee/Jefferson county line to the north junction of K-4/K-16 near Valley Falls. This segment is designated out of a tremendous growth potential as well as a matter of route continuity. The Oakland Expressway in east Topeka connects I-70 and the Kansas Turnpike and has brought K-4 to the forefront both as a commuter route and a freight route between Atchison, Topeka, and the remainder of the state. In addition, this route is part of the National Highway System from Atchison to US-40 and carries between 2,960 and 7,890 ADT (2011 KDOT Traffic Count Map). In March of 1999 an Advance Preliminary

Engineering study was initiated from the county line to the junction of K-92 highway. As a result of the study, a partnership was established between the Secretary, Jefferson County, and the cities of Meriden, Ozawkie, and Valley Falls in the form of an MOU. Preliminary plans have been completed for a freeway section along K-4 from the US-24 junction in Shawnee County to 46th Street in Jefferson County. However, funding has not yet been identified to construct this freeway.

8.5.1.d US-24 Huxman Road to the K-4 interchange (Shawnee County)

This corridor consists of the segment of US-24 from Huxman Road (west limit) to the K-4 interchange (east limit) through the Topeka city limits and extending either side into Shawnee County. US-24 is a class C route that connects Manhattan on the west with Topeka, Lawrence, and Kansas City to the east. Traditionally this segment of US-24 was a mix of large industrial and small commercial developments. Over the last five to seven years, large commercial developments have located within the city of Topeka portion of the corridor, which has increased traffic volumes resulting in the need for a corridor management study. This route is part of the National Highway System from the US-75 interchange to the K-4 interchange. Traffic volumes vary between 7,400 ADT on the west to over 15,000 ADT at the east (2011 KDOT Traffic Count Map).

A Phase I *US-24 Access Management, Circulation and Land Use Plan* (www.ksdot.org/projects.asp) was completed in July 2009. This was followed by a Phase II *US-24 Corridor Management Plan* (www.ksdot.org/projects.asp) in December 2010, which will develop a coordinated strategy to create a good transportation environment which balances safety, efficiency, and economic activity. Once the Phase II study is completed, it is anticipated the plan will be brought before the local governing bodies for consideration and potentially adopted.

8.5.1.e US-24/US-40 (Leavenworth County)

This corridor consists of the segment of US-24/US-40 from Honey Creek Road on the west to K-7 on the east in Leavenworth County. This includes the communities of Basehor on the east end of the corridor and Tonganoxie on the west end. The purpose of the study was to protect and preserve the transportation investment within the corridor by implementing sound corridor land use and transportation planning and management principles. Stakeholders desire to maintain a high level of mobility and safety on the highway, to preserve the rural drive experience of US 24/40, and to foster orderly economic growth in southern Leavenworth County. US-24/US-40 is a class C route that connects Tonganoxie with Lawrence and Topeka from the west and Basehor with Bonner Springs and Metro Kansas City to the east. This segment of US-24/US-40 is a commuter route between Lawrence, Tonganoxie, and Kansas City that also serves as an option for traveling to and from the Kansas Speedway/Legends development area for attractions and events. As a result of the construction of these large commercial developments in the Kansas City area, traffic volumes have increased resulting in the need for a corridor management study. This route is part of the National Highway System from the US-75 interchange to the K-4 interchange. Traffic volumes vary between 5,000 ADT west of Tonganoxie to over 11,000 ADT east of Tonganoxie and over 15,000 ADT on the east side of the corridor near Basehor (2011 KDOT Traffic Count Map). The *US-24/US-40 Corridor Management Plan* (www.ksdot.org/projects.asp) was recently completed.

8.5.1.f US-24 (Pottawatomie/Riley County line east to east of Wamego)

This corridor consists of the segment of US-24 from the Pottawatomie/Riley County line east to about 2 miles east of Wamego. US-24 is a Class C route that connects Manhattan to Wamego and

is an important lifeline to all communities throughout the Flint Hills region. This highway is heavily influenced by both commuters and local traffic that use the corridor to shop and enjoy recreational activities. Traffic volumes vary between 23,000 ADT on the west study limits to approximately 11,000 ADT at the east limits (2011 KDOT Traffic Count Map). This important corridor has recently experienced significant development and population growth. In response, agency officials agreed to initiate a corridor management plan that would assist the decision-making process regarding developments along the US-24 corridor.

Pottawatomie County, Manhattan, St. George, Wamego, and KDOT have partnered to develop a coordinated plan for the US-24 study area. The intent of this effort is to (1) plan for adequate infrastructure to serve future development and (2) keep US-24 and its associated transportation system operating safely and smoothly. The result of this study is the *US-24 Corridor Management Plan* (www.ksdot.org/projects.asp) for the highway's traffic operations and adjacent land use.

8.5.1.g US-56 from US-59 to I-35 (Douglas and Johnson Counties)

This corridor consists of the segment of US-56 from US-59 in Douglas County east to I-35 in the city of Gardner in Johnson County (approximately 22 miles). US-24 is a Class D route that connects the cities of Gardner, Edgerton, Baldwin City, as well as Douglas and Johnson counties. With the construction of the new Burlington Northern Santa Fe (BNSF) railroad intermodal facility, and subsequent development in Edgerton, traffic along US-56 is expected to increase. Traffic volumes vary from 4,000 ADT to 5,000 ADT (2011 KDOT Traffic Count Map). This corridor will likely experience increased development as a result of the BNSF intermodal facility. As a result, KDOT officials agreed it would be beneficial to initiate a corridor management plan that would assist the future decision-making process.

In 2008, KDOT and local partners began the US-56 Corridor Management Plan. The purpose of the plan was to improve access management and capacity along US-56 in a way that supports the needs and addresses the concerns of the corridor community. The *US-56 Corridor Management Plan* (www.ksdot.org/projects.asp) was completed and adopted by local officials in July 2010.

8.5.1.h K-4 from Auburn Road to I-70 (Shawnee County)

This corridor consists of the segment of K-4 from Andover Road north to I-70 in Shawnee County. K-4 is a Class E route that connects the city of Topeka with the city of Auburn to the south (from Auburn Road) and the city of Dover to the west. Significant growth has occurred within southwest Shawnee County which has increased commuter traffic along Auburn Road in the corridor. Traffic volumes vary from between 6,000 and 7,000 ADT (2011 KDOT Traffic Count Map). Commercial and residential development could increase along this section of K-4 as a result of increased development in southwest Shawnee County. KDOT staff would like to work with local partners (city of Topeka, Shawnee County) to initiate an access management plan.

8.5.1.i US-36 from K-187 to County Road L (city of Seneca, Nemaha County)

This corridor consists of the segment of US-36 between K-187 (west boundary) and County Road L (east boundary), including portions of the city of Seneca and unincorporated areas of Nemaha County. US-36 is a Class B route, part of the National Highway System, which connects Seneca with Hiawatha to the east and Marysville to the west. US-36 is a commercial corridor that transports people and goods throughout northern Kansas. Traffic volumes vary from 4,000 ADT to 6,000 ADT along the corridor (2011 KDOT Traffic Count Map). KDOT's Bureau of Traffic

Engineering recommended the initiation of an access management plan along US-36 as part of the May 2007 Nemaha County Road Safety Audit (RSA). The intent of the RSA was to determine ways to reduce the total number of excess access points. Another primary concern has been the preservation of land development opportunities to enhance local economic development.

The Purpose and Need Statement for the *US-36 Access Management Plan* (www.ksdot.org/projects.asp) is as follows:

“The purpose of the US-36 Access Management Plan is to make policy and conceptual design recommendations that will enhance the long-term safety and operational capacity of US-36, while providing reasonable access to adjacent properties. This Plan is necessary to address motorist safety concerns, increasing traffic volumes, and commercial development pressure for additional access along US-36.

The Plan will identify a corridor-based strategy to achieve the following goals:

- Improve motorist safety within the study area.
- Preserve efficient traffic flow along US-36 through Seneca and parts of Nemaha County.
- Enhance and preserve the economic development potential of Seneca and Nemaha County, as related to commercial development adjacent to US-36 and the subsequent need for reasonable highway access.
- Promote continued intergovernmental coordination between KDOT, the city of Seneca, and Nemaha County.”

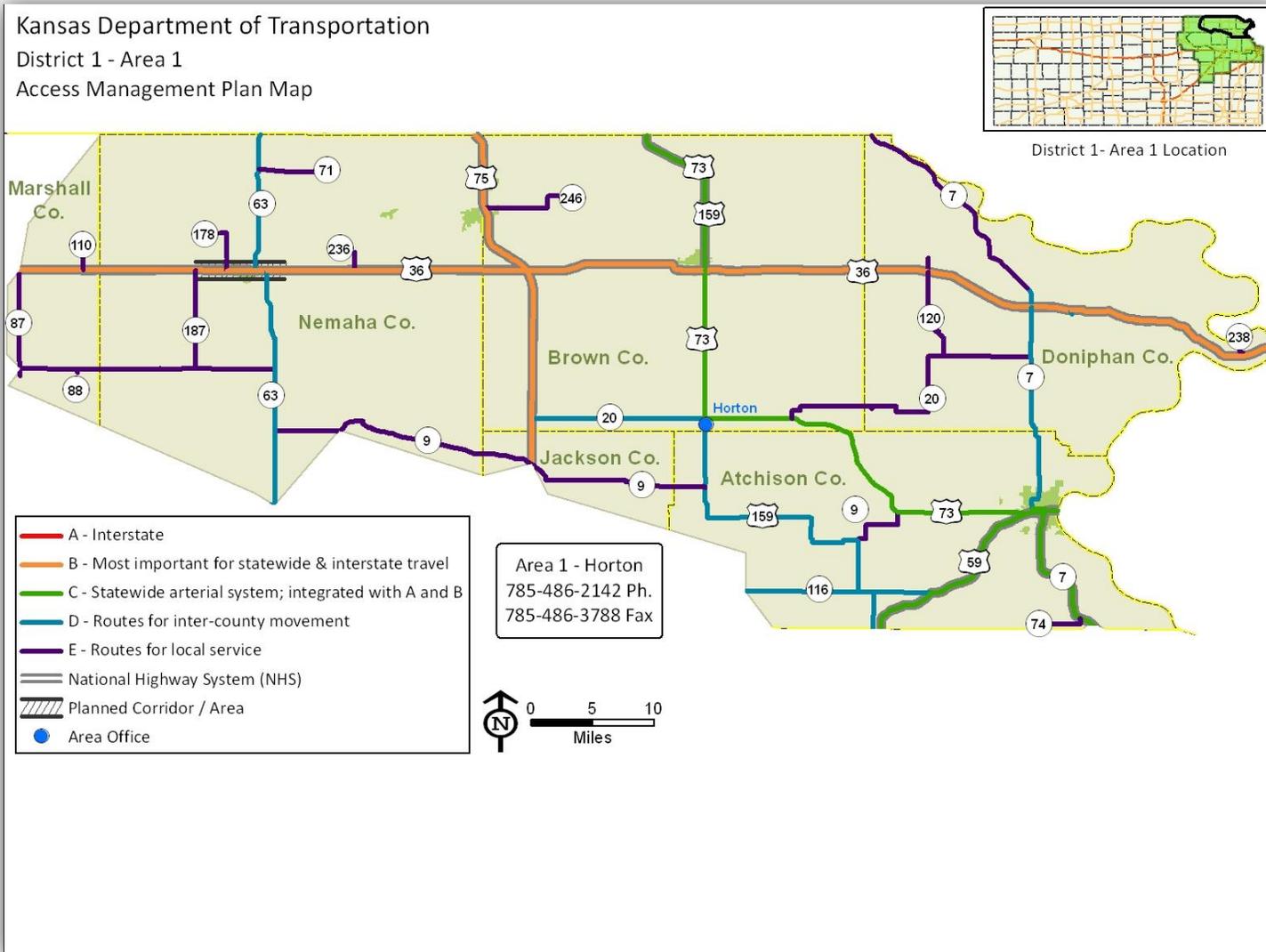
8.5.1.j US-40/West 6th Street and K-10 Interchange (city of Lawrence, Douglas County)

This area consists of a 1.5-mile segment of US-40/West 6th Street beginning at George Williams Way proceeding west to East 800 Road. It also includes the K-10 ramps and an area approximately one-half mile on either side of US-40/West 6th Street. US-40 is a Class D route that connects the cities of Topeka, Tecumseh, Big Springs, and Lawrence through Shawnee and Douglas Counties. K-10 connects with I-70 west of Lawrence and essentially acts as a bypass around the southwest side of Lawrence before intersecting with US-59 on the south side of town (first half of the South Lawrence Trafficway). Funding to complete the second half of the South Lawrence Trafficway around the southeast side of Lawrence is included in the T-WORKS Program. Traffic volumes on US-40/West 6th Street vary from approximately 6,000 ADT west of K-10 to over 18,000 ADT east of Folks Road (2009 KDOT City of Lawrence Traffic Count Map). The area surrounding the US-40/West 6th Street and K-10 interchange has significant development potential. With any large-scale development, a variety of transportation challenges will eventually come about, thus planning for this future development is necessary. Currently, KDOT has started designing improvements at the US-40/West 6th Street and K-10 interchange. These improvements will initially include dual left turn lanes and traffic signals at the ramp terminals to improve traffic flow at this location, especially during the heavy afternoon peak hours. Longer term improvements may include widening the bridge to accommodate additional dual left-turn lanes and possibly pedestrian accommodations.

In January 2011, KDOT, the city of Lawrence, Douglas County, and the Lawrence-Douglas County Metropolitan Planning Organization initiated the *US-40/West 6th Street and K-10*

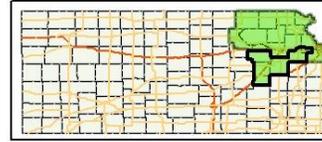
Interchange Area Transportation Plan. The plan will gather information about the nature and magnitude of future development and develop a list of transportation improvements and access management guidelines to accommodate this growth. The study is scheduled to be completed and adopted by local officials in early 2012.

8.5.2.a District 1 – Area 1

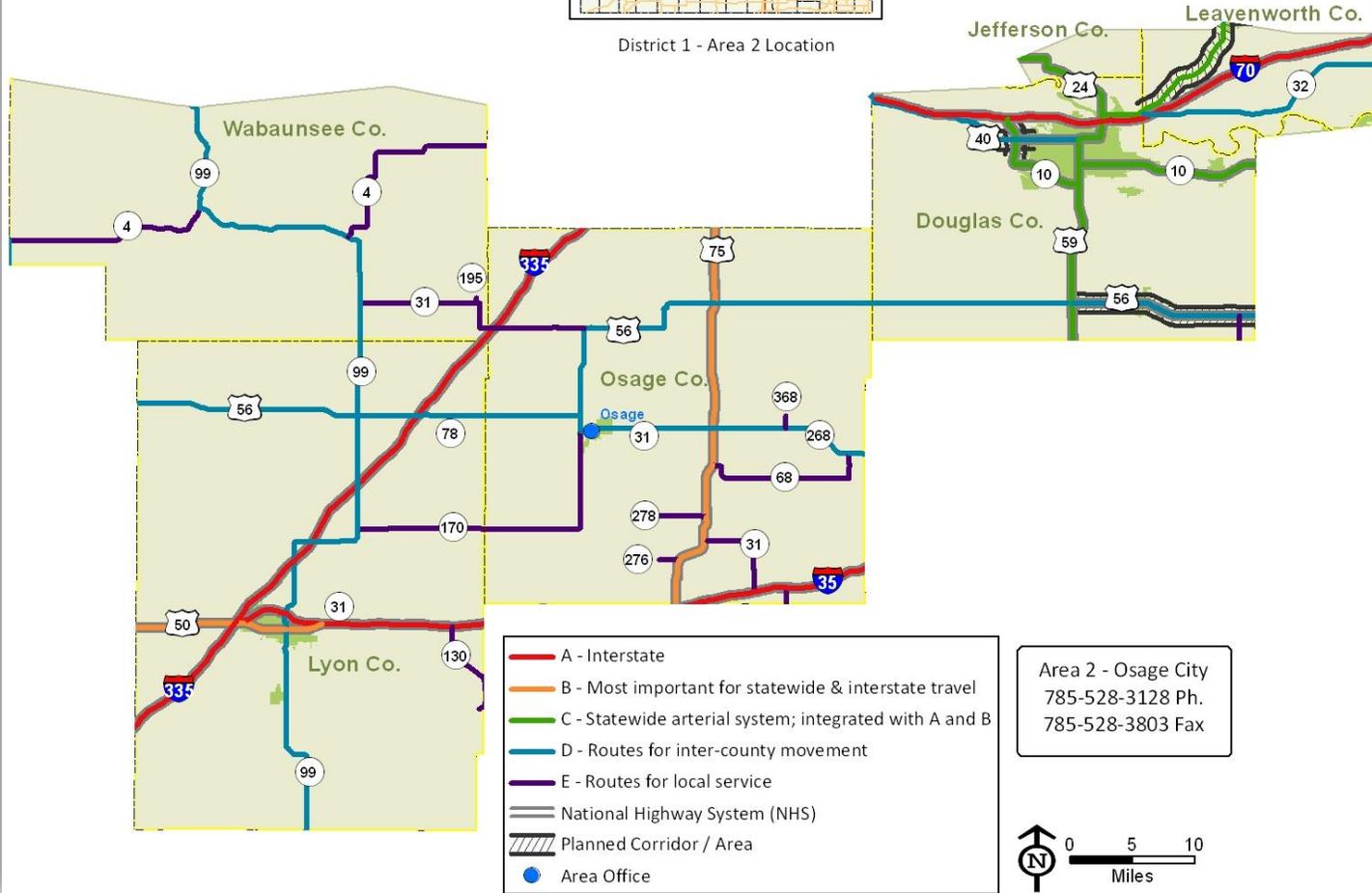


8.5.2.b District 1 – Area 2

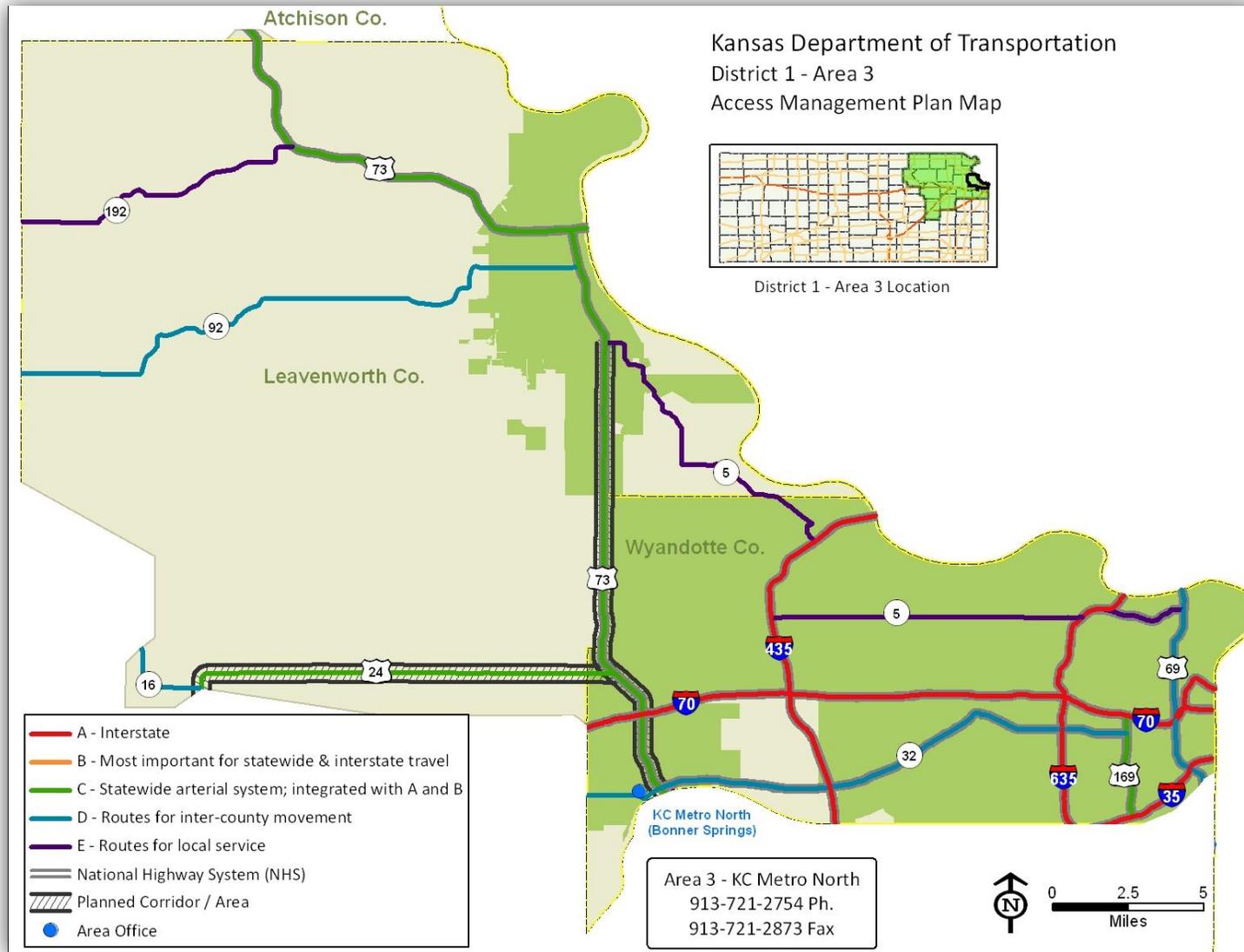
Kansas Department of Transportation
District 1 - Area 2
Access Management Plan Map



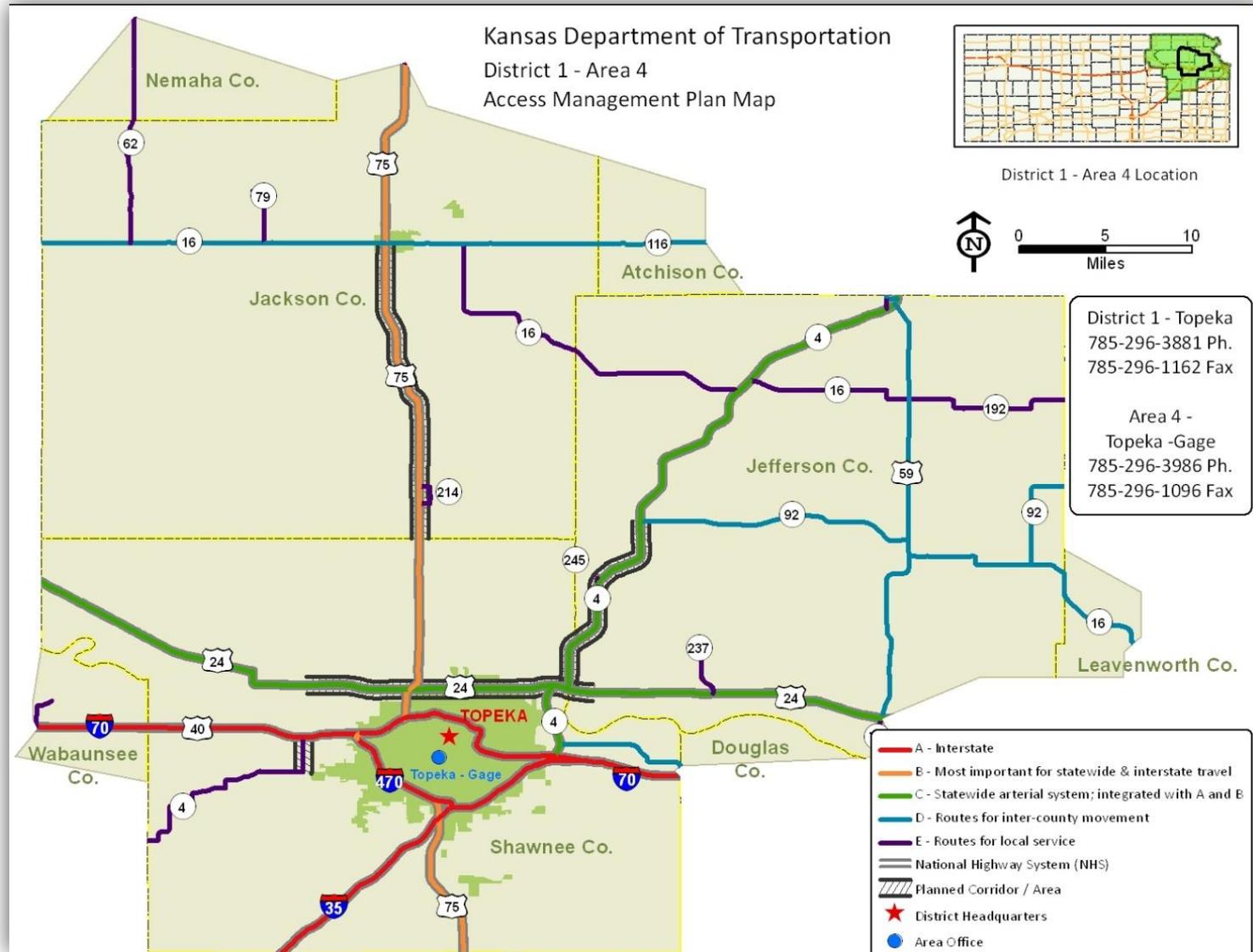
District 1 - Area 2 Location



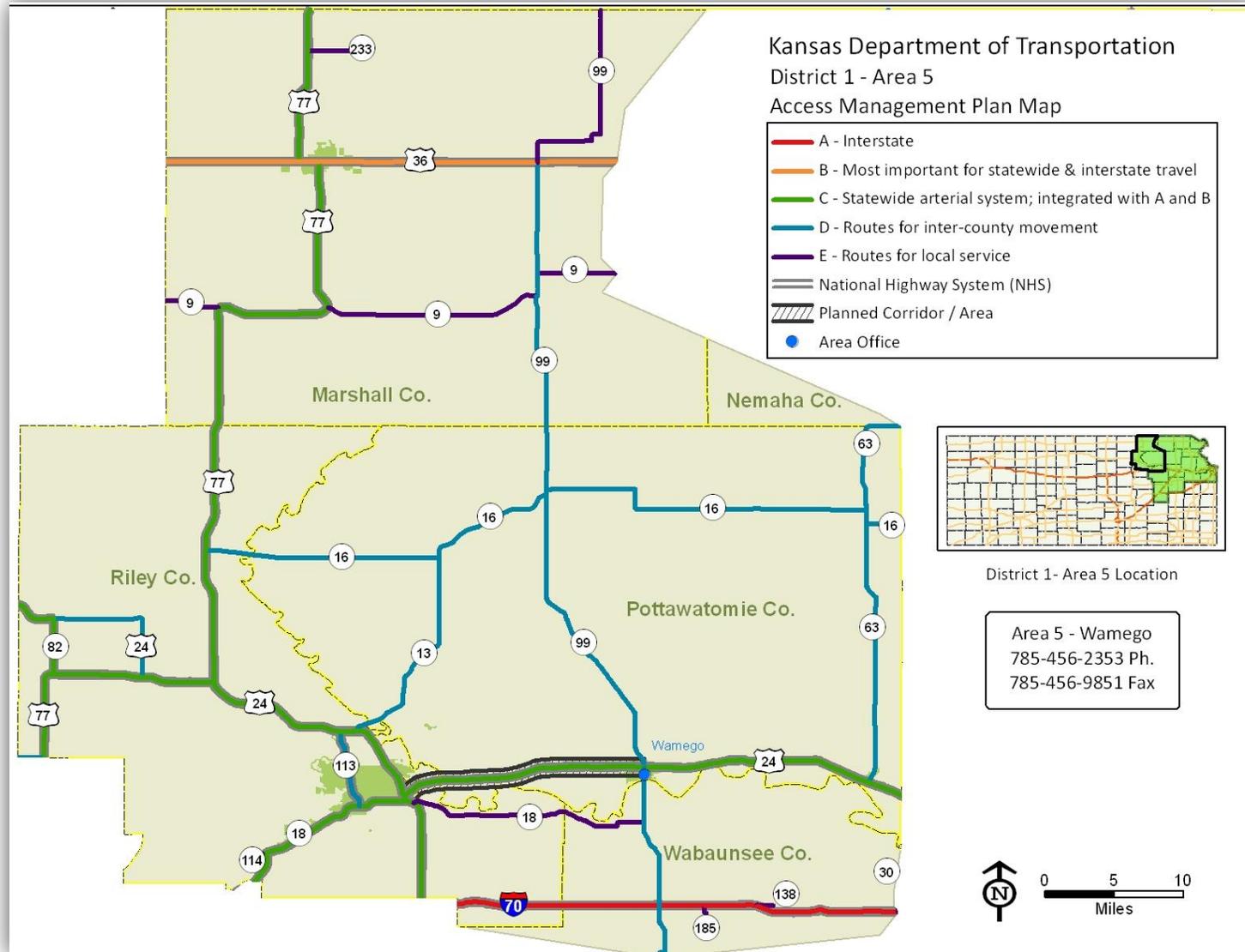
8.5.2.c District 1 – Area 3



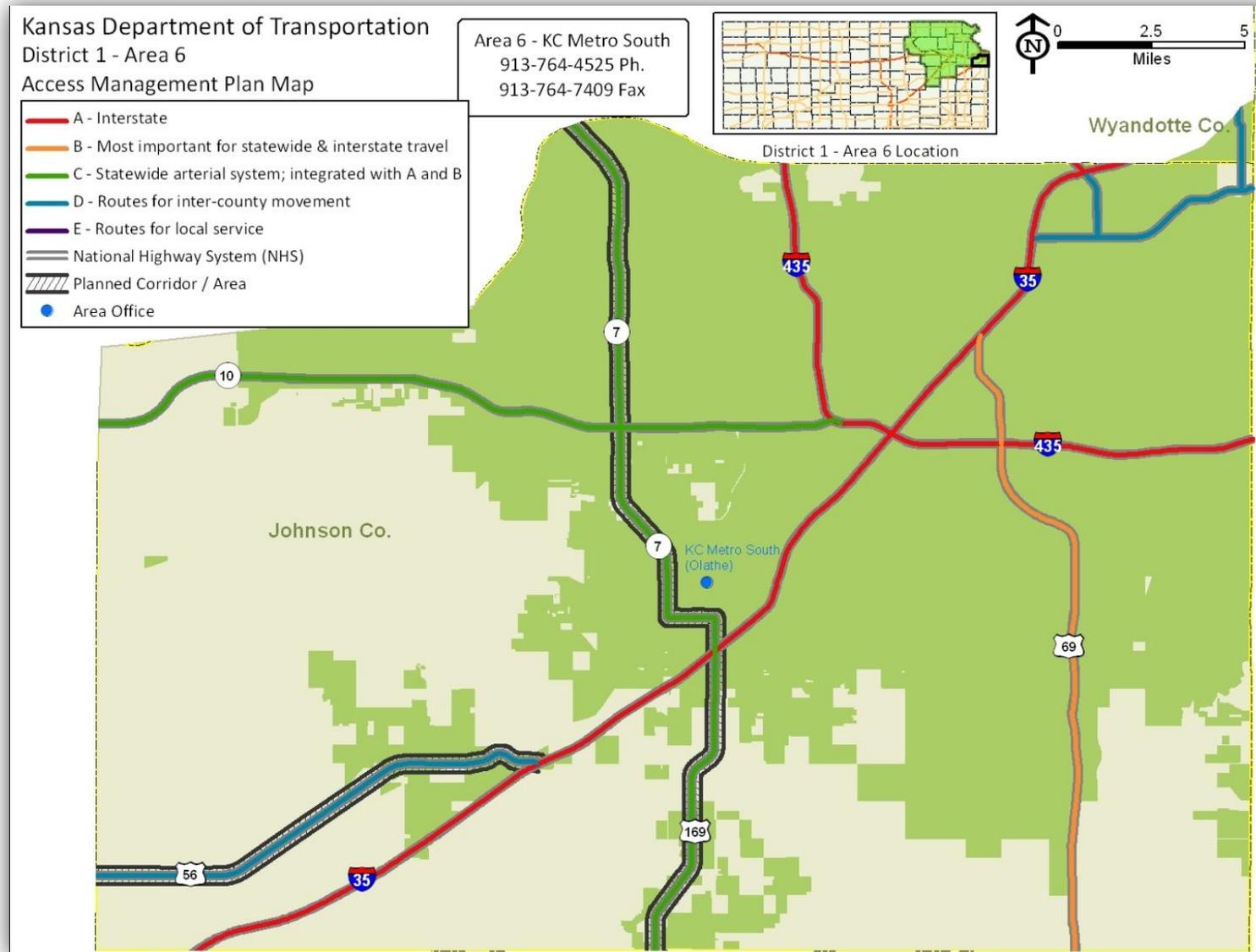
8.5.2.d District 1 – Area 4



8.5.2.e District 1 – Area 5



8.5.2.f District 1 – Area 6



8.5.3 Northcentral Kansas (District 2) Access Management Plan

District 2 has two access management plans for corridors and areas throughout the district in addition to the *District Access Management Plan*. Both plans are described in this section.

8.5.3.a US-77 from RS Route 1806 to the north junction of K-57 highway (Geary County)

US-77 in Junction City and Geary County is designated as a planned corridor primarily because of its critical role in the north-south movement of high volumes of traffic. This corridor is a Class C route and is the primary route serving north-south trip movements in the region between US-75 to the east and US-81 to the west and local trip movements through Junction City, an urban area with a population of more than 21,000. From a statewide perspective, US-77 extends from the Oklahoma state line south of Arkansas City to the Nebraska state line north of Marysville.

In addition to interstate movements, this segment also provides for local trip movements and commercial and industrial development. The designated segment shows traffic counts ranging between 4,240 ADT and 7,940 ADT (2011 KDOT Traffic Count Map). These volumes are high for a roadway that has two-lane geometry. This corridor is the primary north-south corridor for longer trip movements on state highways and is the only major corridor in the area not fully access controlled. Without a higher level of management, greater intensity of land use will jeopardize operational efficiency and will likely increase the magnitude of safety issues.

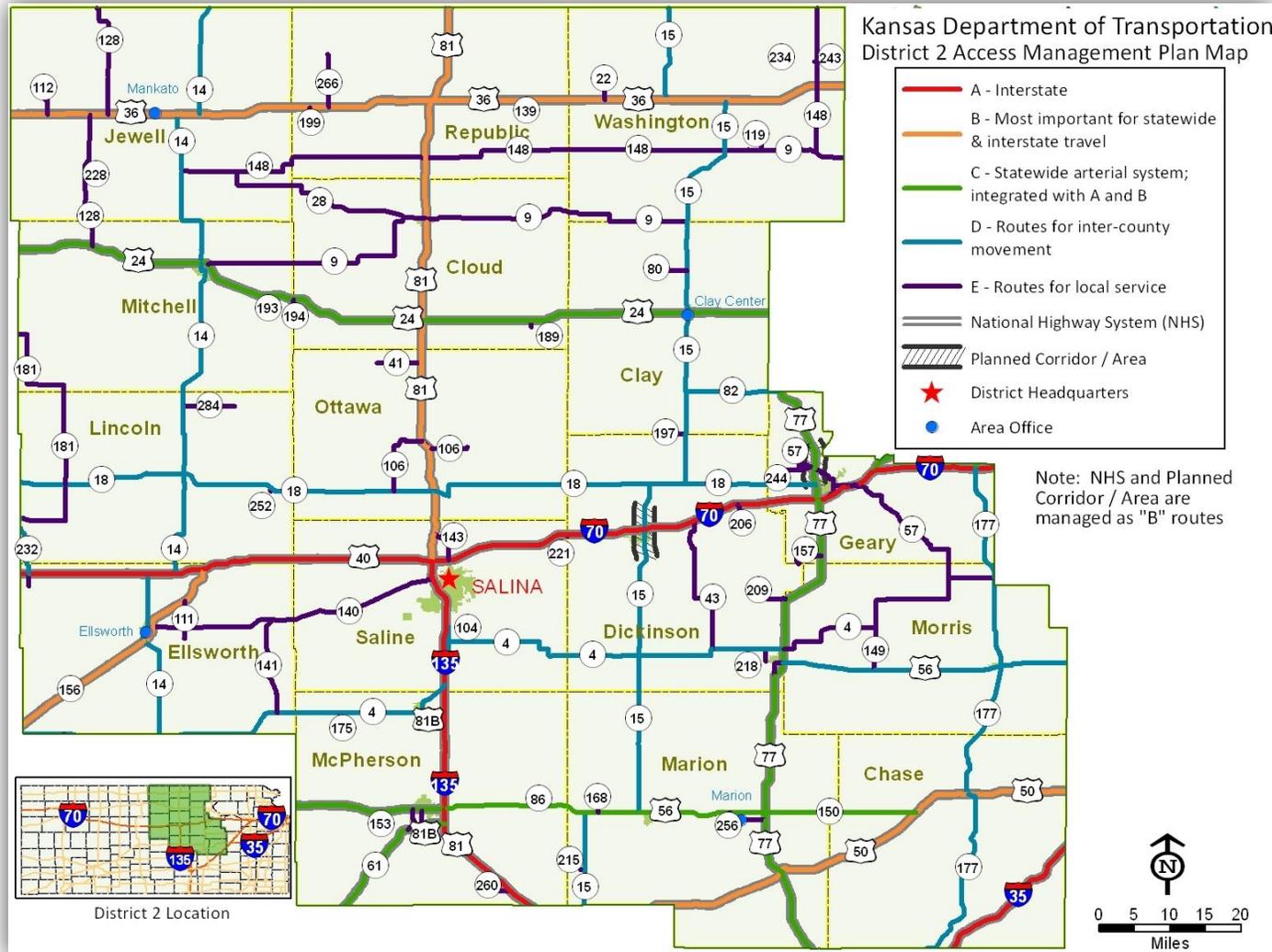
In 2005, the U.S. Department of Defense's *Base Realignment and Closure Plan* (BRAC) recommended that the military base at Fort Riley be expanded to include thousands of additional personnel (both on- and off-base), including the return of the 1st Infantry Division after 10 years in Germany. As a result, a large amount of development occurred on the west side of Junction City, including new housing (apartments, town-houses, and single-family homes), schools, and industry both east and west of US-77, to accommodate the additional troops and their families. In 2007, there was a growing concern from local business leaders, citizens, city/county staff, Fort Riley staff, and elected officials regarding the effect this development would have on the corridor. A *US-77/K-18 Corridor Management Plan* (www.ksdot.org/projects.asp) was performed and completed in 2009. The limits of the study were from Lyons Creek Road to the south (south of I-70), through Junction City, to 12th Street in Milford to the north (approximately 16 miles in length). The results of the study included recommendations for future improvements at the main intersections along the corridor, access spacing, including the future spacing of traffic signals, and proposed typical sections (four-lane expressway [urban], four-lane expressway [rural] and two-lane [rural])

8.5.3.b K-15 from 2000 Avenue 1 mile south of Abilene north to the intersection of 2700 Avenue (Dickinson County)

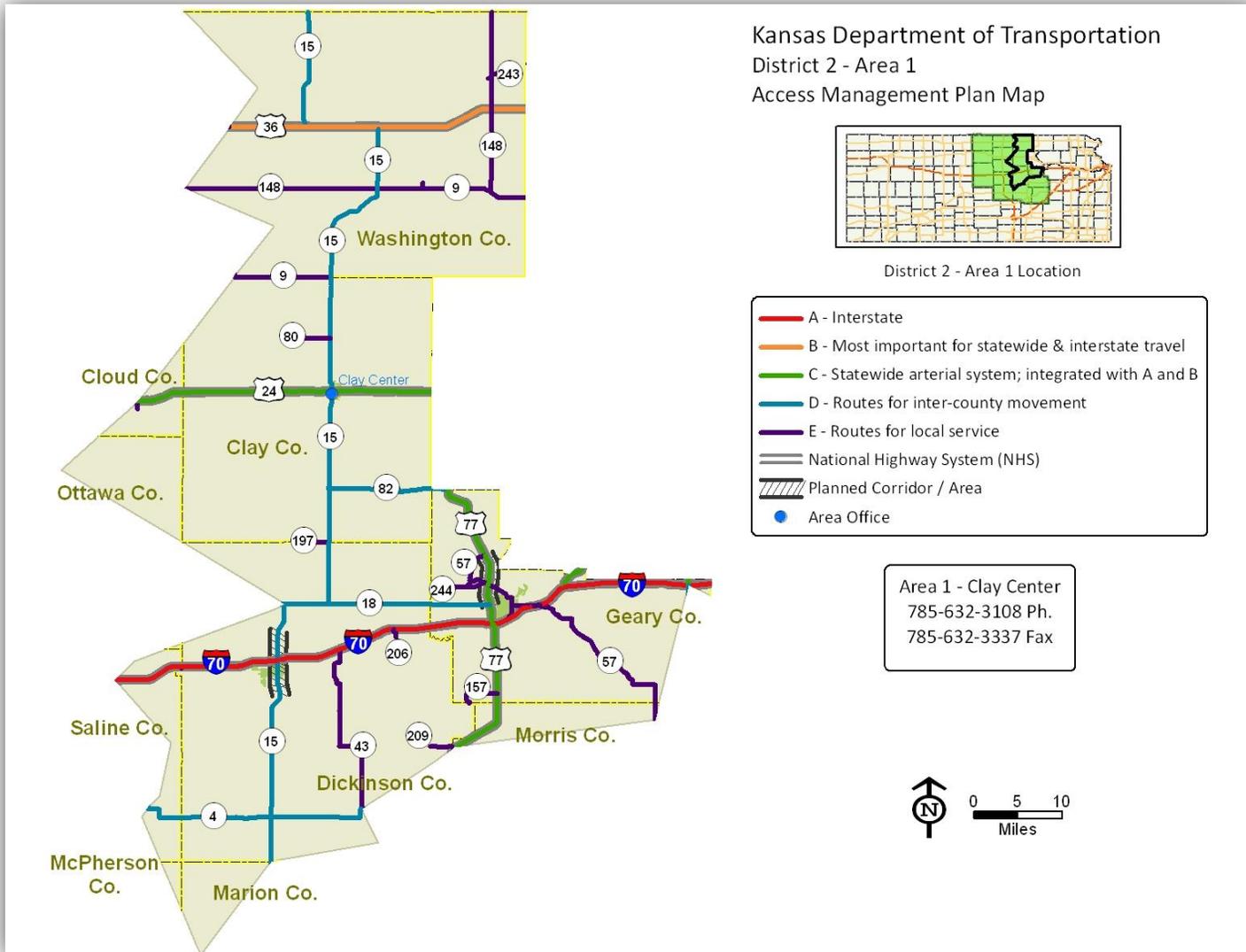
This corridor designation includes the Abilene area and extends from the intersection of 2000 Avenue, approximately 1 mile south of Abilene north to the intersection of 2700 Avenue, approximately 3.2 miles north of I-70. This corridor is designated primarily because of significant development pressures, especially to the north of I-70. This corridor currently carries traffic volumes ranging from 2,500 ADT to 7,000 ADT (2011 KDOT Traffic Count Map) and provides north-south movement through numerous counties. A more detailed discussion of this newly designated corridor will come after evaluations have been completed and partnerships with the

local units of government initiated. A draft RSA, conducted by KDOT, proposes an access management plan from Charles Road to the I-70 interchange.

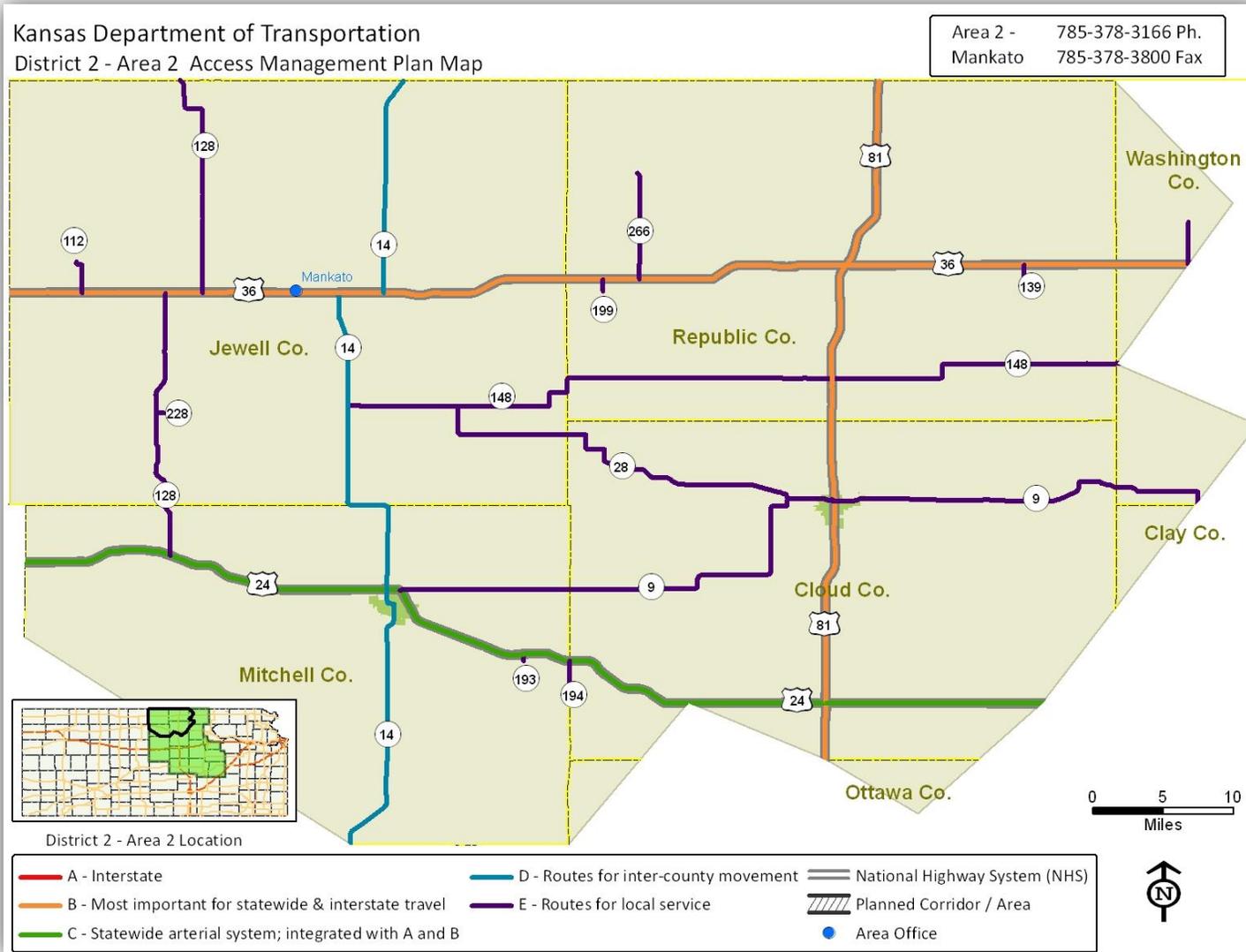
8.5.4 District 2 Access Management Plan maps



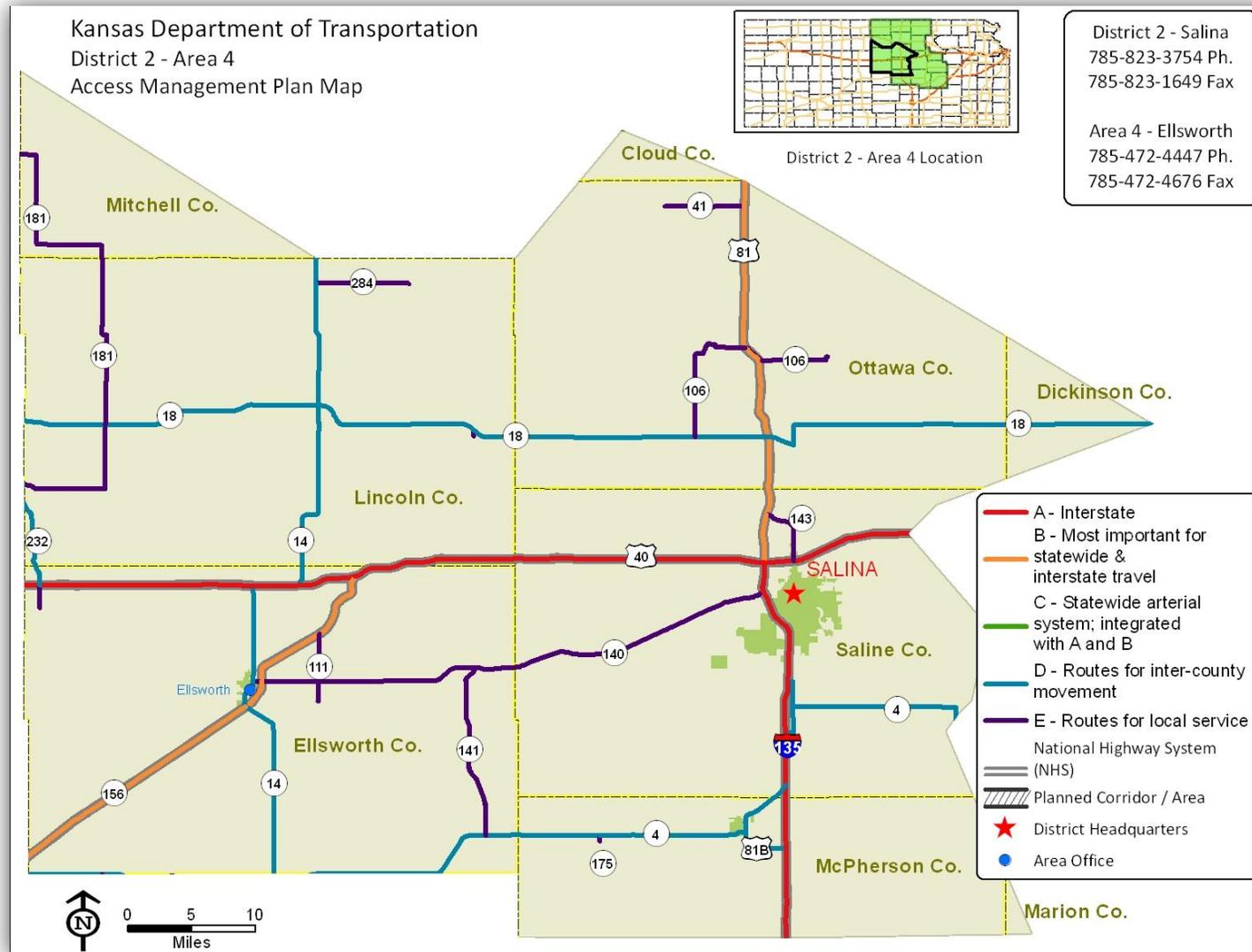
8.5.4.a District 2 – Area 1



8.5.4.b District 2 – Area 2



8.5.4.d District 2 – Area 4



8.5.5 Northwest Kansas (District 3) Access Management Plan

District 3 has three access management plans for corridors and areas throughout the district which contribute to the *District Access Management Plan*. Each plan is described in this section.

8.5.5.a US-183/183 Alternate (Ellis County)

The planned corridor along US-183 in Ellis County extends through the city of Hays, including US-183 Alternate in its entirety. The segment of US-183 (Vine Street) begins at the intersection of Spring Hill Road south of Hays and proceeds to approximately one-half mile north of Fairground Road.

The US-183/183 Alternate corridor in Ellis County is designated as a planned corridor in the District 3 plan primarily because of its critical role in the north-south movement in the region and because of development occurring within the city of Hays. This corridor is a Class B route and is the only north-south route in the region for approximately 30 miles in either direction. It is used by the Hays population of more than 20,000 for local trip movements. From a statewide perspective, US-183 extends from the Oklahoma state line in the south to the Nebraska state line in the north. Further, US-183 is part of the National Highway System.

The segment designated is particularly critical not only for interstate trip movement, but also for local trip movements and commercial and industrial development as well as other traffic flow characteristics, such as traffic volume and safety records. The designated segment shows traffic counts ranging from 4,070 ADT south of the city to 16,600 ADT just south of I-70 (2011 KDOT Traffic County Map). The highest traffic volumes are served by a four-lane facility in an intensely developed commercial zone with numerous signalized and unsignalized intersections. Without some retrofitting and a higher level of management, additional development will jeopardize operational efficiency and will likely increase the magnitude of safety issues.

A Corridor Management Plan has been entered into by and between the Secretary, Ellis County, and the city of Hays.

During the mid-2000s, the city of Hays utilized KDOT's *Corridor Management Program* to construct a number of *reverse access* roads and side streets in preparation for the system enhancement project along a 1.5-mile stretch of US-183 starting north of I-70. This system enhancement project extended the city limits north by roughly 1.5 miles and established access control along the entire route.

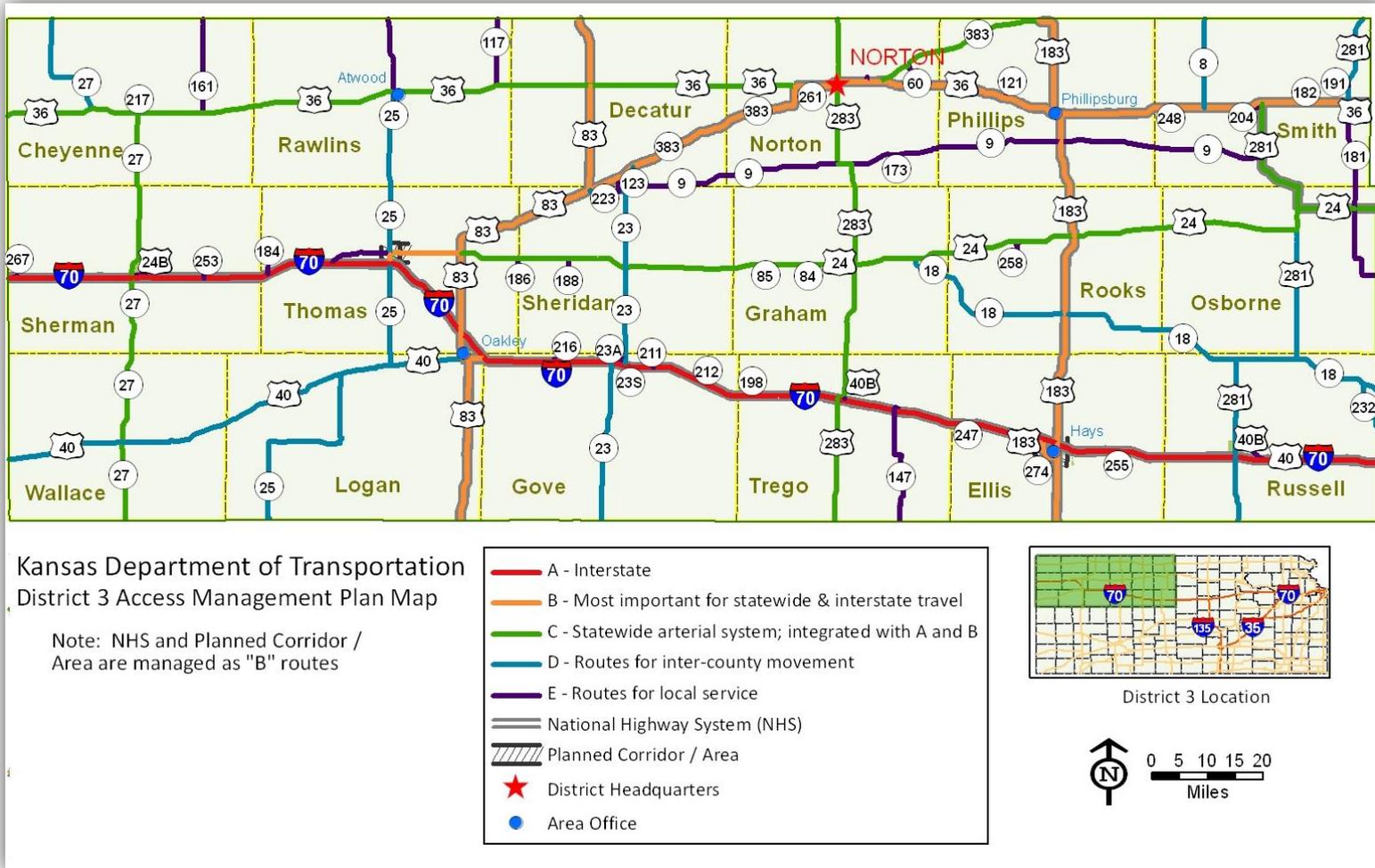
8.5.5.b K-25 from the south city limits of Colby north to Veterans Memorial Drive (Thomas County)

This corridor consists of the segment of K-25 from the south city limits of Colby north to Veterans Memorial Drive. K-25 is a Class D route that connects Colby with Atwood to the north and US-40 (west of Oakley) to the south. Significant growth has occurred along K-25 within the city of Colby, which has increased traffic along the corridor. Traffic volumes along the corridor vary from 7,500 ADT just north of I-70 to 1,500 ADT north of Colby (2011 KDOT Traffic Count Map). KDOT intends to work with local partners (city of Colby, Thomas County) to initiate an access management plan that would assist the future decision-making process regarding developments along this corridor.

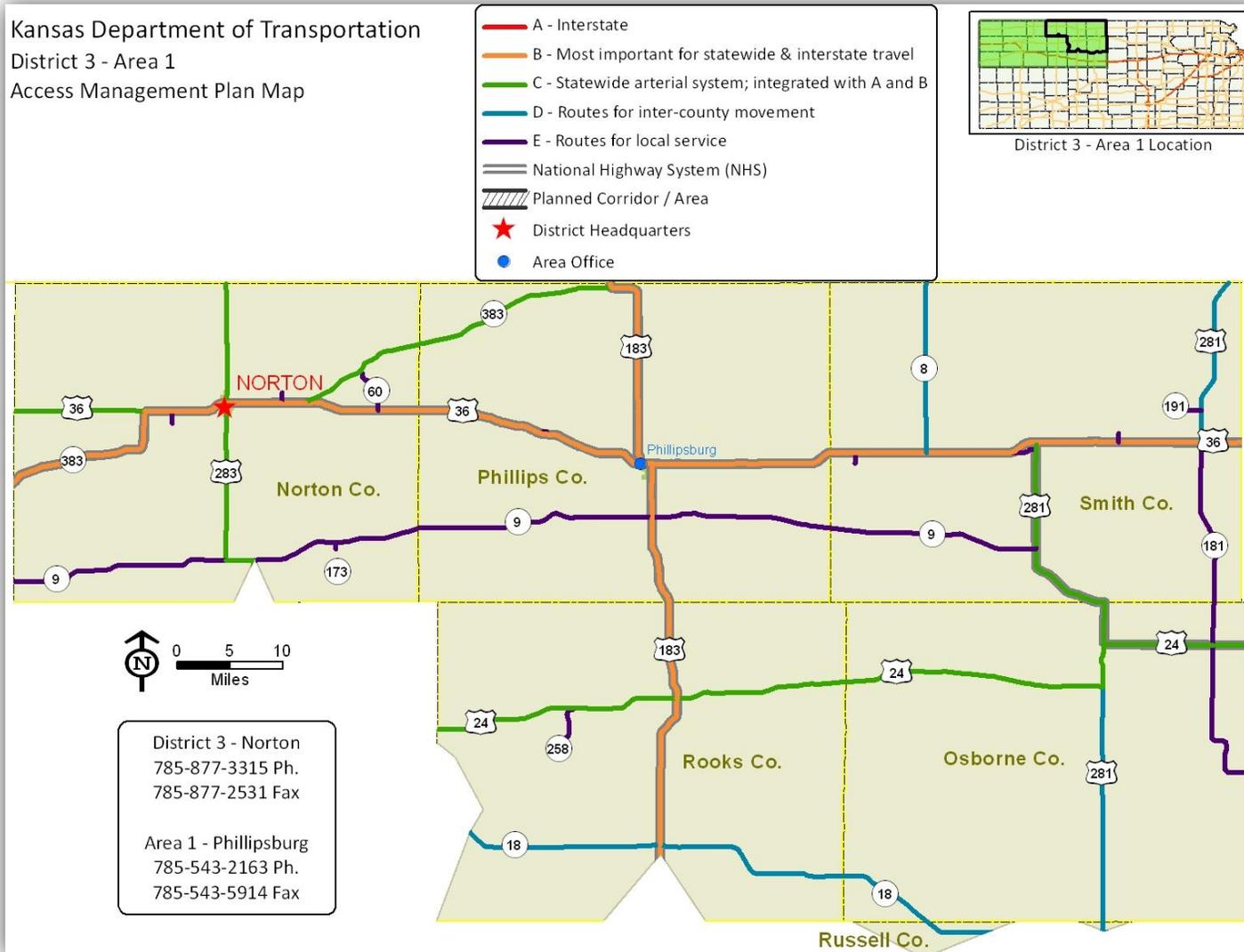
8.5.5.c US-24 from K-25 east to the east city limits of Colby (Thomas County)

This corridor consists of the segment of US-24 from K-25 east to approximately 2.5 miles east of the east city limits of Colby. US-24 is a Class B route that connects Colby with Hill City to the east and Goodland along I-70 to the west. Significant growth and traffic has occurred along the US-24 corridor. Traffic volumes along the corridor vary from 3,350 ADT east of K-25 to 2,500 ADT farther east of Colby (2011 KDOT Traffic Count Map). KDOT intends to work with local partners (i.e., city of Colby, Thomas County) to initiate an access management plan for this section of US-24.

8.5.6 District 3 Access Management Plan maps



8.5.6.a District 3 – Area 1

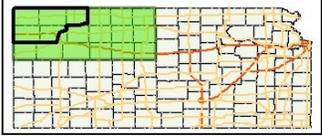


8.5.6.b District 3 – Area 2

Kansas Department of Transportation
 District 3 - Area 2
 Access Management Plan Map

Area 2 - Atwood
 785-626-3258 Ph.
 785-626-3185 Fax

- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- Area Office

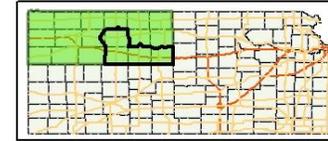


District 3 - Area 2 Location



8.5.6.c District 3 – Area 3

Kansas Department of Transportation
 District 3 - Area 3
 Access Management Plan Map



District 3 - Area 3 Location



8.5.7 Southeast Kansas (District 4) Access Management Plan

District 4 has four access management plans for corridors and areas throughout the district which contribute to the *District Access Management Plan*. Each plan is described in this section.

8.5.7.a US-69 from south of US-160 (Cherokee County) north to north of the city of Arma at the beginning of the four-lane expressway (Cherokee and Crawford Counties)

The planned corridor on US-69 begins south of the intersection of US-160 highway in Cherokee County and proceeds north around Pittsburg to terminate north of Arma at the beginning of the four-lane expressway section in Crawford County. US-69 is designated as a planned corridor primarily because of its critical role in the north-south movement of people and goods in the area and because of development pressures within the city of Pittsburg. This corridor is a Class B route and is the primary route serving north-south trip movements for the Pittsburg area, an urban area with a population of almost 20,000. From a statewide perspective, US-69 extends from the Oklahoma state line in the south to the Missouri state line in the northeast and connects the major metropolitan centers of Tulsa and Kansas City.

The segment designated is particularly critical not only for interstate trip movement but also for local trip movements and commercial and industrial development as well as other traffic flow characteristics, such as traffic volume and safety records. The designated segment shows traffic counts ranging from 9,560 ADT to 12,200 ADT (2011 KDOT Traffic Count Map). The segment of the corridor around the city of Pittsburg serves a rapidly developing area with signalized and unsignalized intersections. The number of both signalized and unsignalized intersections, along with greater intensity of land use, has jeopardized operational efficiency and will likely increase the magnitude of safety issues.

This corridor was the subject of an Advance Preliminary Engineering project in the early 2000s to investigate a new, fully access-controlled alignment. Agreement between the Secretary, Crawford County, and the cities of Pittsburg, Frontenac, and Arma were entered into in order to reserve the right-of-way necessary to construct this route access controlled alignment.

8.5.7.b US-69 from the Bourbon/Crawford County line north to US-54 in Fort Scott (Bourbon County)

This corridor consists of the segment of US-69 from the Bourbon/Crawford County line north to the US-69/US-54 interchange. US-69 is a Class B route that connects Fort Scott with Pittsburg to the south and Kansas City to the north. The volume of traffic traveling through the city of Fort Scott continues to grow as US-69 is expanded to a four-lane expressway from between Overland Park to Fort Scott. Traffic volumes along the corridor vary from between 5,000 ADT and 6,000 ADT at the north and south limits of the study to between 8,000 ADT and 9,000 ADT near Fort Scott (2011 KDOT Traffic Count Map). In order to prepare for this growth, the city of Fort Scott and Bourbon County, in partnership with KDOT, initiated the *US-69 Corridor Management Plan* (www.ksdot.org/projects.asp). This study was completed in January 2010.

8.5.7.c K-68 from Davis Avenue (city of Ottawa) east to the Kansas/Missouri state line (Franklin and Miami Counties)

This corridor designation involves the city of Ottawa, Franklin County, Miami County, the city of Paola, and the city of Louisburg and extends from Davis Avenue in the city of Ottawa east to the

Kansas/Missouri state line. K-68 is a Class D route that connects Ottawa with US-75 to the west and Louisburg with Missouri to the east. The K-68 corridor through Franklin and Miami Counties is situated on the next ring of expansion of the Kansas City metropolitan area. Communities along this corridor anticipate significant residential, commercial, and industrial growth within the next 20 to 30 years. Traffic volumes along the corridor vary from between 2,400 ADT and 9,000 ADT (2011 KDOT Traffic Count Map). In order to prepare for this growth, the local partners along the corridor, in Partnership with KDOT, initiated the *K-68 Corridor Management Plan* (www.ksdot.org/projects.asp). The purpose of the *K-68 Corridor Management Plan* was to gather information about the nature and magnitude of future development and identify transportation improvements necessary to keep traffic flowing safely and efficiently. This plan was completed in October 2009.

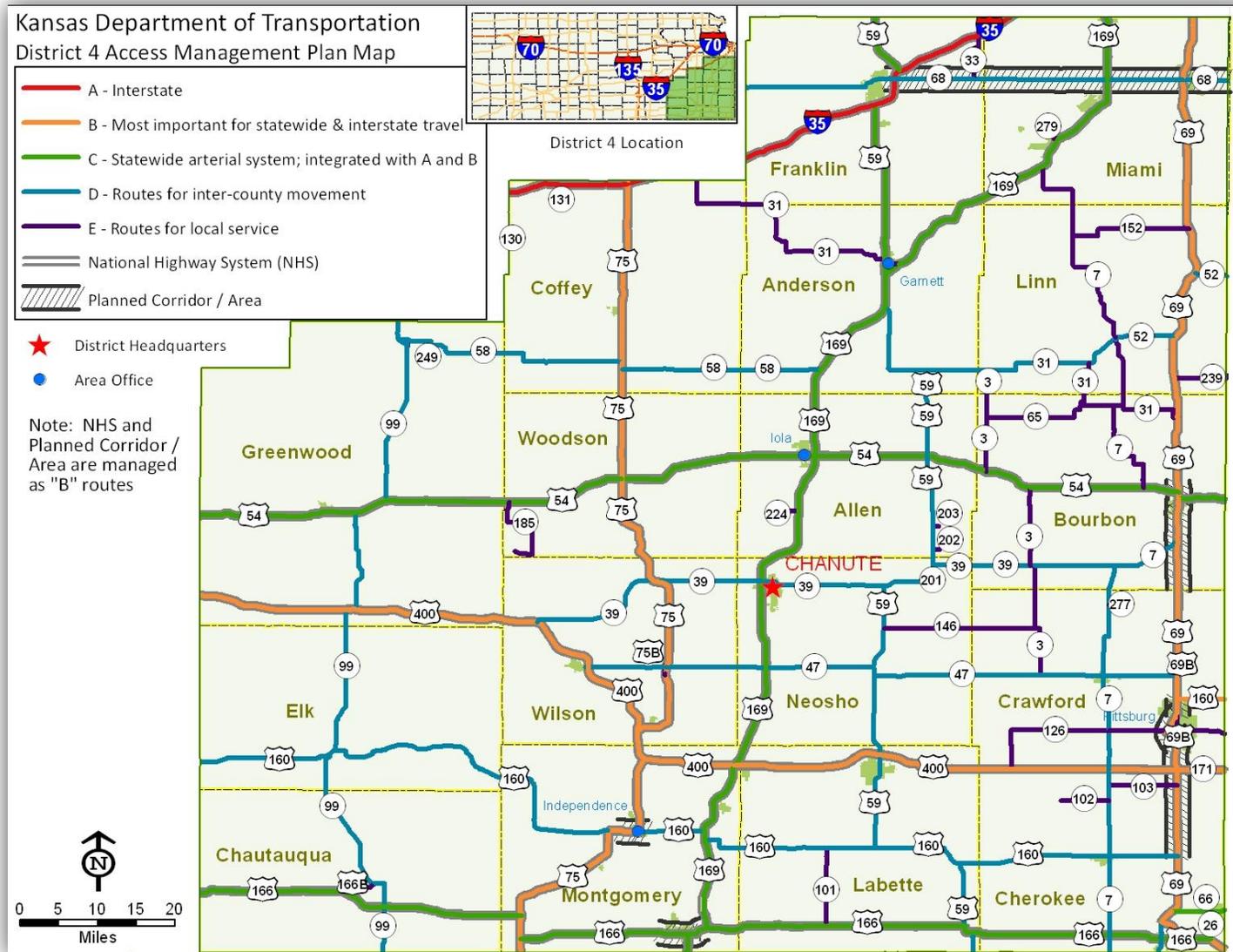
8.5.7.d US-75/US-160 in Independence (Montgomery County)

This corridor consists of the segment of US-75/US-160 approaching and within the city limits of the city of Independence. US-75 is a Class B route that connects Independence with the Kansas/Oklahoma border to the south and Yates Center (towards Topeka) in the north. US-160 is a Class D route that connects Independence with Winfield to the west and Columbus to the east. Traffic volumes vary from between 7,000 ADT and 9,600 ADT (2011 KDOT Traffic Count Map). KDOT intends to work with local partners (i.e., city of Independence, Montgomery County) to initiate an access management plan that would assist the future decision-making process regarding developments along this section of US-75/US-160.

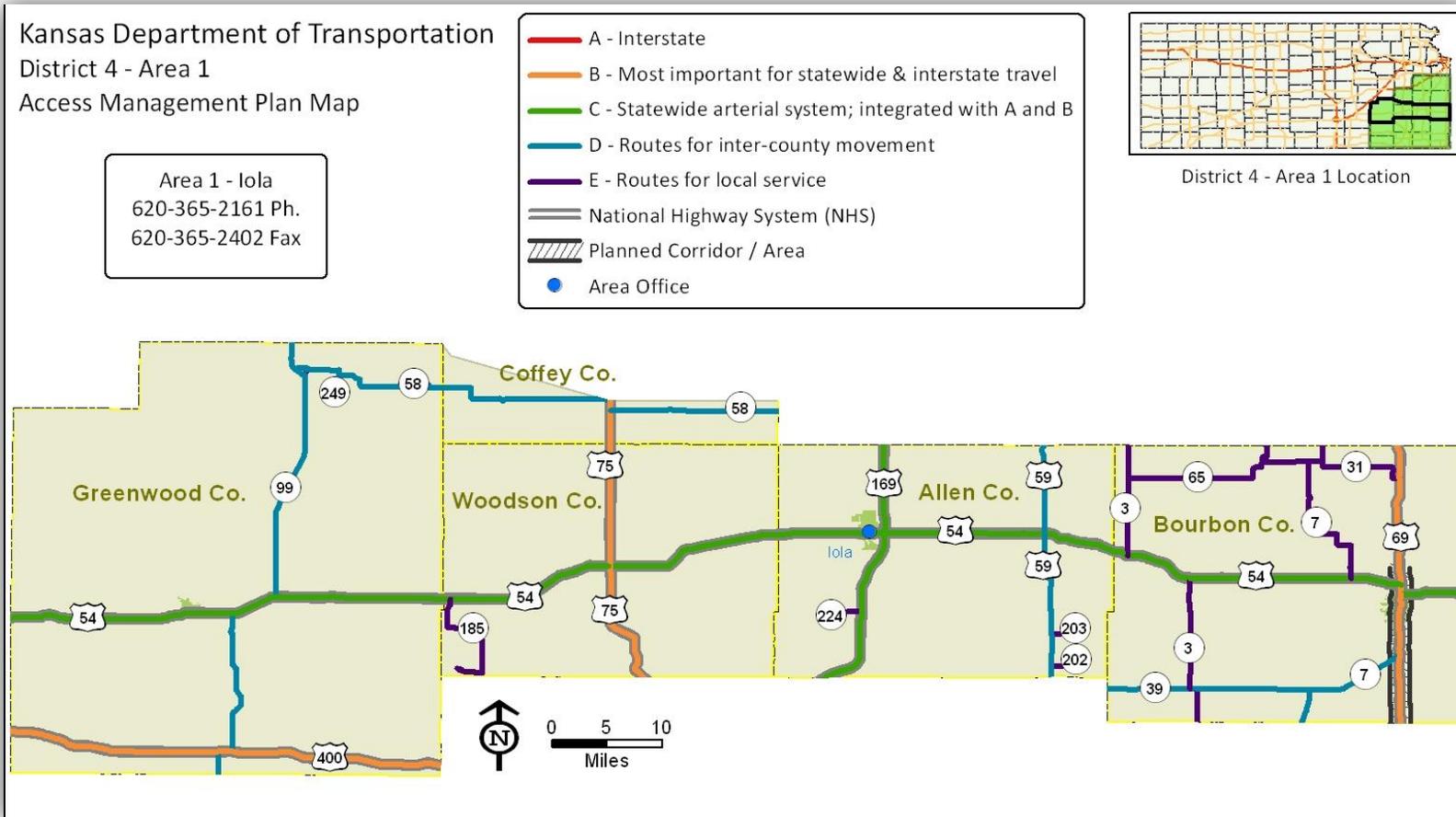
8.5.7.e US-166 in Coffeyville (Montgomery County)

This corridor consists of the segment of US-166 approaching and within the city of Coffeyville. US-166 is a Class C route that connects Coffeyville with Arkansas City to the west and Baxter Springs to the east. Traffic volumes vary from over 6,000 ADT on the west side of Coffeyville to approximately 10,000 ADT in the center and east portion of US-166 (2011 KDOT Traffic Count Map). KDOT intends to work with local partners (i.e., city of Coffeyville, Montgomery County) to initiate an access management plan that would assist the future decision-making process regarding developments along this section of US-166.

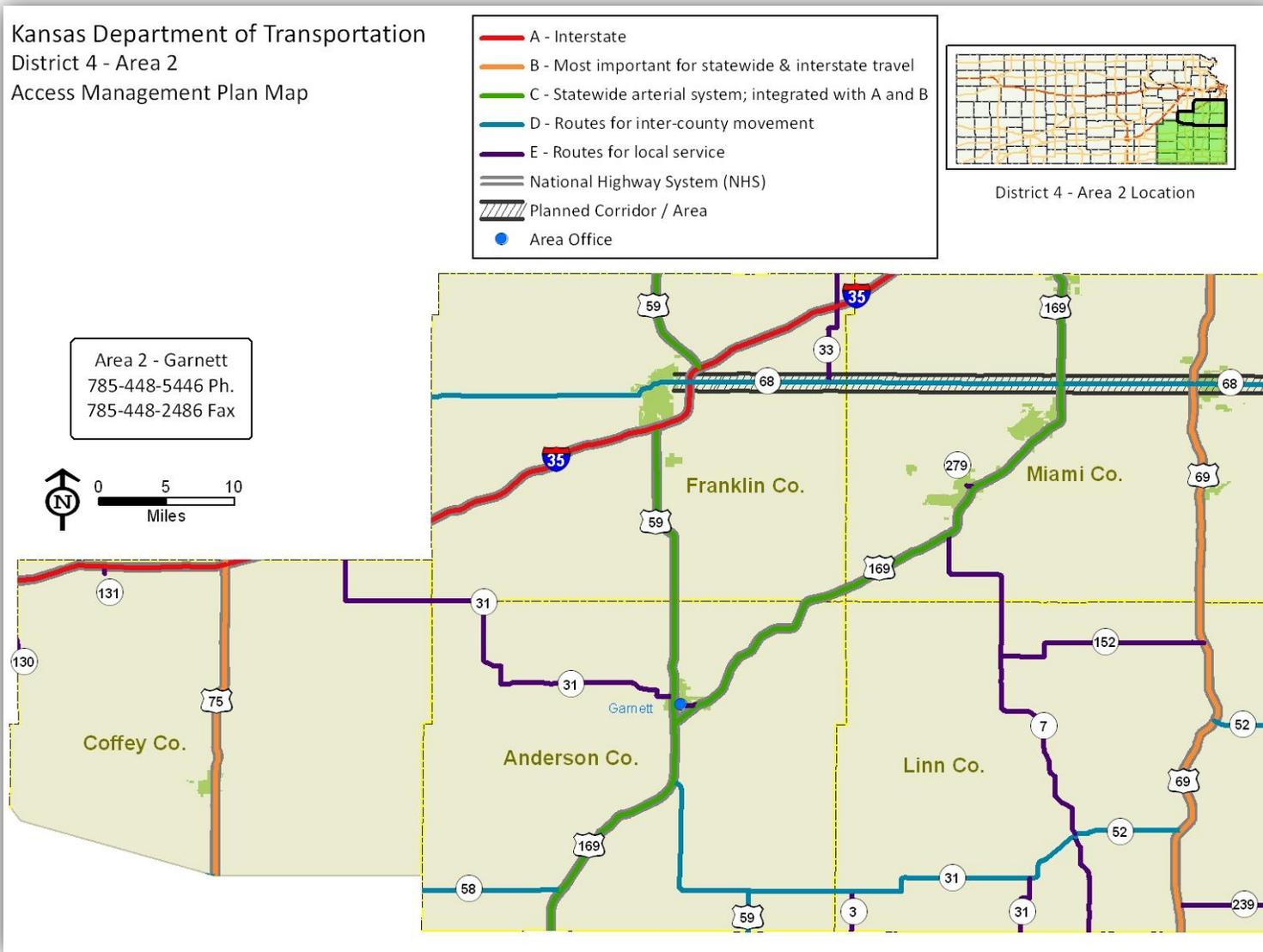
8.5.8 District 4 Access Management Plan maps



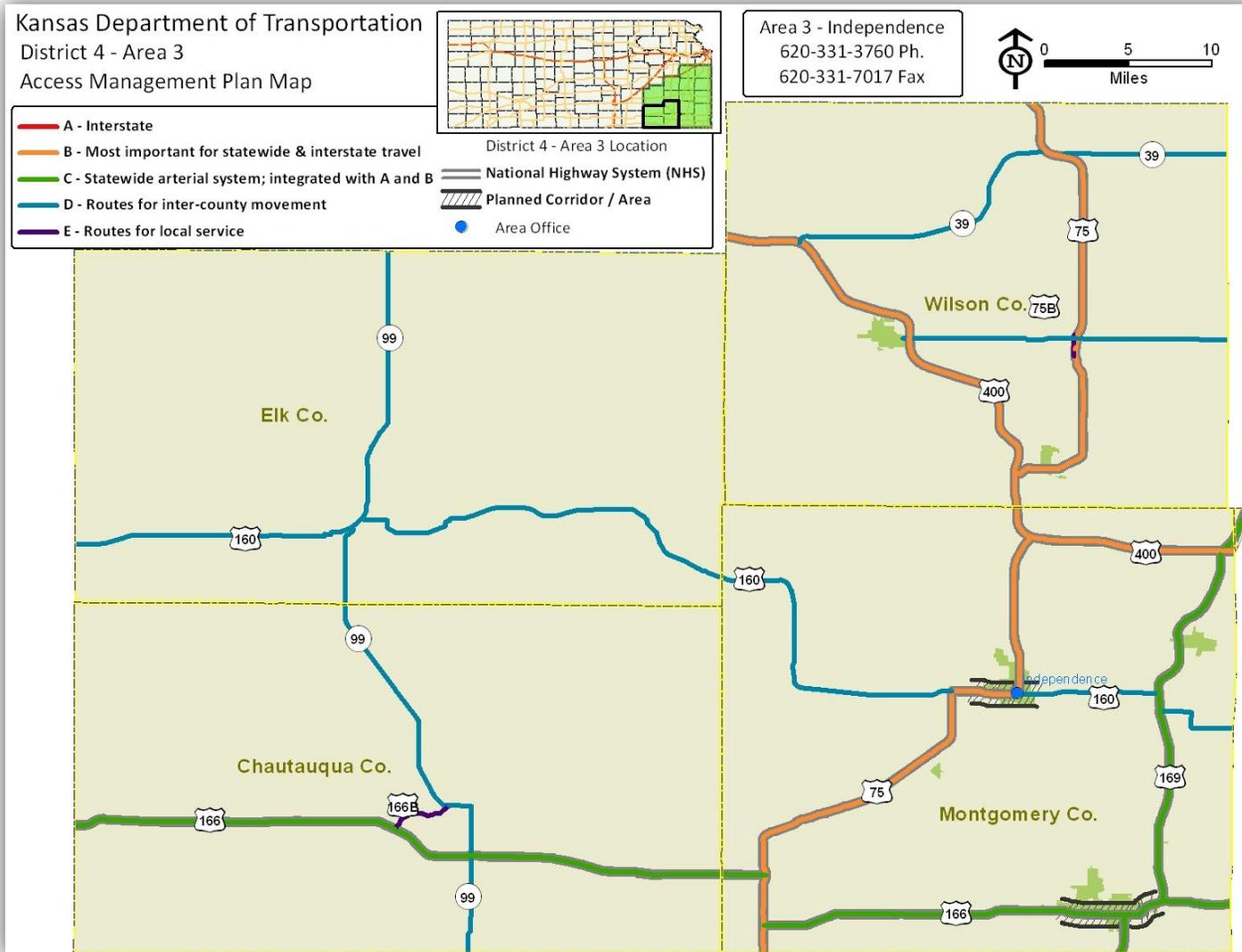
8.5.8.a District 4 – Area 1



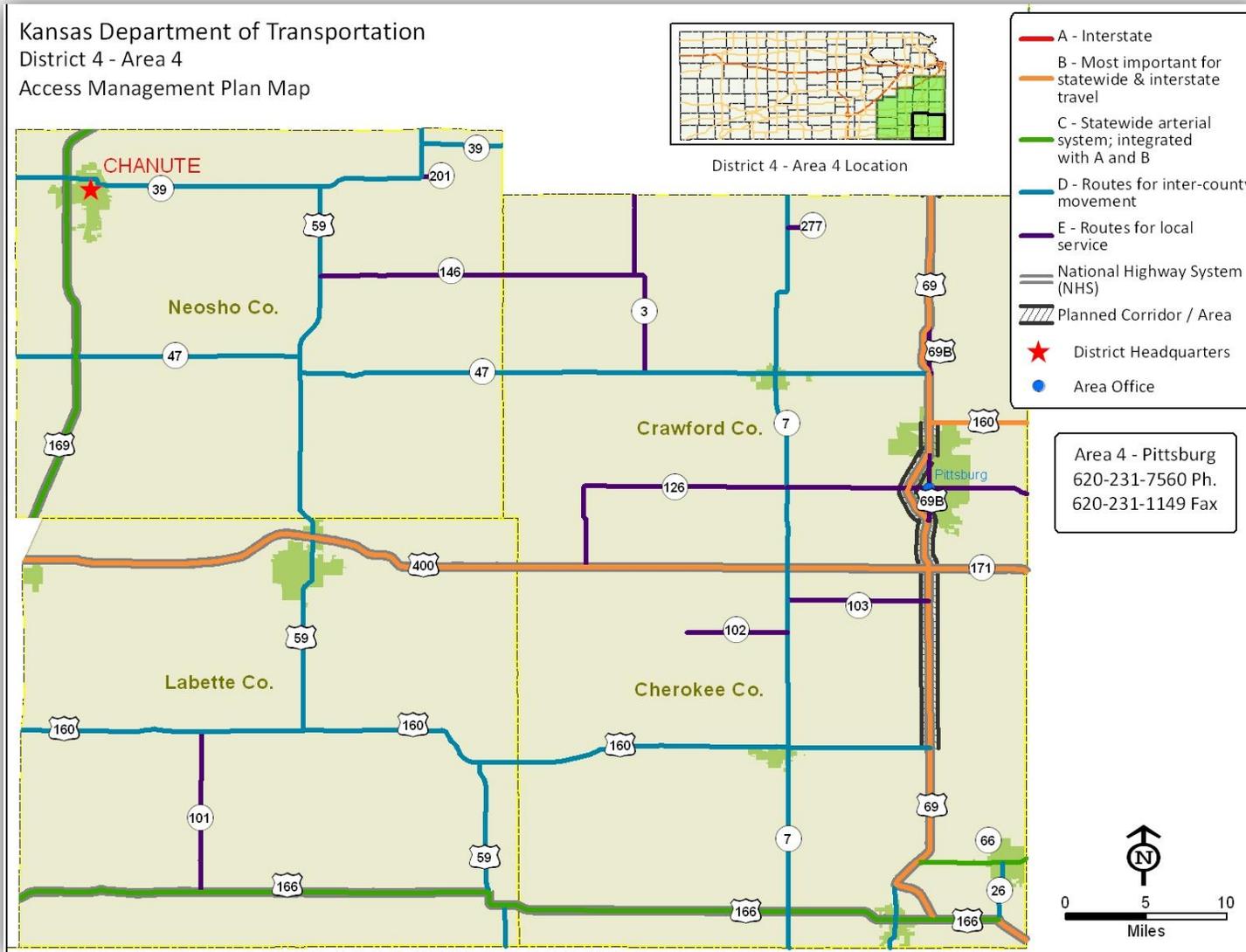
8.5.8.b District 4 – Area 2



8.5.8.c District 4 – Area 3



8.5.8.d District 4 – Area 4



8.5.9 Southcentral Kansas (District 5) Access Management Plan

District 5 has five access management plans for corridors and areas throughout the district which contribute to the *District Access Management Plan*. Each plan is described in this section.

8.5.9.a US-54 (Sedgwick and Butler Counties)

This planned corridor consists of two segments of US-54 in Sedgwick and Butler counties. The western segment begins at Sedgwick county milepost nine (approximately state milepost 198.7) and proceeds easterly to terminate within the city limits of Wichita at Maize Road. The eastern segment begins at the interchange with Rock Road and proceeds easterly to terminate east of Augusta at the intersection of Pickerel Corner.

The US-54 corridor in Sedgwick and Butler Counties is designated as a planned corridor because of its critical role in the east-west movement of people and goods in the region and because of the development pressures in this rapidly growing area. This corridor is a Class B route, is designated part of the National Highway System, and is the only east-west route through the Wichita metropolitan area. From a statewide perspective, US-54 extends from Oklahoma in the southwest to Missouri in the east and serves important interstate and intrastate trip movements. In addition, US-54 is a critical component of Wichita's local transportation network; a large amount of local resources have been invested in the highway segment. This segment is now fully access controlled and, thus, is not included in the designation of the planned corridor. However, municipal planning officials have additional plans for the remainder of the corridor and have expressed interest in working with KDOT in management of this vital route.

Development pressures on this corridor in recent years have been immense. For instance, between 1974 and 1996, the buffer between the west Wichita urban area boundary and the city of Goddard has been reduced from approximately 6 miles to about 3 miles. An even more pressing situation exists on the eastern segment of the designated corridor. There is, for practical purposes, no undeveloped area between Wichita and Andover. The eastern Wichita urban area boundary coincides with the Butler County line. In the period from 1974 to 1996, the city of Andover has developed to the south, jumping US-54, and is developing to the east at a rapid rate.

The Sedgwick county portion of this corridor is now the subject of a *US-54 Corridor Management Plan* with an agreement between the Secretary, Sedgwick County, and the city of Wichita that is incorporated by reference and made part of the plan. The *Corridor Management Plan* calls for the eventual upgrade of all of US-54 to a freeway system. With that in mind, direct access to US-54 is expressly prohibited. Alternate access is required of all new developments and alternate access will be phased in for existing areas. Further, median crossovers will be phased out with fully directional intersections at mile-line arterials only. The Butler County portion of this corridor is currently under consideration for conversion to a freeway section in the future.

8.5.9.b US-77 from Winfield to Arkansas City (Cowley County)

This corridor consists of US-77 between the city of Winfield and the city of Arkansas. US-77 is a Class B route that connects Arkansas City with the Oklahoma state line to the south and Winfield with the city of Augusta to the north. This section of US-77 is a four-lane expressway and considered part of the National Highway System. Strother Field, a regional airport with additional development, is located off US-77 near the center of the corridor. Traffic volumes along the

corridor vary from 11,100 ADT on the north end of Arkansas City to 12,500 ADT near Strother Field and 11,500 ADT near the south end of Winfield (2011 KDOT Traffic Count Map). In order to address the continued growth and severe crashes along this corridor, Arkansas City, the city of Winfield, and Cowley County, in partnership with KDOT, initiated the *US-77 Corridor Management Plan* (www.ksdot.org/projects.asp). This plan was completed in 2008.

8.5.9.c K-96 from the city of Maize to the city of Hutchinson (Sedgwick and Reno Counties)

This corridor consists of the segment of K-96 from the city of Maize in Sedgwick County to the city of Hutchinson in Reno County. K-96 is a Class B route that was reconstructed as a four-lane expressway in the late 1990s. This section of K-96 is considered part of the National Highway System. The K-96 corridor is considered a commuter route between Hutchinson and Wichita and has experienced severe crashes at several intersections. Traffic volumes along the corridor vary from between 5,000 ADT and 12,000 ADT (2011 KDOT Traffic Count Map). KDOT intends to work with local partners (i.e., city of Hutchinson, city of Yoder, city of Haven, city of Mount Hope, city of Maize, Reno County, and Sedgwick County) to initiate a corridor management plan for this section of K-96.

8.5.9.d K-254 from the city of Wichita to the city of El Dorado (Sedgwick and Butler Counties)

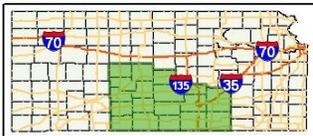
This corridor consists of the segment of K-254 from the city of Wichita in Sedgwick County to the city of El Dorado in Butler County. K-254 is a Class B route that was reconstructed as a four-lane expressway in the late 1990s. This section of K-254 is considered part of the National Highway System. The K-254 corridor is considered a commuter route between Wichita and El Dorado and has experienced severe crashes at several intersections. Traffic volumes along the corridor vary from over 11,000 ADT near the city of Wichita to over 12,000 ADT near the city of El Dorado (2011 KDOT Traffic Count Map). KDOT staff intend to work with local partners along the corridor (i.e., city of Wichita, city of Kechi, city of Bel Aire, city of Benton, city of Towanda, city of El Dorado, Sedgwick County, and Butler County) to initiate a corridor management plan for this section of K-254.

8.5.9.e K-53 from US-81 east to the city of Mulvane (Sumner County)

The K-53 corridor connects the city of Mulvane on the east with I-35/KTA on the west. The west end of the corridor is near the new Kansas Star Casino, which is scheduled to open its first phase in early 2012. Traffic volumes and development opportunities will increase as a result along K-53. K-53 is currently a two-lane Class E route. Traffic volumes along the corridor vary from 2,700 ADT to over 3,600 ADT (2011 KDOT Traffic Count Map). KDOT staff intend to work with local partners (i.e., city of Mulvane, Sumner County) to initiate a corridor management plan for this section of K-53.

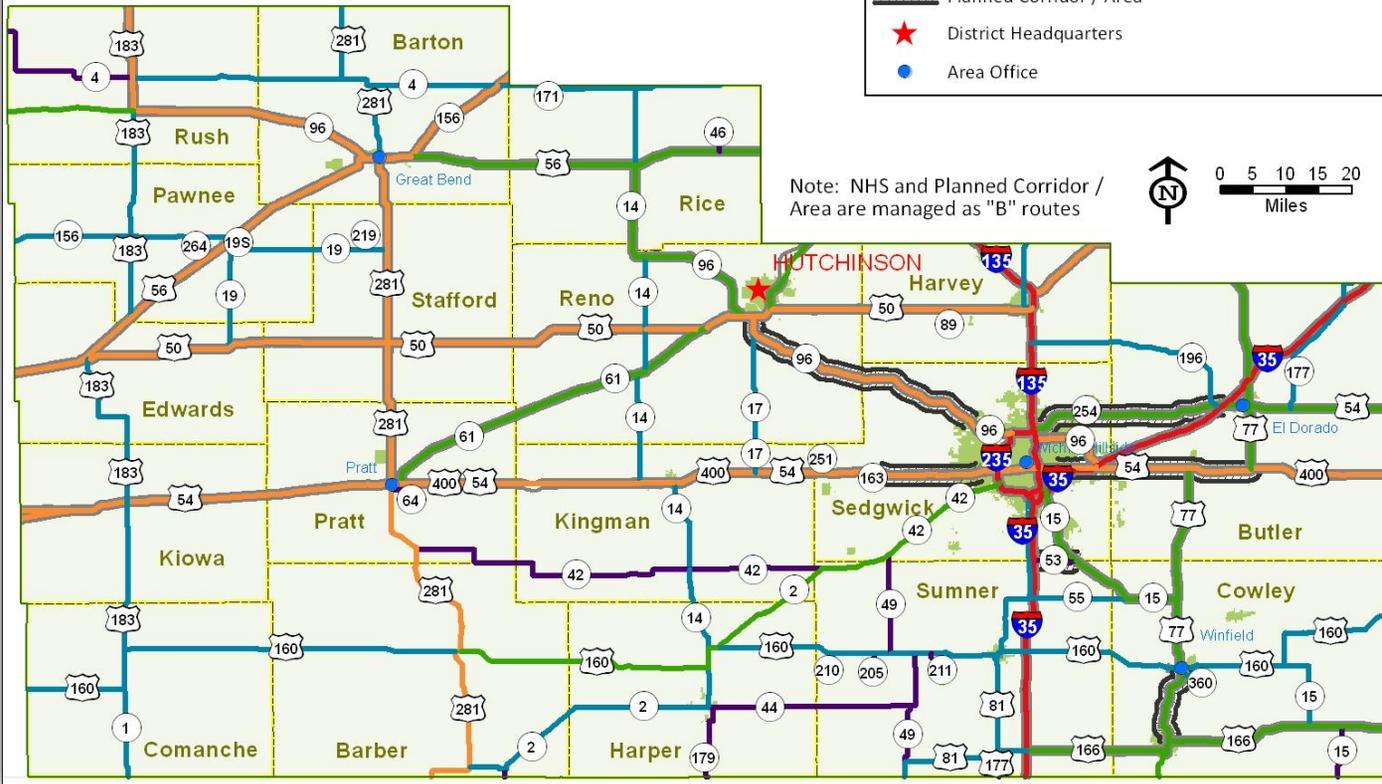
8.5.10 District 5 Access Management Plan maps

Kansas Department of Transportation
District 5 Access Management Plan Map



District 5 Location

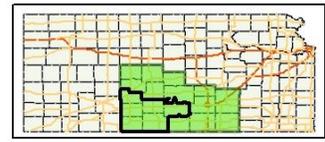
- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- ★ District Headquarters
- Area Office



8.5.10.a District 5 – Area 1

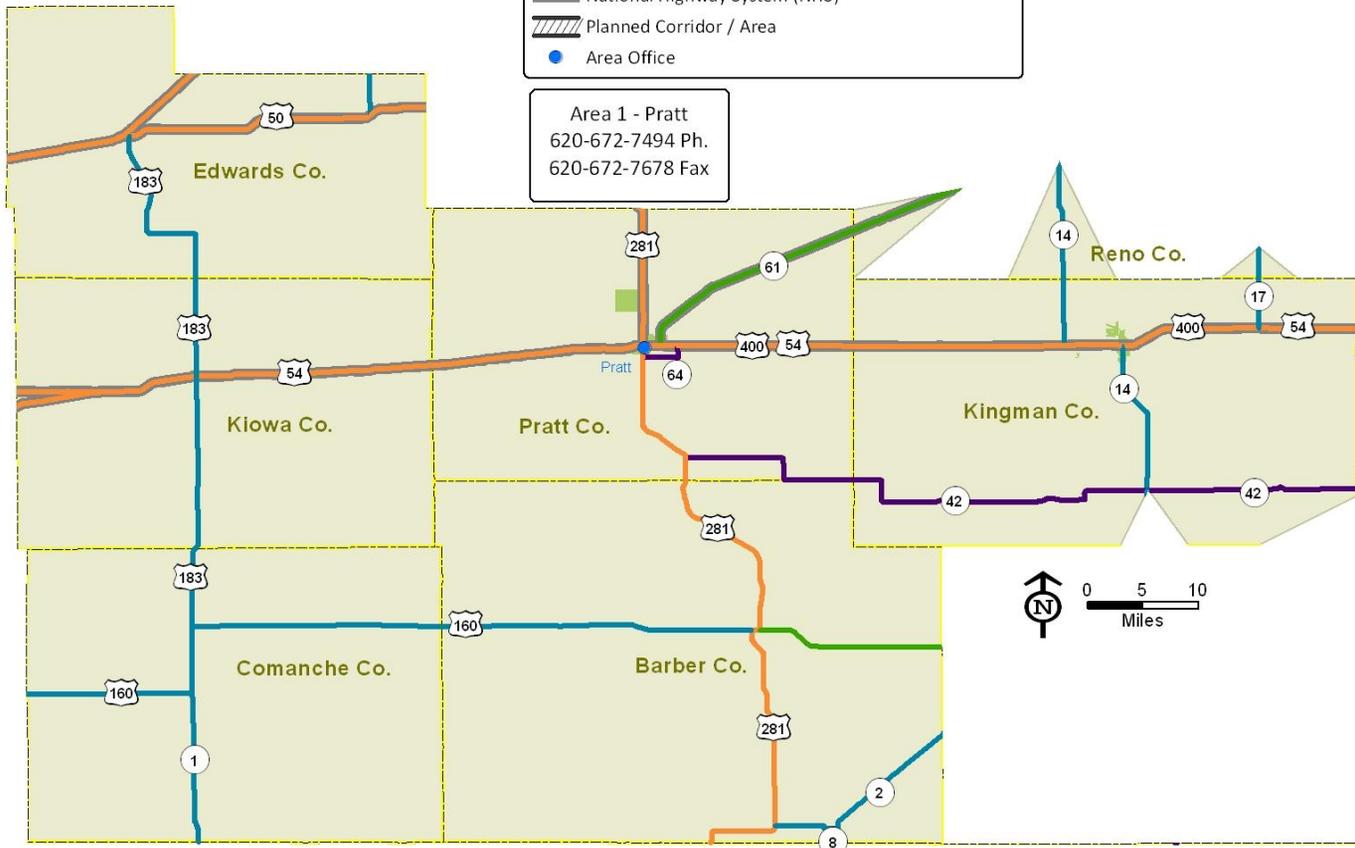
Kansas Department of Transportation
 District 5 - Area 1
 Access Management Plan Map

- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- Area Office



District 5 - Area 1 Location

Area 1 - Pratt
 620-672-7494 Ph.
 620-672-7678 Fax



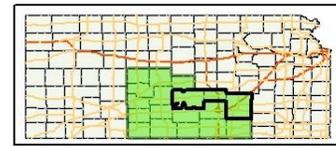
8.5.10.b District 5 – Area 2

Kansas Department of Transportation
District 5 - Area 2
Access Management Plan Map

-  A - Interstate
-  B - Most important for statewide & interstate travel
-  C - Statewide arterial system; integrated with A and B
-  D - Routes for inter-county movement
-  E - Routes for local service
-  National Highway System (NHS)
-  Planned Corridor / Area
-  District Headquarters
-  Area Office

District 5 - Hutchinson
620-663-3361 Ph.
620-663-1804 Fax

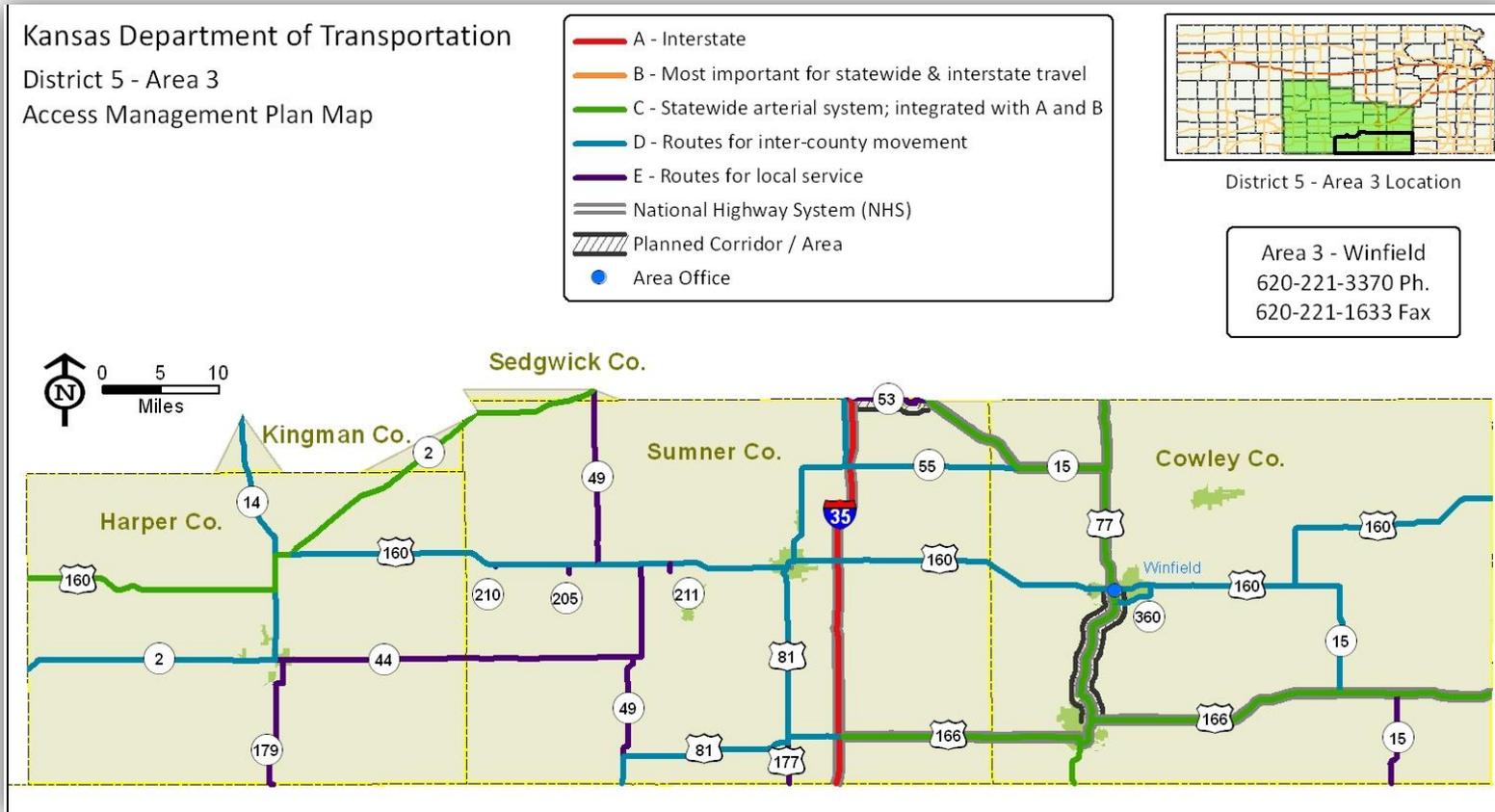
Area 2 - El Dorado
316-321-3370 Ph.
316-321-1702 Fax



District 5 - Area 2 Location



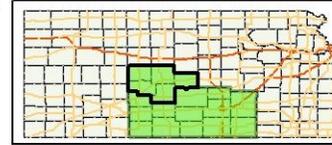
8.5.10.c District 5 – Area 3



8.5.10.d District 5 – Area 4

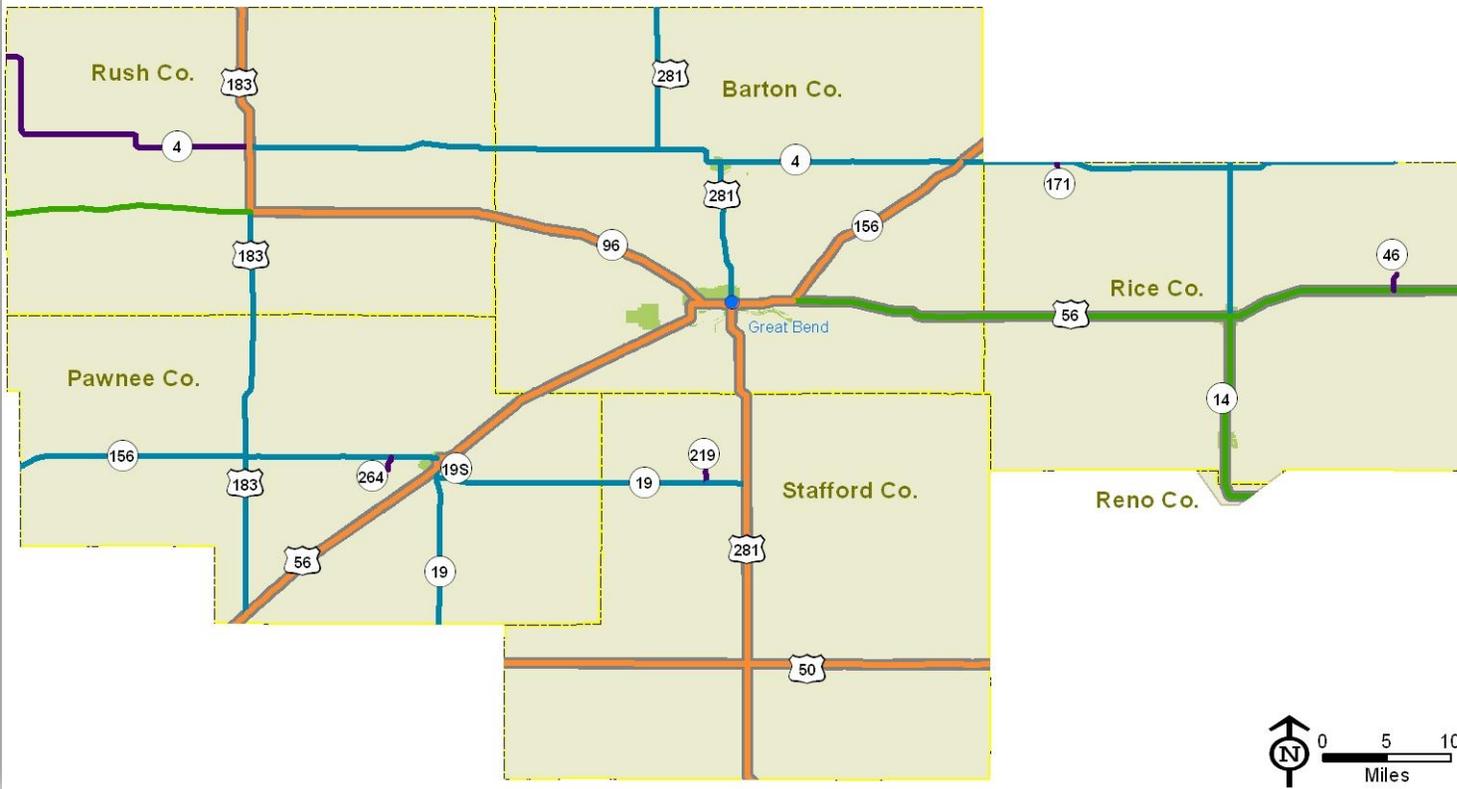
Kansas Department of Transportation
 District 5 - Area 4
 Access Management Plan Map

- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- Area Office

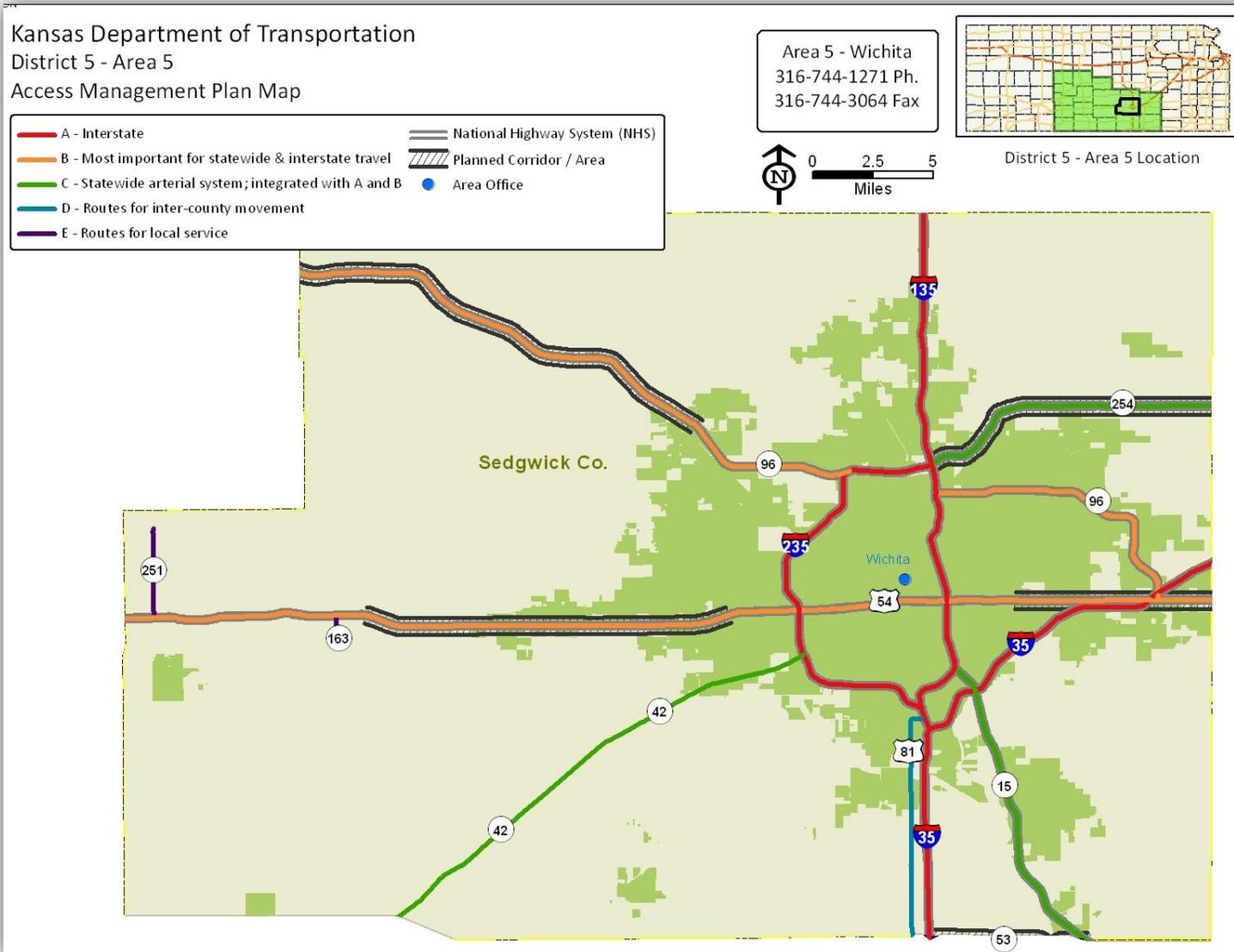


District 5 - Area 4 Location

Area 4 - Great Bend
 620-793-5408 Ph.
 620-793-6216 Fax



8.5.10.e District 5 – Area 5



8.5.11 Southwest Kansas (District 6) Access Management Plan

District 6 has five access management plans for corridors and areas throughout the district which contribute to the *District Access Management Plan*. Each plan is described in this section.

8.5.11.a K-156 from Campus Drive east to Sixteen Mile Road (Finney County)

The K-156 corridor in Finney County is designated a planned corridor because of its critical role as an east-west commercial route. This corridor is a Class D route but is designated for a higher level of management because of its role in connecting the US-83, US-283, and US-56 corridors and because of its importance to commercial development for Garden City, an urban area with a population of almost 29,000.

The segment designated is particularly critical not only for local trip movements and commercial and industrial development, but also for traffic flow characteristics, such as traffic volume and safety records. The designated segment shows traffic counts of around 2,310 ADT (2011 KDOT Traffic Count Map) and serves a rapidly developing area. Without limitations on the number of access points and without a higher level of management, greater intensity of land use will jeopardize operational efficiency and will likely increase the magnitude of safety issues. Effective implementation of a K-156 corridor management plan, in cooperation with local partners, can help prevent degradation of safety and capacity.

8.5.11.b US-83 from the Oklahoma/Kansas state line to the north Scott County line near Scott City (Scott County)

The US-83 corridor extends from the state line in Liberal to the north Scott County line just north of Scott City. There are the two active agreements along the US-83 corridor, including local partners at Liberal and Garden City.

The south limits of the corridor involve a segment of US-83 highway in Liberal. The *US-83 Corridor Management Plan* extends from the state line north approximately 7.5 miles to the junction of the county road (Sally Road). This corridor is designated because of a desire to protect this newly constructed highway alignment and to coordinate the commercial and industrial development in the area with the transportation. The plan calls for an eventual four-lane section with non-traversable median. Further, fully directional access is limited to public street intersections at one-half-mile spacing with the possibility of one-quarter-mile right-in/right-out access where justified. Sufficient setback will be maintained on new developments to allow for future expansion of the highway.

In Finney County, the designation extends from the junction of US-83/US-83 Business to the south of Garden City north approximately 11.8 miles to Six Mile Road. This corridor is designated, in part, because US-83 is the principal north-south route utilized for the movement of people and goods from Oklahoma to I-70. The corridor is also designated because of strong trends in commercial and industrial development in the Garden City area and because of concerns regarding coordination of land use and transportation.

A feasibility study completed in 2010 (KDOT) along US-83 between the US-56 junction near Sublette (Haskell County) and Scott City (Scott County) has recommended the design and installation of passing lanes along the corridor. Additional future growth may occur near the planned interchange at US-83 and US-56 just west of Sublette. There is also an interchange

proposed for US-83/US-160/US-144 in Haskell County. If designed and constructed, these interchanges present a potential for future development.

As a result of this potential development, existing three-party agreements would need to be modified, and additional local partners along the corridor engaged, to extend the limits of the US-83 corridor beyond the existing plan limits in Seward and Finney counties.

8.5.11.c US-54 Oklahoma/Kansas state line east to Ford County line

The US-54 corridor from the state line east to the east Ford County line is a new planned corridor. The KDOT T-WORKS Program will design and construct four-lanes on US-54 east of Liberal. There is a proposed design concept study to extend the four-lane section of US-54 to Seward and Meade Counties. This entire corridor will eventually be under consideration for development as a partial access control corridor. No existing agreements are in place along US-54.

8.5.11.d US-50 Kearny/Finney County line east to the Ford/Edwards County line

The existing planned corridor designation includes two segments of US-50 in the Garden City area. The first segment begins to the west of Garden City at the IBP plant entrance and proceeds east approximately 7 miles to the west junction of US-50/US-83. The second segment begins at the east junction of US-50/US-83 and proceeds east approximately 4.5 miles and terminates at the intersection at Sixteen Mile Road. This corridor is designated because of the very heavy industrial development that has taken place in recent years and because of concerns of conflicts between heavy industrial and passenger traffic. A three-party agreement exists between the city of Garden City, Finney County, and KDOT on these two sections of the corridor.

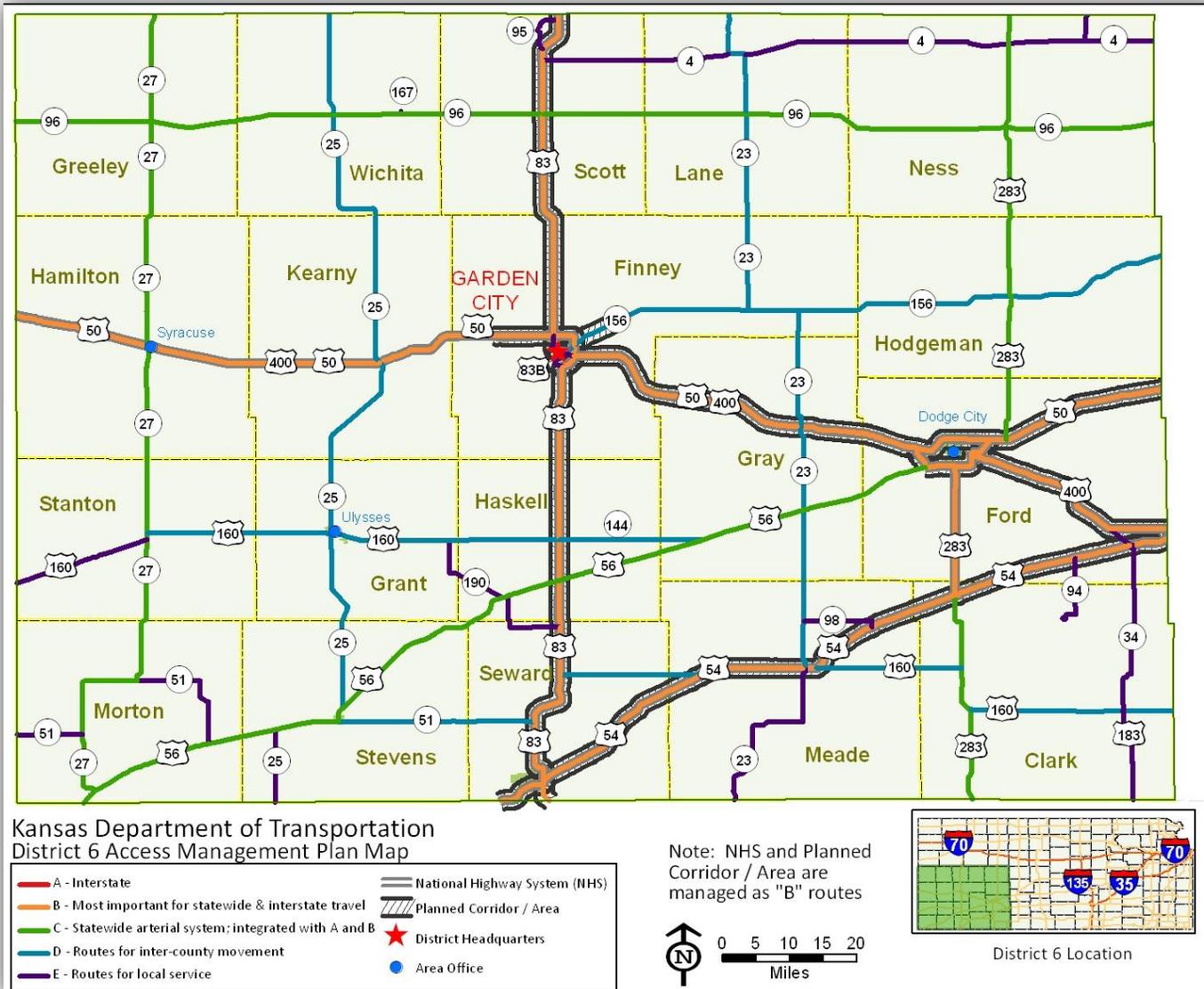
The US-50 planned corridor is being extended on the west side of Finney County because of the recent four-lane expansion west of Garden City that will be extended further west. An extension of the existing plan at Garden City requires changes to the three-party agreement to include this updated portion of US-50 to the west. An extension of the US-50 planned corridor to the east of Garden City is needed because of the pending T-WORKS projects that will add four lanes between Cimarron in Gray County and Dodge City in Ford County. There is interest in extending the four-lane corridor east of Dodge City in the future. No existing agreements exist for the US-50 planned corridor east of Garden City.

Two potential area transportation plans exist at the new interchanges of US-50 and Big Lowe Road as well as US-50 and US-83 in Finney County based on the potential for future development at each interchange.

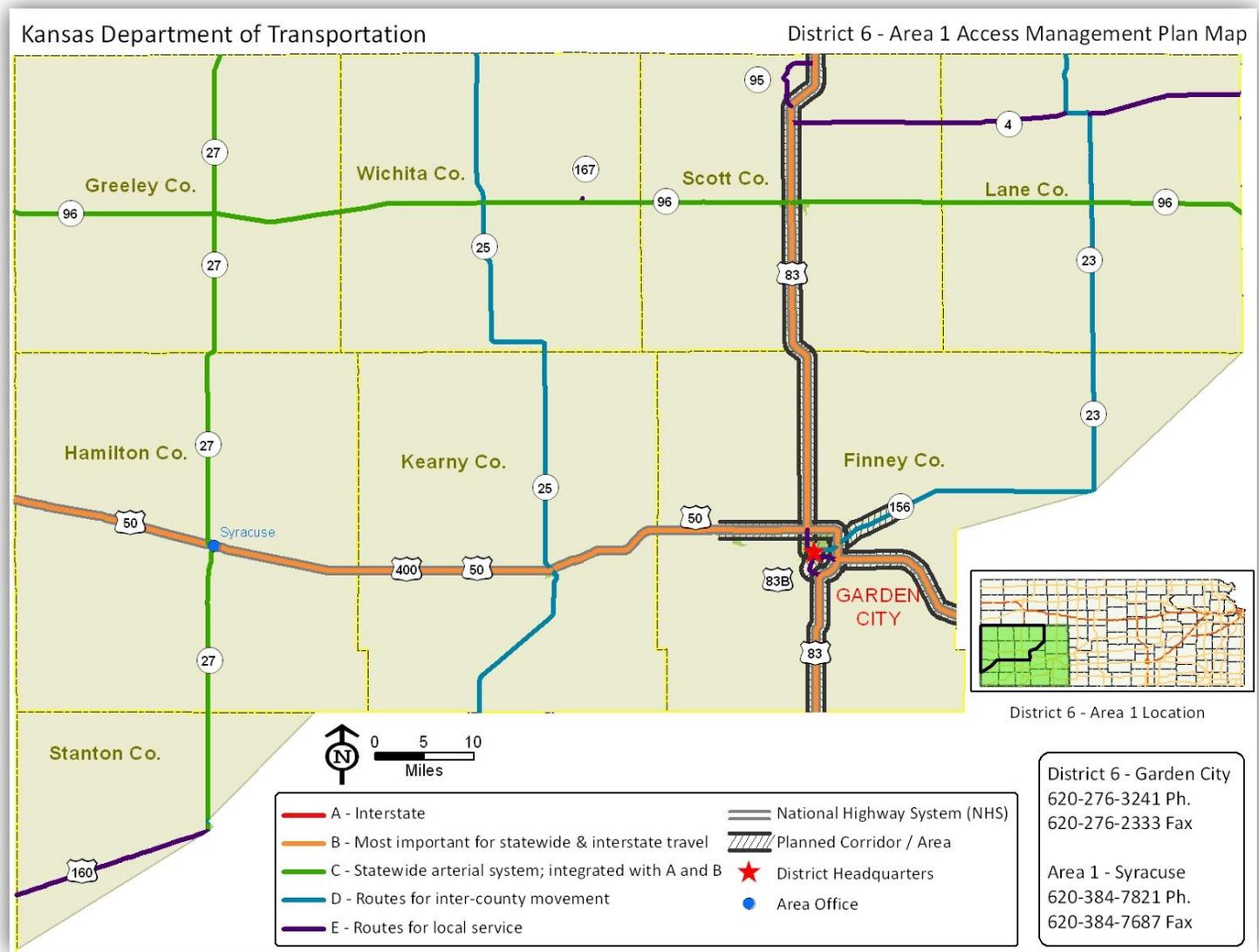
8.5.11.e US-400 from US-50 west of Dodge City and east to the Ford/Kiowa County line

The future development of a four-lane corridor on US-54 would likely result in the need for a similar facility into Dodge City along some portion of the US-400 corridor. This includes the new SE US-400 Dodge City bypass and extends east of Dodge City to the east Ford County line. US-400 is currently a Class B route and is considered a part of the National Highway System. Traffic volumes along the corridor vary from 900 ADT to 3,000 ADT (2011 KDOT Traffic Count Map). KDOT intends to work with local partners along the corridor (i.e., Dodge City, Ford County) to initiate a corridor management plan that would assist the future decision-making process regarding developments along this section of US-400.

8.5.12 District 6 Access Management Plan maps

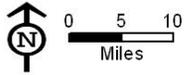


8.5.12.a District 6 – Area 1

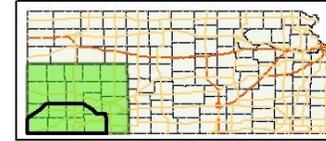


8.5.12.b District 6 – Area 2

Kansas Department of Transportation
 District 6 - Area 2
 Access Management Plan Map

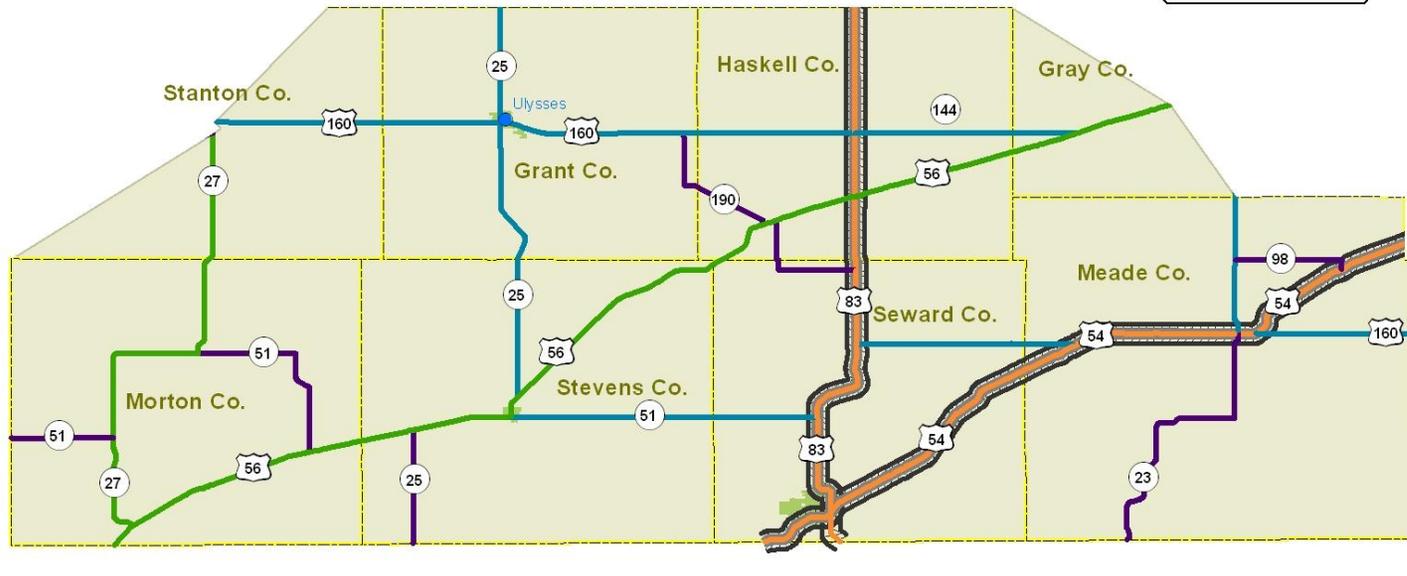


- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- Area Office



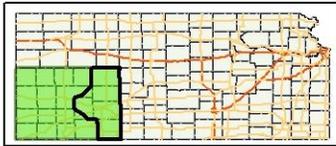
District 6 - Area 2 Location

Area 2 - Ulysses
 620-356-1531 Ph.
 620-356-4361 Fax



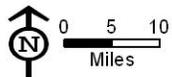
8.5.12.c District 6 – Area 3

Kansas Department of Transportation
 District 6 - Area 3
 Access Management Plan Map



District 6 - Area 3 Location

Area 3 - Dodge City
 620-227-6122 Ph.
 620-227-2537 Fax



- A - Interstate
- B - Most important for statewide & interstate travel
- C - Statewide arterial system; integrated with A and B
- D - Routes for inter-county movement
- E - Routes for local service
- National Highway System (NHS)
- Planned Corridor / Area
- Area Office

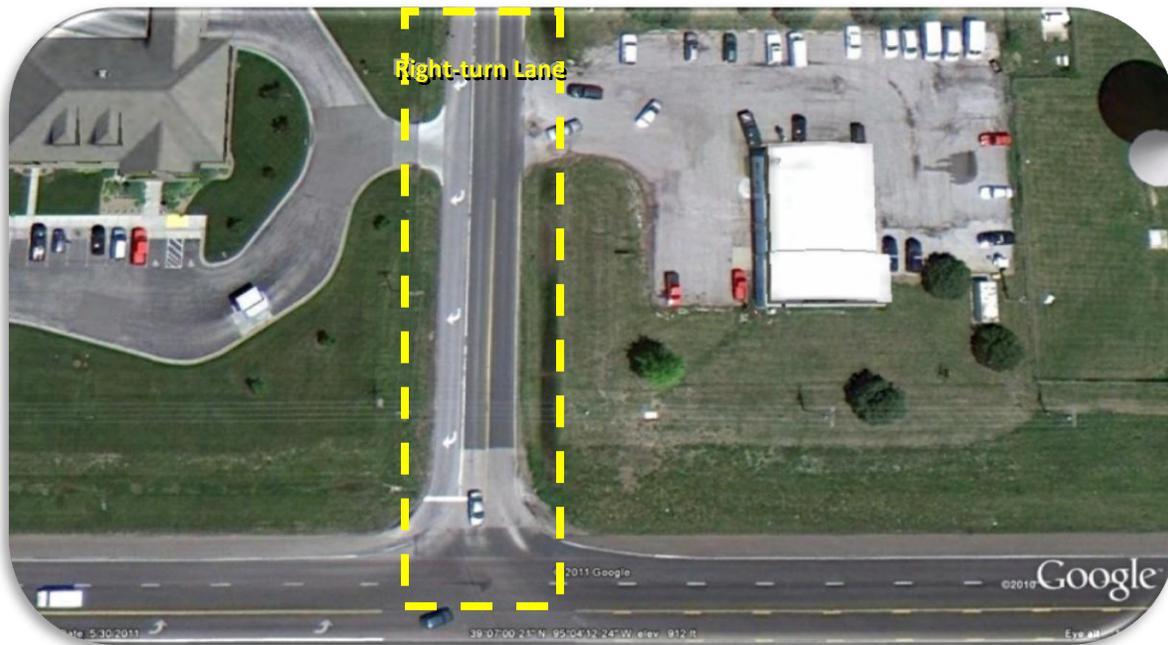


8.6 Access management set-aside funded project case studies

8.6.1 Left- and right-turn lanes

The city of Tonganoxie funded a right-turn lane on Laming Road at the intersection of US-24 and Laming Road, north of US-24 through an access management set-aside. There are several commercial developments along Laming Road, and the right-turn lane decreases delay and facilitates throughput of traffic onto US-24. This improvement was executed as part of the *US-24/US-40 Corridor Management Plan*. Figure 8-1 identifies the right-turn lane that was developed as part of the project in Tonganoxie.

Figure 8-1. Right-turn lane in Tonganoxie



8.6.2 Joint access or cross access connections

The city of Lawrence created a joint access connection and cross access connections between a CVS pharmacy and the El Mezcal restaurant. This project also opened the connection to other land uses on adjacent parcels. The joint access improved safety at the intersection and for vehicles entering and exiting the highways. The project was part of an economic development plan and provided improvements on both K-10 and US-59. Another noteworthy improvement associated with this project is the pedestrian connectivity from the intersection directly to the CVS building. Figure 8-2 identifies the joint access that was developed as part of the Lawrence project.

Figure 8-2. Joint access and cross access connections



8.6.3 Consolidated access points

The city of Lawrence consolidated two access points for adjacent businesses into one access as part of an economic development plan. The access management set-aside funds allowed Lawrence to complete this unfunded portion of its project. The University Bookstore and O’Reilly Auto Parts now have a single consolidated access point along K-10/23rd Street through Lawrence. Figure 8-3 identifies the consolidated access that was developed as part of the project in Lawrence.

Figure 8-3. Consolidated access in Lawrence



8.6.4 Raised Medians

The city of Hays supported the US-183 Corridor Plan by funding a one-quarter mile raised median along US-183 from 26th to 27th Streets. The median prevents left-turns from US-183 into Walgreens and instead requires traffic to access the Walgreens from the adjacent local road, Vine Street. The raised median improved safety at the US-183 and Vine Street intersection and supports improved capacity and efficiency on US-183. Figure 8-4 identifies the raised median that was developed as part of the project in Hays.

Figure 8-4. Raised median in Hays



8.6.5 Frontage and backage roads

The city of Basehor created a one-half mile two-lane *backage road* (also known as *reverse frontage*) along Wolf Creek Parkway between 150th and 153rd Streets. This project helped preserve the safety and efficiency of the US-24/US-40/State Avenue corridor by avoiding access to a new development directly from the highway. Figure 8-5 identifies the two-lane backage road that was developed as part of the Basehor project.

Figure 8-5. New backage road project in Basehor



8.7 Setback Calculations

To determine building setback guidelines for developments along Kansas state highways, KDOT has used the route access control designations, area type, access type, and an approximate future build-out footprint to provide the appropriate context for each scenario. The approximate future build-outs for different facilities are calculated as follows:

- Freeway/expressway (developed)—approximate total distance from centerline of right-of-way = 132 feet
 - Centerline of median barrier (centerline of right-of-way) = 2 feet
 - Inside shoulder = 12 feet
 - Three 12-foot lanes = 36 feet
 - Outside shoulder = 12 feet
 - Separation to frontage road = 40 feet
 - Frontage road, bounded by the outside right-of-way line = 30 feet
- Freeway/expressway (undeveloped)—approximate total distance from centerline of right-of-way = 163 to 208 feet
 - Centerline of median (centerline of right-of-way) = 20 to 65 feet
 - Inside shoulder = 12 feet
 - Two 12-foot lanes = 24 feet
 - Outside shoulder = 12 feet
 - Separation to frontage road = 40 feet
 - Frontage road = 30 feet
 - Separation to outside right-of-way line = 25 feet
- Major arterial (developed)—approximate total distance from centerline of right-of-way = 111 feet
 - Centerline of raised median/TWLT (centerline of right-of-way) = 7 feet
 - Three 12-foot lanes = 36 feet
 - Curb and gutter = 3 feet
 - Sidewalk = 10 feet
 - Separation to frontage road = 25 feet
 - Frontage road, bounded by the outside right-of-way line = 30 feet
- Two-lane highway (undeveloped)—approximate total distance from centerline of right-of-way = 117 feet
 - Centerline of two-lane highway (centerline of right-of-way) = 0 feet
 - One lane = 12 feet
 - Outside shoulder = 10 feet
 - Separation to frontage road = 40 feet
 - Frontage road = 30 feet
 - Separation to outside right-of-way line = 25 feet

- Minor arterial (developed)/CBD—approximate total distance from centerline of right-of-way = 65 feet
 - Centerline of raised median/TWLT (centerline of right-of-way) = 6 feet
 - Two 12-foot lanes = 24 feet
 - Angle parking (45 degree) = 20 feet
 - Curb and gutter = 3 feet
 - Sidewalk, bounded by the outside right-of-way line (building front) = 12 feet

8.7.1 Considering roadway future build-out width

When considering setbacks, it is beneficial to consider the future build-out width of the roadway to prevent development too close to future roadways. The future roadway could consume setback space depending on its alignment. Examples of the potential consequences of this are presented in the following figures.

In Figure 8-6 and Figure 8-7, the white lines demark the right-of-way of the existing 2-lane, partial access control-2, non-commercial roadway. The development on the north side was built to the minimum recommended setback of 110 feet for non-commercial and 125 feet for commercial development. The development on the south side of the roadway was built to the maximum recommended setback of 205 feet for non-commercial and 230 feet for commercial development.

Figure 8-6 illustrates how applying the maximum setback to the south of the existing roadway allows the future right-of-way to extend to the south without conflicting with the existing development. The yellow lines demark the future right-of-way if the roadway is widened to the south. If the roadway is widened to the south, the existing development will remain outside the future right-of-way.

Figure 8-6. Example of potential consequence of maximum setback recommendations

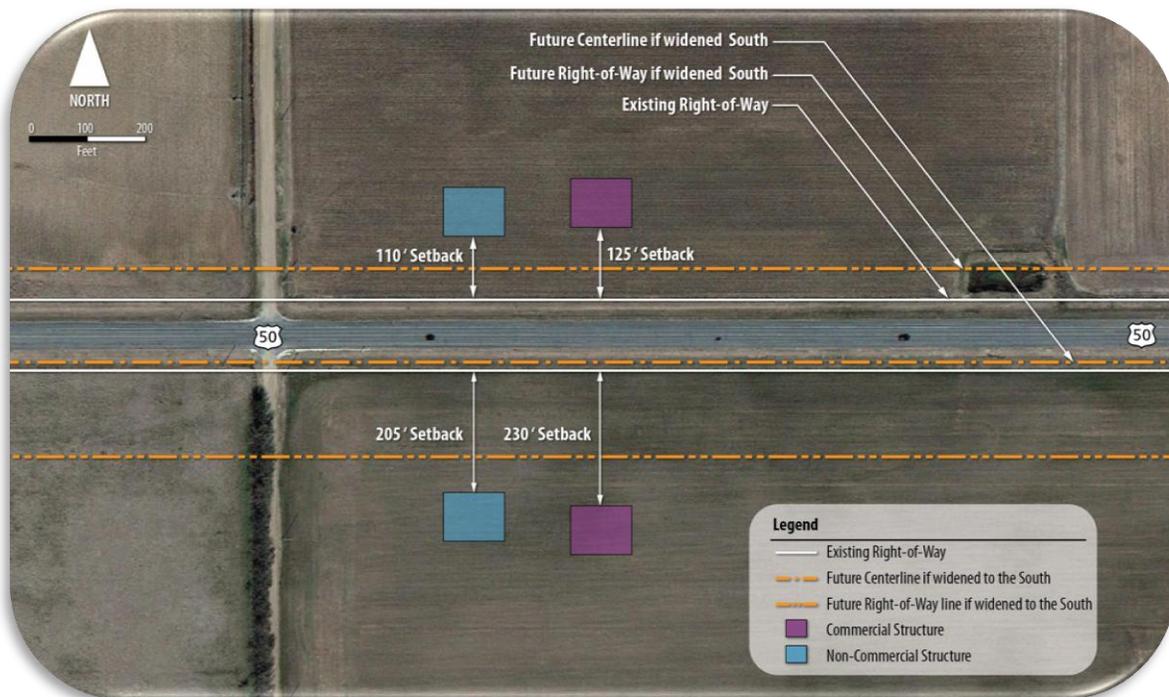
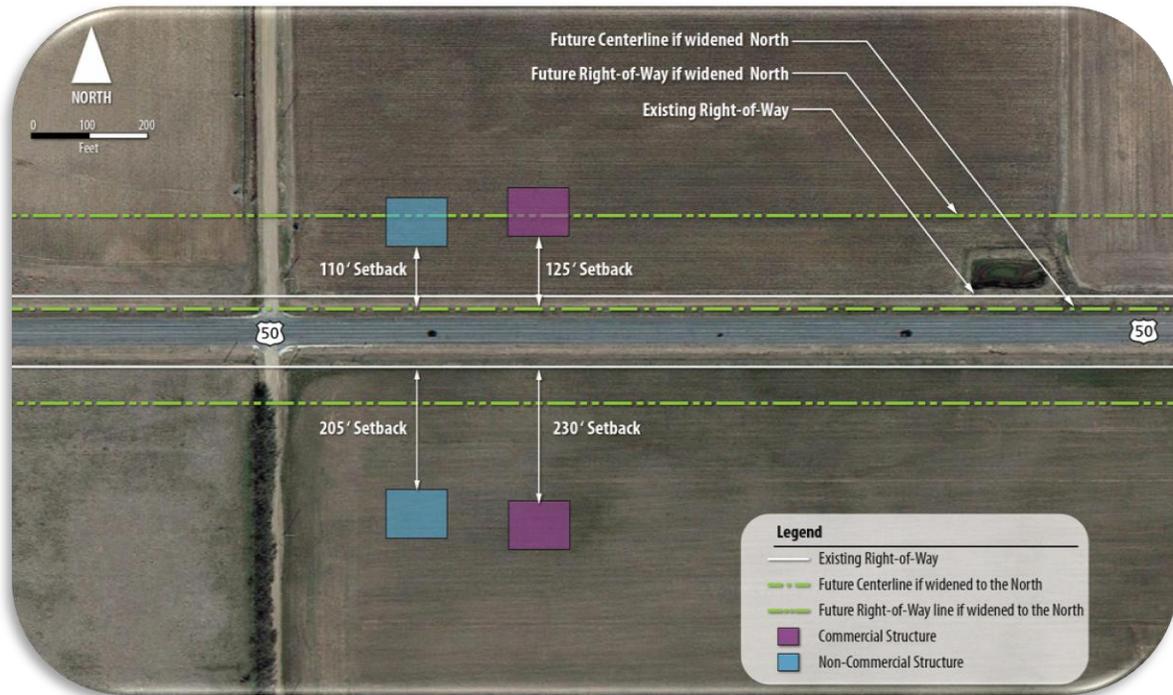


Figure 8-7 illustrates how applying the minimum setback to the north of the existing roadway could create potential conflict with the existing development if the roadway is widened to the north. The green lines demark the future right-of-way if the roadway is widened to the north. If the roadway is widened to the north, the existing development will be within the future right-of-way. Therefore, it is beneficial to consider the future potential build-out of a roadway when applying setbacks.

Figure 8-7. Example of potential consequence of minimum setback recommendations



8.8 Sample Basic Traffic Impact Study (TIS)

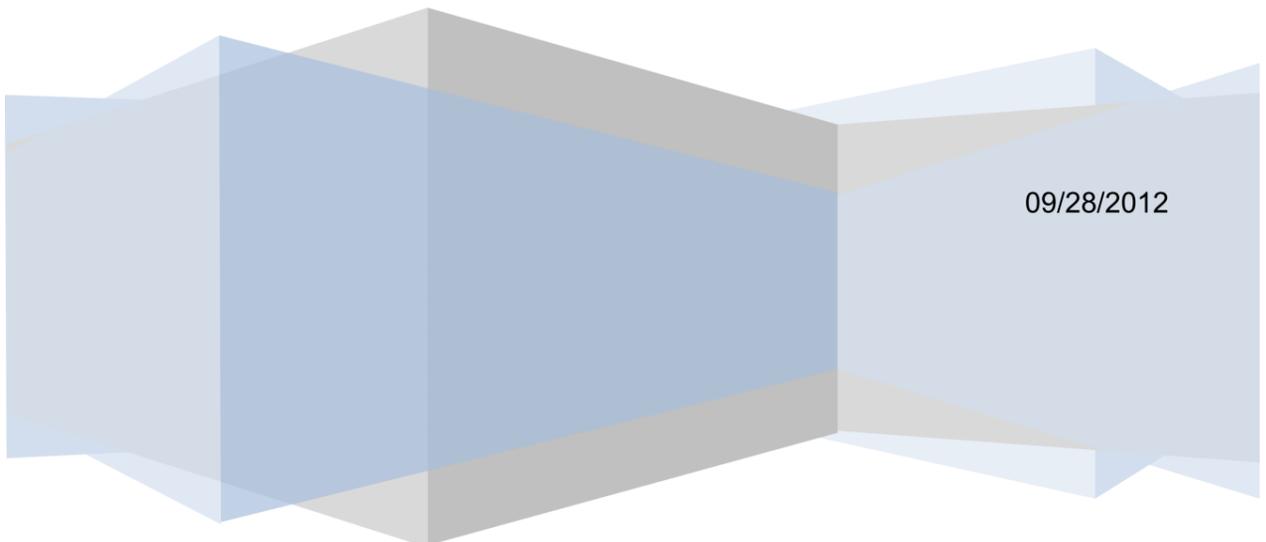
Engineering Company

SAMPLE

**Basic Traffic Impact
Study – Gas XYZ**

Convenience Store/Gas Station

John Hancock



- **Proposed development plan**
 - *Location description* – The proposed development is for XYZ Gas located on SW corner of US-75 and W Butler St in Yates Center KS., in Woodson County in KDOT District 4. Approximately 0.25 miles North of US-54 about 0.1 miles north of mile marker 75.
 - *Land use—existing and proposed*
 - Existing is a 7500 sq ft beer bar, with 1200 sq ft outside area.
 - Proposed is a gas station convenience store will be 5000 sq ft with 3700 sq ft outside with four pumps (8 fueling stations).
 - *Site plan access—existing (if any) and proposed*
 - The site currently has 3 access points. The main entrance is a 69-foot wide access on US-75 located 50 feet south of W Butler St. The second and third access points are on W Butler St 65 feet and 165 feet west of US-75.
 - The proposed site will have 2 access points. The main will be a 36-foot wide concrete access located on the south property line approximately 150 feet south of W Butler St on US-75. The second existing entrance on W Butler St located 65 feet west of US-75 will be closed and the third entrance, 165 feet west of US-75 will be upgraded to a 30-foot access. A site plan is included in the appendix.
- **Highway and area street characteristics**
 - *KDOT Access route classification* – US-75 is classified as a Class B highway
 - *On the National Highway System?* – US-75 is on the National Highway System
 - *Posted speed limit* – This is a 50 mph facility.
 - *Type of area* – This site is located within the city limits of Yates Center in a developed area
 - *Roadway characteristics*
 - US-75 is a two-lane, undivided facility with 12' lanes, 9' asphalt shoulders and open ditches.
 - East of US-75, W Butler St is a two-lane, asphalt paved, stop-controlled street 350 feet in length. West of US-75, W Butler St is a narrow, two-lane, gravel, stop-controlled street approximately 900 feet that serves three businesses in addition to serving the new gas station convenience store.
 - *Existing transportation system plans* – This site is not located in a planned corridor
- **Existing traffic condition plus site generated traffic**
 - *Existing traffic volumes daily and peak hour (directional)* – According to the 2012 KDOT flow map, the traffic count on US-75 is 2,610 with 650 of that being Heavy Commercial. It is assumed that the directional split will be 50/50, resulting in 1305 vehicles per day in each direction. It is assumed that 10% of the daily volumes will be the peak hour volumes. This results in 261 vph on US-75. During the PM peak hour it is assumed that there is a 60/40 split with 60% of the traffic coming from the North going toward US-54. See Appendix for diagram.
 - *ITE daily trips and trips in the peak hour of the generator for the site* –
 - Land Use code 853 from the 8th edition of the ITE Trip Generation Handbook, with 8 Vehicle Fueling Stations and assuming the site will generate following values. Because this is a small town with relatively low traffic volumes the minimum value was selected. This will result in 61 vehicles per hour

in the PM peak hour. The AM peak hour will not be the critical peak hour. The weekday volume will be 2962 vehicles per day, also assuming the minimum range from the Trip Generation.

However, due to the rural area and the experience with similar types of stores in remote areas the number of transaction were taken from a number of stores similar in size and in towns with comparative populations and traffic volumes. The calculations can be seen in the appendix. It is expected based on the number of transactions that this site is expected to have 1517 vehicles per day and 45 vehicles in PM the peak hour. The values based on the transactions of similar stores are lower than the minimum values from the Trip Generation Handbook; therefore, the use of the minimum values is reasonable.

- *Driveway distribution if more than one access to site* – There will be 2 access points to the site and it is expected that the access on US-75 will be used 75% of the time. Based on this assumption 46 vehicle per hour and 2222 vpd will use the access on US-75. The access on W Butler St will have 15 vph and 740 vpd usage.
- *ITE trip distribution entering and exiting in peak hour of the generator (at each access)* – According to ITE there will be a directional distribution with 50% entering and 50% exiting the access on US-75. This will result in 23 vph and 1111 vpd entering and exiting at the US-75 access.
- *Of the trips entering (each access), estimate left and right-turn movements* – Because this is located north of US-54, it is assumed that 70% of the traffic will be coming from the south. This will result in about 16 vph making a left turn and 7 vph making a right turn into the site from US-75. It is assumed that 90% of the traffic or 14 vph using the W Butler St access will be turning left into the access.
- *Design vehicle* – The design vehicle is a passenger car. There will not be any dedicated diesel fueling stations for heavy vehicles. The largest most frequent vehicle will be the tanker truck delivering gas to the site twice a week. There will also be a refrigerated delivery truck once every other week and a standard semi once a week.
- *Percent trucks* – US-75 has about 25% heavy vehicle traffic in this segment of highway, however, since not special accommodations have been made for heavy vehicles, it is anticipated that less than 1% of the daily traffic will be heavy vehicles. The site plan has been set up such that delivery trucks will enter from W. Butler St and exit onto US-75.
- **Proposed site access characteristics**
 - *Access type* – Because there are more than 50 vpd and less than 499 vpd, the access on US-75 will be a Type 5.
 - *Access width and radii* – The proposed access with will be 36' wide to accommodate one entrance lane and a dedicated left/right exit lane with a radius of 50'. This is within the range of the guidelines in the policy. This should be adequate for a passenger car. Delivery trucks will enter the site from W. Butler St.

- *Access Surfacing* – The proposed access on US-75 will be constructed of 8-inch thick concrete in compliance with the policy.
 - *Drainage method and material* – A 24” pipe 55’ in length will be installed with end section with 12” of cover in the open ditch to accommodate the 6:1 side slopes and drainage.
 - *Adjacent access spacing* –

The first upstream access on the same side of the highway as the access will be W Butler St and would be about 150 feet from the access. The first downstream access will be W Rutledge St and would be about 215 feet from the new access point. These points will also be the nearest access points on the opposite side of the highway.

The recommended access spacing per the unsignalized access spacing table is 535 feet.
 - *Intersection influence area* –

The upstream intersection influence area for W Butler St and W Rutledge St was determined to be 350 feet with a downstream distance of 355 feet. This includes the 110 feet for perception reaction time and 240 feet to decelerate. The deceleration distance was calculated using the equation in the policy on page 4-15, because there will not be any turn lane and will not be a lateral shift for turning traffic.

Since the upstream distance of W Rutledge St is 350 feet and the downstream distance of W Butler St is 355 feet the streets have overlapping intersection influence areas. The access point will be in the intersection influence area.
 - *Sight distance* –

The required sight distance for stopping on a level surface at 50 mph is 425 feet. Measurements were taken 600 feet on both sides of the intersection and found to be adequate due to the straight flat roadway.

The required intersection sight distance for passenger cars on the facility making a left turn is 555 feet and 480 feet for making a right turn. The actual intersection sight distance is 575 feet upstream and 500 feet downstream. This is adequate for vehicles turning left and right from the site.
 - *Auxiliary lane warranted?* – With the highway volumes and respective turning volumes auxiliary lanes are not warranted, according to the policy.
 - *Shared* – The access on US-75 will not be a shared use access point
- **Recommendations**
 - *Findings summary* –

Convenience stores with gas stations are typically located in strategic sites adjacent to well traveled roadways. Corner locations are ideal. The existing 69-foot wide access will be reconfigured to a 36-foot wide access on US-75 and relocated to 150 feet south of W Butler. The recommended access spacing for an Access Route Class B in a developed area with a 50mph speed limit is 535 feet. The

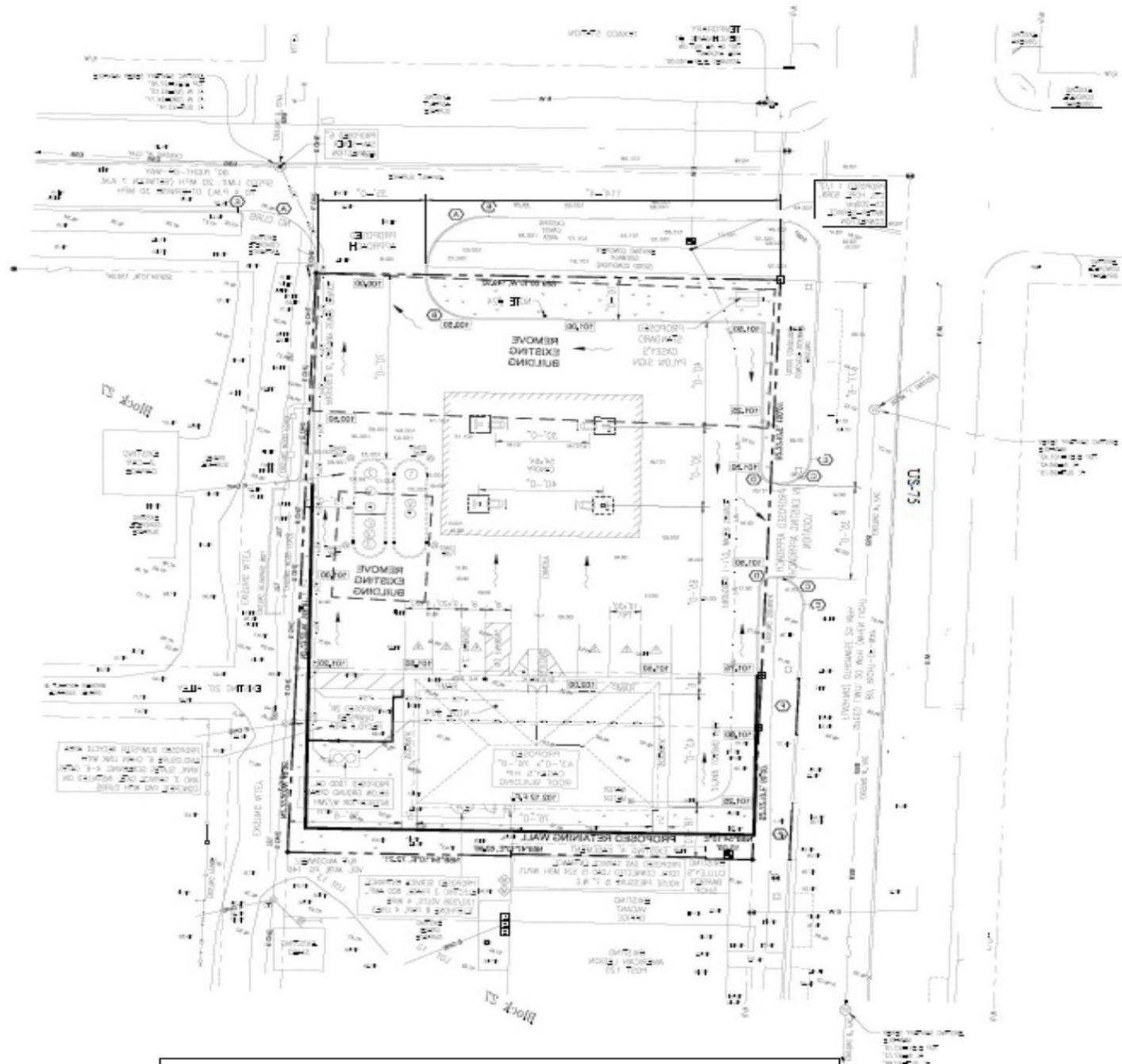
spacing of the proposed access is 150 feet. This is significantly less than that recommended from the Access Management Policy.

Given the fact that the city streets are so closely spaced and their intersection influence areas overlap it goes without stating that the addition of an access between them will be within the intersection influence area. However, the location of the access to the site is a vast improvement to the existing spacing of 50 feet and nearly splits the 365-foot distance between the city streets in half. This configuration will be a substantial improvement to the existing situation.

- *Need for highway improvements (if any)* – Since there will not be a need for highway improvements, the 36-foot wide access with 50-foot radii, is recommended to access the convenience store/gas station on US-75 with a 30-foot wide access and 50-foot radius on W Butler St.

SAMPLE

SAMPLE XYZ Gas Site plan



This sample Site plan has been inverted to prevent reproduction.



General Notes

1. RELATED SHEETS: FOR ADDITIONAL INFORMATION NOT DIRECTLY REFERENCED, SEE CIVIL SHEETS DONE BY ARCHITECTURAL SURVEYING.

Site Notes

PROPERTY ZONED:
C-11 Business Center District

BUILDING SETBACKS:
FRONT 0.0
SIDE 0.0
REAR 0.0

U.G.S.T. Notes

- (P) FULL CATCH BASIN w/ OVERSPILL PROTECTION (TOP)
- (1)(2)(3) TANKS TO BE ENCLOSED TO PREVENT SUB-FLOOR W/LEAKAGE TO THE TANK ROOM FOR FUEL DISPENSERS INCLUDING THE INTERNAL TANK AND TANK SUMP DESIGN
- (V) VENT EXHAUSTOR W/ BALL FLOAT FOR OVERFILL PROTECTION SUMP DESIGN @ 6" H (REVERSE)

General Construction Notes

- 1.) 2 - 20,000 GALLON DOUBLE WALL FIBERGLASS CONTAINMENT SOLUTION TANKS.
- TANK 1-20,000 GALLON (8WE) 10'-0"X38'-0"
- TANK 2-12,000 GALLON (8WE) 10'-0"X22'-0"
- TANK 3-6,000 GALLON (8WE) 10'-0"X14'-0"
- PREMIUM SUPER UNLEADED GASOLINE PRODUCTS
- TANK SETTING DETAILS PAGE QF-601
- 2.) FILL PIPE AND MANHOLE DETAIL PAGE QF-601
- 3.) CIRCUIT BREAKER PANEL PAGE S-601
- 4.) REFRIGERATION WIRING PAGE CR-601, CR-602, CR-603
- 5.) GILBARCO WIRING PAGE QF-601
- 6.) ISLAND SIZE - 4 @ 24" WIDIAL GUARD PIPE
- 7.) 4 - GILBARCO 800'S DISPENSERS (BLENDED)
- 8.) 24"X4" METERS & 4 HOSES EACH
- 9.) ISLAND DETAILS PAGE AL-601
- 10.) ISLAND CONDUIT DETAIL PAGE S-602
- 11.) DO NOT PLACE PRODUCT PIPING UNDER ISLAND
- 12.) 18" MIN. FROM TANK SPRING TO FINISH SURFACE
- 13.) SIGN BASE DETAILS PAGE AL-601
- 14.) SIGN DETAILS PAGE AL-601
- 15.) DRIVEWAY JOINTS TO BE PACKED & CALLED
- 16.) CONCRETE DRIVE TROWELED WITH LIGHT BROOM FINISH
- 17.) CONTROL JOINTS - MIN. 100' @ E - MAX. 125' @ E - 25% DEEP
- 18.) CONSTRUCTION JOINTS - FINISHED @ 0.01" EACH WAY WITH 10" REBAR @H
- 19.) APPROACHES TO BE 7" NON-REINFORCED OR AS PER STATUTORY SPEC.
- 20.) SLOPE RAMPS FOR BUILDING SIDEWALK 1:20 H.C. PARKING 1:50 ALL DIRECTIONS
- 21.) ALL ACCESS ISLE STRIPING AT 45 DEGREE ANGLE BEING MAX. 4' SEPARATION
- 22.) RUN/VENT LINES UP SEPARATE CANYON COLUMN VERIFY
- 23.) VERIFY ALL UTILITY LOCATIONS AND DIMENSIONS
- 24.) CANOPY FOOTING SIZE 8'-0" LENGTH X 8'-0" WIDTH X 2'-0" DEPTH
- CONCRETE MINIMUM COMPRESSIVE STRENGTH OF FC-3000 (ALL)
- CONCRETE REINFORCING: ASTM A-615 GRADE 60
- REBAR: #4 @ 18" HORIZONTAL 18" @ 18" VERTICAL TOP AND BOTTOM
- 12" MAXIMUM SPACING.
- 25.) ALL FUEL DISPENSERS FALL WITHIN A 100 FOOT RADIUS OF THE EMERGENCY SHUT-OFF SWITCH LOCATED ON A POST AT THE CURB

Keyed Construction Notes

NOTICE: ALL WORK WITHIN THE R.O.W. AREA IS SUBJECT TO THE CITY OF LYNDON AND KANSAS DOT APPROVAL AND SPECIFICATIONS.

- (A) PROPOSED 20' RADIUS
- (B) PROPOSED 18' RADIUS
- (C) PROPOSED 15' RADIUS
- (D) PROPOSED 8' RADIUS
- (E) TIE INTO AND MATCH EXISTING CURB AND GUTTER FLOW LINE
- (F) REMOVE EXISTING APPROACH

Legend

- (A) MARKED PARKING SPACES (PAINT LINES AS INDICATED)
- (B) GASOLINE PUMP PARKING SPACES (DO NOT PAINT LINES OR OTHERWISE MARK)
- (C) CONCRETE PAVING OR SIDEWALKS
- (D) AREA TO BE SOCCED OR SEEDED

Legal Description:

Lots 14, 15, 16, 17, 18, 19, 20 and 21, in Block 27, in the Original Town of Lyndon, according to the recorded Plat thereof, in Geary County, Kansas, subject to the Golf Course Deed filed in the Office of the Register of Deeds of Geary County, Kansas, Book 19 33, page 220.

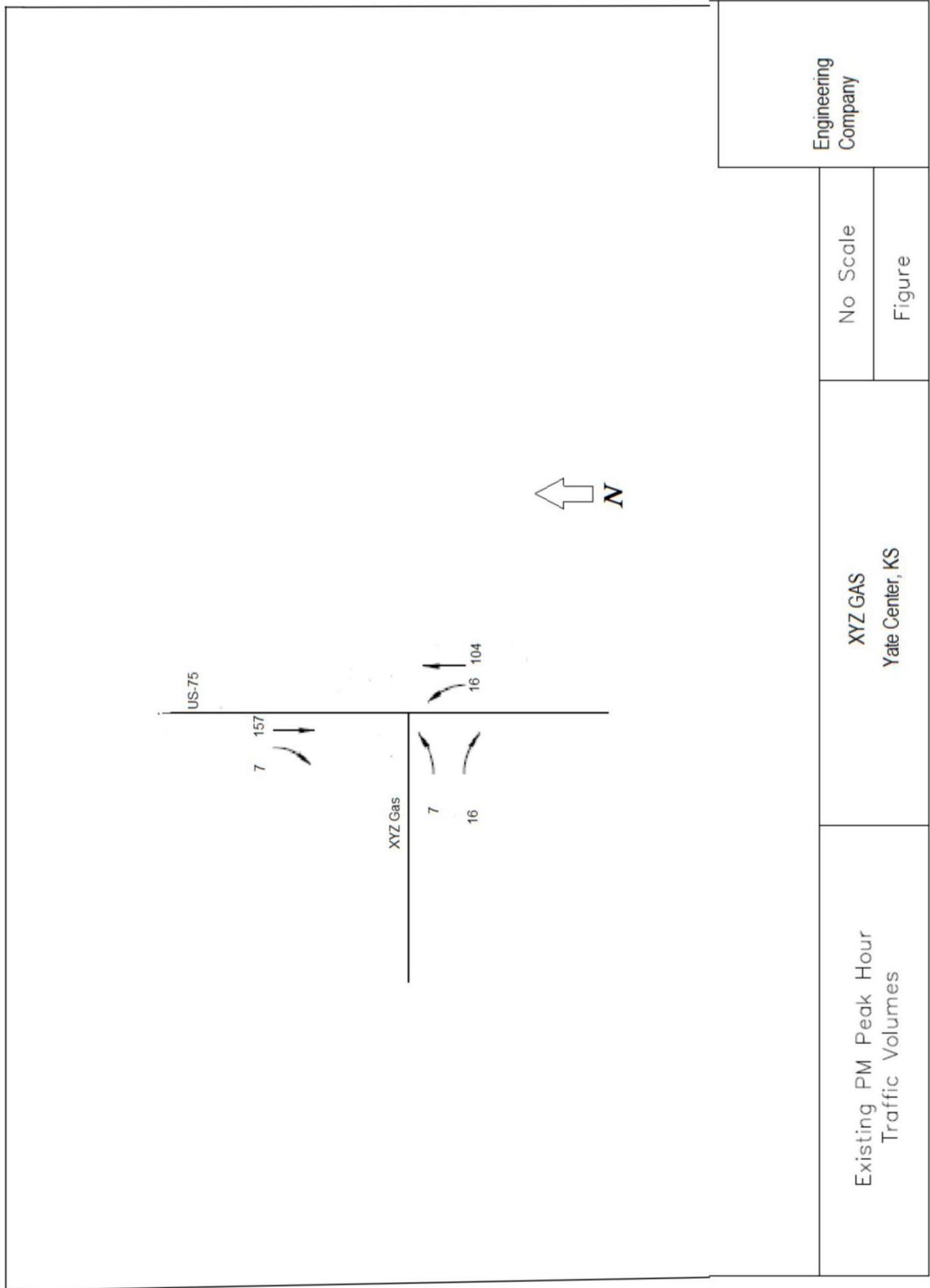


VICINITY MAP
NTS

XYZ Gas
Site Layout Plan
Yates Center Ks

05-11-12
SITE PLAN
AL-101

SAMPLE
XYZ Gas Turning Diagram



Engineering
Company

No Scale

Figure

XYZ GAS
Yate Center, KS

Existing PM Peak Hour
Traffic Volumes

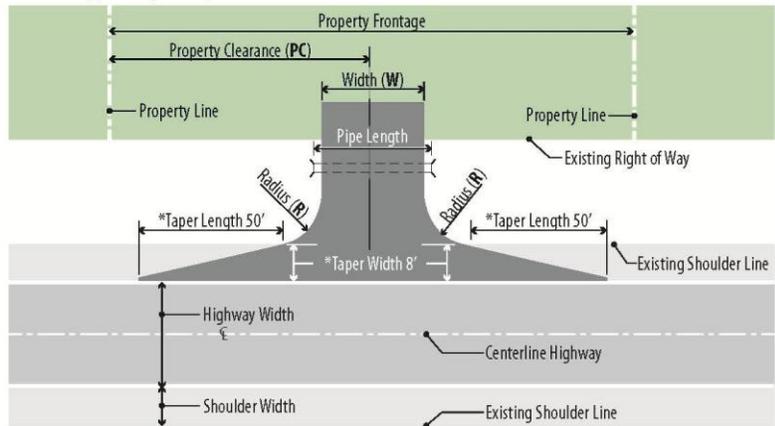
8.9 KDOT Access Management Forms

8.9.1 Application for Highway Access (Form 827)

| KANSAS DEPARTMENT OF TRANSPORTATION APPLICATION FOR HIGHWAY ACCESS | | Date received by KDOT Area Office (KDOT use only): |
|---|--------------------------------|---|
| <p>Instructions:</p> <ul style="list-style-type: none"> - Contact Kansas Department of Transportation's (KDOT) Area Permit Coordinator to determine what plans and other documents are required to be submitted with your application. - Complete this form (some questions may not apply to you) and attach all necessary documents and submit it to the KDOT Area Permit Coordinator. - If the property is within City Limits the permit needs to have City concurrence on the application prior to submittal. - Submit an application for each access affected. - If you have any questions contact the KDOT Area Permit Coordinator. - For additional information see KDOT's Access Management website at www.ksdot.org/accessmanagement <p>Please print or type</p> | | |
| 1) Property owner (Permittee) | | 2) Applicant or Contact for permittee (if different from property owner) |
| Street address | | Mailing address |
| City, state & zip | Phone # | City, state & zip Phone # |
| E-mail address <input type="checkbox"/> Preferred method of communication | | E-mail address if available <input type="checkbox"/> Preferred method of communication |
| 3) Address of property to be served by permit | | Business name |
| 4) Legal description of property: county _____ section _____ township _____ range _____ | | 5) Is access to be shared? <input type="checkbox"/> no <input type="checkbox"/> yes |
| 6) From which State Highway are you requesting access? | | 7) What side of the highway? <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W |
| 8) How far to the proposed access from the nearest mile marker? _____ miles (<input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W) of mile marker: _____ | | 9) How far is the proposed access from the nearest highway or major cross street? _____ feet <input type="checkbox"/> miles (<input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W) from highway or major cross street: _____ |
| 10) Is the proposed access within City Limits? <input type="checkbox"/> no <input type="checkbox"/> yes | | 11) Is access on highway frontage road? <input type="checkbox"/> no <input type="checkbox"/> yes |
| 12) What is the highway speed limit? | | 13) What is the highway section? <input type="checkbox"/> curb and gutter or <input type="checkbox"/> open ditch |
| 14) What is the estimate date you would like to begin construction? How long do you anticipate construction taking? | | |
| 15) Check here if you are requesting a: <input type="checkbox"/> new access <input type="checkbox"/> improvement to existing access <input type="checkbox"/> temporary access (duration anticipated: _____) <input type="checkbox"/> change in access use <input type="checkbox"/> relocation of an existing access | | |
| 16) Describe in detail existing property use: | | |
| 17) Does the property owner own or have any interests in any adjacent property? <input type="checkbox"/> no <input type="checkbox"/> yes, if yes—please describe: | | |
| 18) Are there other existing or dedicated public streets, roads, highways or access easements bordering or within the property? <input type="checkbox"/> no <input type="checkbox"/> yes, if yes—list them on your plans and indicate the proposed and existing access points. (Proposed access? Property Use? Thoughts?) | | |
| 19) Do you have any other alternative access serving this property, or adjacent properties in which you have a property interest? <input type="checkbox"/> no <input type="checkbox"/> yes, if permit is available provide permit number and a copy: _____. | | |
| 20) Describe proposed access property use: | | |
| 21) Provide the following vehicle information. Leaving the property then returning counts as two (2) trips. | | |
| # of vehicles per day | # of vehicles in the peak hour | Most common vehicle type |
| Largest vehicle type to use access regularly | | Frequency of usage (# of vehicles) _____ per <input type="checkbox"/> day <input type="checkbox"/> week <input type="checkbox"/> month <input type="checkbox"/> year |

- 22) Check with KDOT's Area Permit Coordinator to determine which of the following documents are required to complete the review of your application.
- | | | |
|---|--|---|
| a) Property map indicating other access, bordering roads and streets. | d) Map and letters detailing utility locations before and after development in and along the right-of-way. | g) Parcel and ownership maps including easements. |
| b) Highway and driveway plan profile. | e) Subdivision, zoning, or development plan. | h) Traffic studies. |
| c) Drainage plan showing impact to the highway right-of-way. | f) Proposed access design. | i) Proof of ownership. |
| | | j) Proof of insurance. |

23) Provide the following geometric information regarding the proposed access. An attached drawing may be needed if the proposed access requires improvements in addition to those shown on the drawing below. (Note: Measurements along and on the highway should not be completed by the applicant without prior notification and approval by KDOT.)



Proposed Access Drainage: Mound Entrance Valley Gutter Pipe/Culvert—Provide Pipe/Culvert Type _____

Access Information: W-Width: _____ feet R-Radius: _____ feet Pipe Diameter: _____ inches

Access Surface: Asphalt Concrete Gravel Other: _____ Access Thickness (depth): _____ inches

PC-Property Clearance: _____ feet

*Note: Taper Length and Taper Width not applicable in areas with curb and gutter. Use standard taper unless auxiliary lane or other improvement is determined needed by KDOT.

If an access permit is issued, it will state the terms and conditions for its use. Any changes in the use of the permitted access not consistent with the terms and conditions listed on the permit may be considered a violation of the permit.

The applicant declares under penalty of law, that all information provided on this form and submitted attachments are to the best of their knowledge true and complete.

Notification to Applicant: KDOT will contact you when your application has been reviewed. If additional documents are required to continue the application process you will be contacted. When all of the necessary documents have been received, the application will be deemed complete. If your completed application is approved, a Highway Access Permit will be issued.

Insurance provided Insurance not required (governmental entities only)

| | | |
|---------------------|------------|------|
| Applicant signature | Print name | Date |
|---------------------|------------|------|

If the applicant is not the property owner, the applicant must have property owner's consent prior to submitting the application. The property owner or property owner's legal agent will be required to sign the approved permit.

I am the property owner or property owner's legal agent I have the property owner's consent to make this application

When the access location is on a state highway within a city limit, the city needs to support the request for access.

The City of _____ is in support of this request for access, as acknowledged by

Name of City Representative _____ Date _____

Mayor City Manager City Engineer Other _____

INSTRUCTIONS FOR COMPLETING APPLICATION FOR HIGHWAY ACCESS

(KDOT Form No. 827)

January 2013

To construct, relocate, close, or modify access(es) to a State Highway or when there are changes in use of such access point(s), an Application for Highway Access must be submitted to the Kansas Department of Transportation (KDOT). Submit a completed Application for Highway Access to the KDOT Area Permit Coordinator in which the subject property is located. The following link will help you determine which KDOT Area office to contact: www.ksdot.org/accessmanagement

All applications are processed and access permits are issued in accordance to the requirements and procedures found in the most current version of the **KDOT Access Management Policy**. Copies of the Application for Highway Access and Instructions are available at your local KDOT Area Office.

Please complete all information requested accurately. Access permits granted based on applications found to contain false information may be revoked. An incomplete application will not be accepted. If additional information, plans and documents are required, attach them to the application. Keep a copy of your submittal for your records. Please note that only the original signed copy of the application will be accepted. The following is a brief description of the information to be provided on each enumerated space on the application form (KDOT Form 827, January 2013).

1. **Property Owner (Permittee):** Please provide the full name, mailing address, telephone number and the e-mail address (if available) of the legal property owner (owner of the surface rights). Please provide a telephone number where the Permittee can be reached during business hours (8:00 a.m. to 5:00 p.m.). Having a contract on the property is not a sufficient legal right to that property for purposes of this application. If the access is to be on or across an access easement, then a copy of the easement **MUST** accompany this application. If federal land is involved, provide the name of the relevant federal agency **AND** attach a copy of the federal authorization for property use.
2. **Agent for permittee:** If the applicant (person completing this application) is different than the property owner (Permittee), provide entity name (if applicable), the full name of the person serving as the Agent, mailing address, telephone number, and the e-mail address (if available). Please provide a telephone number where the Agent can be reached during business hours (8:00 a.m. to 5:00 p.m.). Joint applications such as owner/lessee may be submitted. All corporations serving as, or providing, an Agent as the applicant must be licensed to do business in Kansas.
3. **Address of Property to be Served:** Provide if property to be served has an official street address. If the access is a public road, note the name (or future name) of the road. Provide business name if applicable.
4. **Legal Description of Property:** Complete all applicable sections. This information is available at your local County Courthouse, or on your ownership deed(s). A copy of the deed may be required as part of this application, upon request. To determine applicability, check with the local KDOT Area Permit Coordinator
5. **Shared Access:** If the access is used by more than one property owner, it is a shared access, select "yes," otherwise select "no."
6. **State Highway:** Provide the State Highway number from which the access is requested (E.g., US-50 or K-96).
7. **Highway Side:** Mark the appropriate box to indicate what side of the highway the requested access is located.
8. **Access Mile Marker:** Without complete information, we may not be able to locate the proposed access. To obtain the distance in feet, drive the length between the mile marker and the proposed access, rounding the distance on the odometer to the nearest tenth of a mile to obtain the distance from the mile marker. Then select the direction (i.e. north, south, east, west) from the mile marker to the proposed access. Finally, enter the mile

marker number (E.g., 281). It is helpful in rural or undeveloped areas if some flagging is tied to the right-of-way fence at the desired location of the access.

9. **Access Cross Street:** Note the distance in feet/miles to the nearest highway or major cross street from the proposed access (using the same procedures noted above). Nearest highway is preferred.
10. **City Limits:** Determine if the property is within city limits and mark the appropriate box.
11. **Frontage Road Access:** If the requested access is on a frontage road that is within KDOT ROW select “yes,” otherwise select “no.”
12. **Speed Limit:** Provide the speed limit on the highway of the proposed access.
13. **Highway Section:** Determine if the section of highway adjacent to the access is curb and gutter or if it is an open ditch?
14. **Access Construction Date:** Fill in the date on which construction of the access is planned to begin. Construction cannot begin until the permit is issued.
15. **Access Request:** Mark items that apply. More than one item may be checked. **New access** is a NEW connection to a state highway. **Improvements to existing access** include replacement, redesign, or change of surfacing material. **Relocation of an existing access** is the closure of an existing access and the installation of a new access at a different location. The work pertaining to the closure of the existing access will be included on the access permit associated with the relocation. A Use of Right-of-Way permit will not be needed. **Change in access use** is for property owners who change the use of their property and KDOT has been determined that a new permit is needed. **Temporary Access** is permitted for a use until alternative permanent access becomes available.
16. **Describe in Detail Existing Property Use:** Describe in detail the existing property use including business name if applicable.
17. **Adjacent Property:** Please mark the appropriate box. If the “yes” box is marked, provide a brief description of the property (location of the property in relation to the property for which this access application is being made). They should be shown on a map or plan attached to this application.
18. **Abutting Streets:** If there are any other existing or proposed public roads or easements abutting the property, they should be shown on a map or plan attached to this application.
19. **Existing Access:** Does the property have *any other alternatives to reach a public road* other than the access requested in this application? If any access permits exist, provide permit number and copy of permits. If there are no existing access point(s), mark the “no” box.
20. **Proposed Access Use:** List the land uses include the square footage, acreage, number of fueling positions, number of dwelling, or any other relevant information.
21. **Estimated Traffic Count:** Provide a reasonable estimate of the traffic volume expected to use the access.

of vehicles per day are the total number of vehicles (The total number of vehicles using the access in a 24-hour period. A vehicle entering and exiting the access will count as 2 vehicles.) This includes all vehicle types.

of vehicles in peak hour are the total number of vehicles using the access in the busiest 1-hour period and the time of the busiest 1-hour. This includes all vehicle types.

Most common type is the most common type of vehicle that will use the access, such as passenger car, box truck, RV/truck with trailer, farm equipment, semi, etc.

Largest vehicle type is the largest vehicle type expected to use the access on a regular basis. Select from the following list:

- passenger
- bus
- dump truck
- concrete truck
- single-trailer semi
- multi-trailer semi
- other—provide vehicle type detail (ie. tractor, RV)

Frequency of usage is how often the largest frequent vehicle will use the access. Once per month, twice a week, 6 times per year, etc.

22. **Documents and Plans:** The KDOT Area Permit Coordinator or Access Management Unit staff will determine which of these items must be provided to make the application complete. Incomplete applications will not be accepted. The Permittee shall furnish two (2) sets of scaled plans or sketches (11" x 17") and one electronic set for the proposed work to the Area Office which includes a description of the location of the driveway, surface material and provisions for drainage structures. ***It is the responsibility of the applicant to verify with the KDOT Area Permit Coordinator whether the application is complete at the time of submission.***

23. **Geometrics:** Provide the geometric information regarding the proposed access.

Signature: If the applicant is not the property owner, the applicant must have property owner's consent prior to submitting the application. Electronic signatures will be allowed on the electronic version of the application. Please select whether you are the "property owner or owners legal agent" or if you have the owner's consent to make this application. The property owner or owner's legal agent will be required to sign the approved permit.

City Acknowledgement: If the access to a state highway is within city limits, the Permittee needs the support of the city in which the access is proposed. An authorized city representative's name, position, and date of coordination are filled in by the Permittee confirming that the Permittee has city support for the access.

If the application is accepted, it will be reviewed by the KDOT Area/District Engineers and may be reviewed by KDOT Access Management Unit staff. If an Access Permit is issued, be sure to read all of the attached Terms and Conditions before signing and returning the Access Permit to the Area Permit Coordinator.

8.9.2 Highway Access Permit (Form 309)

**KANSAS DEPARTMENT OF TRANSPORTATION
HIGHWAY ACCESS PERMIT**

| | | | |
|------------|------------|---------------------|---|
| Permittee: | Permit No: | Access Route Class: | District Plan: <input type="checkbox"/> |
| City: | Route: | County: | City Connecting Link: <input type="checkbox"/> |

THIS PERMIT, made and entered into, by and between the Secretary of Transportation of the State of Kansas, hereinafter referred to as the "Secretary" and _____
 Name of Owner or Agent for the Owner _____ Phone # _____

 Street Address _____ City _____ State _____ Zip _____
 hereinafter referred to as "Permittee" and the City of _____ hereinafter referred to as the "City", collectively referred to as the "Parties".
 (If not applicable, enter N/A)

WHEREAS, the Secretary has jurisdiction over highway right-of-way within the State Highway System of Kansas, and
 WHEREAS, the Secretary (and City) believe that it is in the interest of the Citizens of the State of Kansas to permit certain work or projects to be performed upon Highway right-of-ways for access for a specific property usage and access type, and
 WHEREAS, the Permittee understands that their specific point of access may be modified or withdrawn as long as reasonable access is afforded, and
 WHEREAS, the Permittee agrees to perform certain work as indicated on Form 334 *Highway Access Permit Work Details Sheet* and described as follows:

Said work is located on public right-of-way in, upon or along State Highway Route, Reference Point
 _____ (or City Connecting Link Routes _____ on _____ Street)
 in Section _____, Township _____, Range _____,
 _____ County, _____ Miles _____ (direction) from _____
 (Cross Street), and

Access Types: 1 2 3 4 5 6 As defined herein:

Type 1: Low Volume—0-49 vehicles per day maximum (two-way access traffic count); Non-commercial—farm, agriculture, field, timber, cultivated, pasture, duplex, single family residential/home, apartment building containing five or fewer dwelling units
 Type 2: Low volume—0-49 vehicles per day maximum (two-way access traffic count); Special-use—city water treatment plant, microwave station, pipeline checkpoint, telephone repeater stations, utilities (electric, gas, telephone, water) check/maintenance stations, Corps of Engineers dike roads
 Type 3: Low volume—0-49 vehicles per day maximum (two-way access traffic count); Emergency facility—fire station and/or paramedic facility
 Type 4: Low volume—0-49 vehicles per day maximum (two-way access traffic count); Commercial - small business, cemetery, nursing home, other.
 Type 5: Medium volume—50-499 vehicles per day and/or less than 50 vehicles per peak hour of the highway (two-way vehicular access count); Commercial—industrial, institutional, recreational, local road connections (included joint-use/shared access)
 Type 6: High volume—500 vehicles per day and over and/or 50 vehicles per peak hour of the highway or more; Commercial—industrial, institutional, recreational, local road connections (includes join-use/shared access)

WHEREAS, the Secretary has delegated full and complete authority to the District Engineers of the Kansas Department of Transportation (KDOT) to execute Highway Permits, hereinafter referred to as "Permits," for and on the Secretary's behalf.

NOW THEREFORE, in consideration of the permission granted hereunder by the Secretary (and City) to utilize Highway right-of-ways in the manner described above and on Form 334, the following terms and conditions are mutually agreed to by the Permittee, the Secretary (and the City). The access facility described in Form 334 and permitted under this document is referred to herein as the "Facility."

Terms and Conditions of Permit:

The Owner or their designated Agent agrees that the "Access Type" will remain as indicated on this form and apply for a new permit when the "Access Type" or "Property Usage" changes. The owner or their designated Agent agrees to incur all costs associated with revising the access when "Access Type" or "Usage" changes occur and improvements are determined to be necessary. In Cities, the Permittee will obtain additional Permits as required by the City.

- 1.0 PLANS: Approved plans ("Plans") for the Facility are attached and hereby incorporated and made a part this permit. If, before, during or after construction, it is determined that alterations to the Facility are needed and made, an accurate set of "As-Built" Plans shall be provided to reflect deviation(s) from the Plans. The As-Built Plans are required before the Notice of Completion or Revocation (Form 309C) will be issued.
- 2.0 MATERIALS AND CONSTRUCTION METHODS:
 - 2.1 The Permittee shall furnish all materials, do all work and pay all costs for the work described on this Permit.
 - 2.2 All Facility installations shall comply with the conditions and requirements of the *KDOT Access Management Policy*, current edition, (and City standards when they exceeded those of KDOT).
 - 2.3 Drainage structure requirements shall be determined by the Permittee, but said requirements are subject to review and approval by the District Engineer (and City).
 - 2.4 All material and construction methods used on work within the limits of the right-of-way shall be equal to or better than that required in the *Standard Specifications for State Road and Bridge Construction*, current edition.
- 3.0 INITIATION AND COMPLETION OF WORK: Permittee agrees to notify the District Engineer (and City) or their duly authorized representative before work is initiated and again when the work is completed.
 - 3.1 An approved signed copy of the Permit shall be on the premises before and during any work is performed.
 - 3.2 All work, including right-of-way restoration, shall be completed within _____ calendar days of the PERMIT APPROVAL DATE; otherwise, this Permit is rescinded. If an extension is needed to complete the work included in this permit, the permittee will obtain written consent of the Area Engineer. If work has not been started within the completion time, the Permit becomes null and void.
- 4.0 INSPECTION: The Permittee will be responsible for supervising construction to insure compliance with KDOT (and City) policies and standards.
- 5.0 ACCEPTANCE: City If checked the city will be responsible for concurring in the acceptance of the restored right-of-way.
- 6.0 RIGHT-OF-WAY: Except for authorized changes, Permittee agrees to restore said right-of-way to a condition equal to or better than existed prior to approval of the work described in this Permit.
 - 6.1 Any sod, shrubs or trees destroyed by this work shall be replaced as directed by the District Engineer (and City).
 - 6.2 The right-of-way shall be kept free from parking, advertising signs or any other commercial activity.
- 7.0 OBSTRUCTION OF TRAFFIC: Permittee agrees that the highway (and connecting link) traffic will be free of interference unless specifically provided for as part of the Permit. Temporary traffic control shall be in accordance with the *Manual of Uniform Traffic Control Devices*, current edition.
- 8.0 BOND WAIVED: In lieu of the Secretary requiring the Permittee to provide a bond, the Permittee agrees that the Secretary may revoke the permit and remove any work performed. The Permittee agrees to reimburse the Secretary for any cost incurred by the Secretary to restore the right-of-way. The Secretary will not authorize any other highway permits until the Permittee has either reimbursed the Secretary or restored the right-of-way to its previous condition, as accepted by the Secretary.
- 9.0 LIABILITY: The Permittee, its heirs, successors, or assigns, shall assume all risk and liability for accidents and damages that may occur to persons or property during construction and/or installation of the Facility pursuant to this Permit, and shall indemnify and hold the Secretary (or City) harmless from any and all costs, liabilities, expenses, suits, judgments, or damages to persons or property for claims of any nature whatsoever arising out of or in connection with this Permit, or the operation and performance there-under by the Permittee, their agents, employees, or subcontractors. Upon completion of the Facility by the Secretary, the Permittee's duty and obligation to assume all risk and liability and to indemnify and hold the Secretary (or City) harmless shall lapse.
- 10.0 INSURANCE: The Permittee shall be subject to the Liability provisions above and shall provide a Certificate of Insurance indicating the following minimum coverage:
 - A. Comprehensive Liability:
 - Bodily injury and property damage for which the Permittee is responsible with limits of \$250,000 per person and \$500,000 per occurrence (required for Access Types 1 through 4).
 - Bodily injury and property damage for which the Permittee is responsible with limits of \$1,000,000 per person and \$2,000,000 per occurrence (required for access Types 5 & 6).

Local governments requesting access to the Highway are not required to provide liability insurance
- B. Workman's Compensation: Any entity working subject to this Permit, including Permittee's contractors, subcontractors and consultants, which is subject to worker's compensation laws and regulations must carry legally sufficient worker's compensation insurance.
- 10.1 The insurance coverage period must cover the time period for construction up to and including the notice of acceptance completion by KDOT. Insurance as herein required shall be maintained in force until completion of the Facility by the Secretary. In the event the Facility has not been completed and an extension of the construction period is required, Permittee agrees to notify the Secretary (or City) and an updated Certificate of Insurance must be provided if the extension will go beyond the coverage period indicated on the Certificate of insurance on file.
- 11.0 HIGHWAY IMPROVEMENTS AND/OR MAINTENANCE: The Secretary (or City) reserves the right to make any alteration or improvement along or upon the highway right-of-way which is the subject of this Permit or in the vicinity of the Facility located pursuant to this Permit, including, but not limited to, relocation or complete eradication of a Facility subject to this Permit.
 - 11.1 In the event the Secretary determines it necessary to relocate the Facility subject to this Permit, Permittee agrees to hold the Secretary (or City) harmless for any damages, if any, that may arise as a result of said relocation of the Facility. If the Secretary (or City) deems it necessary to relocate the Facility subject to this Permit, the Secretary (or City), at the discretion of the Secretary, will either, assume the actual construction costs related to said relocation or perform the relocation itself. Permittee agrees that in, the event of relocation, Secretary (or City) has complete and full discretion regarding the location of the new permitted access point.
 - 11.2 Subject to the terms of this Permit, in the event the Secretary determines it necessary to completely eradicate Permittee's Facility and/or revoke this Permit, Permittee agrees to hold the Secretary (or City) harmless for any damages, if any, that may arise as a result of said eradication of the Facility or revocation. If the Secretary (or City) deems it necessary to eradicate the Facility subject to this Permit, the Secretary (or City), at the discretion of the Secretary, will either, assume the actual construction costs related to said eradication or perform the eradication itself.
 - 11.3 The Permittee agrees that the work approved pursuant to this Permit will be conducted in such a manner as not to interfere with any construction or other work being performed by the Secretary (or City) or its contractors in the vicinity of the Permittee's work or projects.

11.4 It is further agreed that written notice will not be required for the Secretary's (or City's) normal maintenance including, but not limited to , cleaning ditches, repair/replace surfacing and drainage structures and sign installation or replacement. The Permittee agrees to hold the Secretary (or City) harmless for any temporary loss of use or inconvenience arising out of maintenance activities.

12.0 SNOW REMOVAL ON FACILITY: The Permittee is obligated to perform any and all snow and ice removal maintenance to the Facility. Permittee further understands and agrees the Secretary (or City) does not assume any responsibility for the removal or clearance of snow and/or ice, the opening of windows by authorized representatives engaged in normal winter maintenance operations. Permittee agrees to save and indemnify the Secretary (or City) against any and all claims related to maintenance of the Facility.

13.0 ABANDONED OR RETIRED IN PLACE: The Permittee agrees to notify the Secretary (or City) when the Facility has been abandoned, in whole or in part, or retired in place and to be responsible for all costs associated with removal and/or closure of said Facility. In the event Permittee receives notice from the Secretary (or City) to remove the abandoned and/or retired Facility, Permittee agrees to perform said work within 180 days of notice. Should Permittee fail to properly perform said work, the Secretary (or City) reserves the right to remove and/or close the Facility at Permittee's expense.

13.1 The Secretary (or City) reserves the right to require Permittee to place certain gates or other infrastructure, as set forth in the *KDOT Access Management Policy*, across the Facility the Secretary (or City) deems inactive. In no event shall the Permittee block or otherwise impede the Facility pursuant to this Permit without the express written authorization of the Secretary (or City).

It is understood and agreed by the Parties that this Permit only creates a license for Permittee to have the right and privilege to use the right-of-way for the specific purpose stated herein and subject to the terms of this Permit. It is further understood and agreed by the Parties that this Permit does not create, grant, convey, transfer, or vest, any property right or interest in the Secretary's real property to the Permittee; thus, the Secretary may terminate, modify, or revoke this Permit without notice and without duty, obligation, penalty, damages, or compensation owed to the Permittee by the Secretary unless otherwise stated herein.

This Permit is hereby accepted and its provisions agreed to by the parties hereto:

KDOT's Access Management Unit has reviewed the Permit and provided comments to the District Engineer regarding the conditions of the Permit.

N/A Reviewed (Access Types 5 and 6, and all variances)

| | |
|--|---|
| <p>PERMITTEE The person signing as the Permittee must be the Owner or legal representative of the property (Agent of the Owner) served by the permitted access and have full authority to accept the Permit and its terms and conditions.</p> <p>Owner/Agent of the Owner</p> <p>Street Address</p> <p>City, State, Zip</p> <p>Permittee</p> <p>By: _____</p> <p><input type="checkbox"/> Owner <input type="checkbox"/> Agent of the Owner</p> | <p>APPROVED The permit must be signed by the duly authorized representative of the Secretary of Transportation, the city (when applicable) and the Permittee. The permit is not valid until signed by all parties and returned to KDOT for Permit Approval Date.</p> <p>The City of (when applicable)</p> <p>City Representative</p> <p><input type="checkbox"/> Mayor <input type="checkbox"/> City Manager <input type="checkbox"/> City Engineer</p> <p>Recommended by (KDOT)</p> <p>_____</p> <p>Area/Metro Engineer <input type="checkbox"/> AM Engineer</p> <p>Secretary of Transportation of the State of Kansas</p> <p><input type="checkbox"/> Approved <input type="checkbox"/> Denied</p> <p>By: _____</p> <p>District Engineer or Designee</p> <p>For KDOT Use Only Permit Approval Date : _____</p> <p>By: _____ KDOT Representative (Please Print)</p> |
|--|---|

8.9.3 Access Application Information Sheet (Form 334)

| KANSAS DEPARTMENT OF TRANSPORTATION ACCESS PERMIT WORK DETAILS SHEET | | | | | | | | | | | | | | | |
|--|-----------------------------------|--|--------------------------|--------------|-----------------------------------|----------------------|--------------------------|---|--------------------------|------------------------|--------------------------|-------|--------------------------|--|--|
| Permittee: | Permit No: | Access Route Class: | | | | | | | | | | | | | |
| City: | Route: | County: | | | | | | | | | | | | | |
| Business Data: Name _____ Phone No. _____ Address _____ <div style="display: flex; justify-content: space-between; margin-left: 100px;"> Street City State Zip Code </div> Use _____ <p style="text-align: center; font-size: small;">Fast Food, Restaurant, Service Station, Office, Shopping Center, Apartments, etc.</p> | | | | | | | | | | | | | | | |
| Highway Data: Surface Type: <input type="text"/> Area Type: <input type="text"/> Surface Width: <input type="text"/> <input type="radio"/> Curb and Gutter <input type="radio"/> Open Ditch Shoulder Width: <input type="text"/> <input type="checkbox"/> Parking along Highway Number of Lanes: <input type="text"/> <input type="checkbox"/> Highway Slope > 3% Speed Limit: <input type="text"/> MPH Average Daily Traffic: <input type="text"/> (2-way) Access Route Class: <input type="text"/> Is a Highway Construction Project Programmed? <input type="radio"/> Yes <input type="radio"/> No | | | | | | | | | | | | | | | |
| Access Data: Access Surfacing: <input type="text"/> Traffic Volume: <input type="text"/> Daily <input type="text"/> Peak Hr <input type="text"/> Access Width: <input type="text"/> Ft. <input type="radio"/> 1-Way <input type="radio"/> 2-Way <input type="checkbox"/> Drop Curb* Access Radius: <input type="text"/> Ft. Access Thickness: <input type="text"/> In. Taper Type: <input type="text"/> | | | | | | | | | | | | | | | |
| Frequency of Usage <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Largest Vehicle Using Access Regularly</th> <th style="width: 20%;"># of Trips</th> <th style="width: 50%;">Frequency</th> </tr> </thead> <tbody> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table> | | Largest Vehicle Using Access Regularly | # of Trips | Frequency | <input type="text"/> | <input type="text"/> | <input type="text"/> | Proposed Access Drainage Method: <input type="text"/> | | | | | | | |
| Largest Vehicle Using Access Regularly | # of Trips | Frequency | | | | | | | | | | | | | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | | | | | | | | | | | | | |
| Sight Distance <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Stopping</th> <th colspan="2" style="text-align: center;">Intersection</th> </tr> </thead> <tbody> <tr> <td style="width: 25%;">Upstation</td> <td style="width: 25%;"><input type="text"/> Ft.</td> <td style="width: 25%;">Left</td> <td style="width: 25%;"><input type="text"/> Ft.</td> </tr> <tr> <td>Downstation</td> <td><input type="text"/> Ft.</td> <td>Right</td> <td><input type="text"/> Ft.</td> </tr> </tbody> </table> | | Stopping | | Intersection | | Upstation | <input type="text"/> Ft. | Left | <input type="text"/> Ft. | Downstation | <input type="text"/> Ft. | Right | <input type="text"/> Ft. | | |
| Stopping | | Intersection | | | | | | | | | | | | | |
| Upstation | <input type="text"/> Ft. | Left | <input type="text"/> Ft. | | | | | | | | | | | | |
| Downstation | <input type="text"/> Ft. | Right | <input type="text"/> Ft. | | | | | | | | | | | | |
| Adjacent Access Spacing <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 40%;">Distance Centerline to Centerline</th> <th style="width: 20%;">Access Type</th> </tr> </thead> <tbody> <tr> <td>Direction: Upstation</td> <td><input type="text"/> Ft.</td> <td></td> </tr> <tr> <td>Direction: Downstation</td> <td><input type="text"/> Ft.</td> <td></td> </tr> </tbody> </table> | | | | | Distance Centerline to Centerline | Access Type | Direction: Upstation | <input type="text"/> Ft. | | Direction: Downstation | <input type="text"/> Ft. | | | | |
| | Distance Centerline to Centerline | Access Type | | | | | | | | | | | | | |
| Direction: Upstation | <input type="text"/> Ft. | | | | | | | | | | | | | | |
| Direction: Downstation | <input type="text"/> Ft. | | | | | | | | | | | | | | |
| Other Location Notes: Reference to Section Corner, Permanent Object, Project Plan Station, etc. <input style="width: 100%; height: 20px;" type="text"/> | | | | | | | | | | | | | | | |
| Comments: <input style="width: 100%; height: 40px;" type="text"/> | | | | | | | | | | | | | | | |

Rev. 01-13

D.O.T. Form 334

8.9.4 Highway Access Permit Completion or Revocation Notice (Form 309C)

KANSAS DEPARTMENT OF TRANSPORTATION

HIGHWAY ACCESS PERMIT

COMPLETION OR REVOCATION NOTICE

Petitioner City _____

Permit No. _____
 Route _____
 Co. _____
 Project Number: _____
 Acceptance to Restore ROW _____

To: _____
 Owner _____ Agent Contact _____
 Street _____ Street _____
 City _____ State _____ Zip _____ City _____ State _____ Zip _____

Location of Work: _____

Surface Type _____ Surface Width _____ Ft. Surface Thickness _____ In.
 Longitude _____ Latitude _____ Radius _____ Drop Curb

Permit completed for:
 Private Entrance Commercial/Industrial Entrance Temporary Access Expired _____
 Local Road Permit was not completed and is revoked Mailbox _____
 Other _____

Comments: _____

With this Completion Notice, the obligation to carry a Certificate of Insurance as required in Form 309, Highway Access Permit, shall cease.

Recommended By: _____
 Area/Metro Engineer or Designee

 Representative Responsible for Maintenance Date

 Title

By: _____
 SECRETARY OF TRANSPORTATION
 OF THE STATE OF KANSAS
 District Engineer or Designee

Rev 01-13 D.O.T. Form No. E309C

8.9.5 Use of Right-of-Way Permit (Form 304)

Const./Maint.
 Petitioner
 District
 Area
 City or Sub-Area

KANSAS DEPARTMENT OF TRANSPORTATION
 Bureau of Construction and Maintenance

**HIGHWAY PERMIT
 USE OF RIGHT OF WAY**

Permit No. _____
 Route _____
 Co. _____
 State Highway
 City Conn. Link
 City _____

 Emergency Contact (24/7)

THIS AGREEMENT, made and entered into, between the Secretary of Transportation of the State of Kansas, referred to as "Secretary" and _____ (Name of Firm or Individual) (_____) (Tel. No.) _____ (Street) _____ (City) _____ (State) _____ (Zip) referred to as "Petitioner" and the City of _____ (If Not Applicable, Enter N/A) referred to as "City".

Secretary has jurisdiction over highway right-of-ways within the State Highway System of Kansas, and Secretary (and City) believe it is in the interest of the Citizens of the State of Kansas to permit certain work or projects to be performed upon Highway right-of-ways, and

Petitioner requests permission and authority from Secretary (and City) to perform certain work, described as follows:

Said work is located on public right-of-way in, upon or along State Highway Route _____, Reference Point _____ (or City Connecting Link Route _____ on _____ St.) in Sec. _____ TWP. _____ Range _____, _____ County, _____ Miles(km) _____ (direction) from _____ (Jct. or county line) and

Secretary has delegated full and complete authority to the District Engineers of the Kansas Department of Transportation (KDOT) to execute Highway Permit Agreements, referred to as "Permits," for and on Secretary's behalf.

In consideration of the permission granted by the Secretary (and City) to utilize Highway right-of-way(s) in the manner described above, the following terms and conditions are mutually agreed to by the Petitioner, the Secretary (and the City).

- 1.0 PLANS: Petitioner shall furnish five (5) sets of comprehensive plans or sketches, 8 1/2" x 11" or 11" x 17", of the proposed work.
 - 1.1 Plans for utility installations must include a description of the size, type, and method of installation for the proposed Facilities to be located within highway right-of-ways, and adequate sketches to indicate the location of the proposed installation with respect to the traveled way of the highway, the right-of-way lines and, where applicable, the control of access lines.
 - 1.2 An accurate "As Built" Construction Plan shall be provided for deviation from the approved Plan.
- 2.0 MATERIAL AND METHODS: All requests to perform work in, upon or along Highway right-of-ways must be approved by the District Engineer (and City). In Cities, Petitioner will obtain additional Permits, as required by City.
 - 2.1 The Petitioner shall furnish all material, do all work and pay all costs for the work described on this Permit.
 - 2.2 All utility installations shall comply with the conditions and applicable requirements of the KDOT Utility Accommodation Policy, current edition, which is incorporated by reference in its entirety (and City standards when they exceed those of KDOT).
 - 2.3 Drainage structure requirements shall be determined by Petitioner, but requirements are subject to review and approval by the District Engineer (and City).
 - 2.4 All materials and construction methods used on work within the limits of the right-of-way shall meet or exceed the requirements of the "Standard Specifications for State Road and Bridge Construction," current edition. The Standard Specifications are available at www.ksdot.org.
- 3.0 INITIATION AND COMPLETION OF WORK: Petitioner agrees to notify the District Engineer (and City) or their duly authorized KDOT representative _____ before work is initiated and again when the work is completed.
 - 3.1 An approved signed copy of this Permit shall be on the premises at the start and during the period any work is performed.
 - 3.2 All-work, including right-of-way restoration, shall be completed within _____ calendar days of APPROVAL DATE, otherwise this Permit is rescinded. If work has not been started within the completion time, this Permit becomes null and void.
- 4.0 INSPECTION: Petitioner will be responsible for supervising construction to insure compliance with KDOT (and City) policies and standards.
- 5.0 ACCEPTANCE: (Check One) KDOT ; City ; will be responsible for acceptance of restored right-of-way.
- 6.0 RIGHT-OF-WAY: Except for authorized changes, Petitioner shall restore the right-of-way to a condition equal to or better than existed prior to approval of the work described on this Permit.
 - 6.1 Any sod, shrubs or trees destroyed by this work shall be replaced as directed by the District Engineer (and City).
 - 6.2 The right-of-way shall be kept free from parking, advertising signs or any other commercial activity.

7.0 OBSTRUCTION OF TRAFFIC: Petitioner shall ensure highway (and connecting link) traffic will be free of interference unless specifically provided for as a part of this Permit. All temporary traffic control devices and their installation and maintenance shall comply with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD for streets and highways which has been adopted by the Secretary). Whenever the temporary Traffic Control Standards conflict with the MUTCD, the Standards shall govern. Workers shall wear approved safety vests according to 23 CFR Part 634, Worker Visibility.

8.0 MAINTENANCE: All utility installations shall be maintained or caused to be maintained by Petitioner.

9.0 PERMIT REVOCATION: In lieu of bond, Secretary may revoke the permit and remove any work performed. The Petitioner shall reimburse the Secretary for any cost incurred by Secretary to restore the right-of-way. The Secretary will not authorize any other highway permits until Petitioner has either reimbursed Secretary or restored the right-of-way.

10.0 LIABILITY: Petitioner shall indemnify and hold harmless Secretary from personal injury and property damage claims arising out of any act or omission of Petitioner. If Secretary defends a third party's claim, the Petitioner shall indemnify Secretary for personal injury damages, property damages and related expenses Secretary incurs arising out of Petitioner's act or omission. For purposes of this provision, the term Petitioner includes Petitioner's employees, agents, subcontractors (at any tier), suppliers (at any tier), successors, and assigns.

10.1 INSURANCE: Liability Insurance. Petitioner shall carry "General Liability" insurance under an occurrence policy that has a minimum combined single limit of \$2,000,000 for personal injury and property damage and that contains the following coverage: Comprehensive Form, Premises-Operation, Underground Hazard, Products/Completed Operations Hazard, Contractual Insurance, Broad form Property Damage, Independent Contractors, and Personal Injury. Worker's Compensation: Petitioner shall carry "Worker's Compensation and Employer's Liability" insurance that complies with Kansas Statute. Automobile Liability: Petitioner shall carry "Automobile Liability" insurance under an occurrence policy that has a minimum combined single limit of \$1,000,000.00 for personal injury and property damage and that contains the following coverage: Comprehensive Form, Owned, Hired, and Non-Owned.

10.2 "Certificate of Insurance": This permit shall not take effect unless Petitioner provides Secretary a "Certificates of Insurance" confirming Petitioner carries insurance in the amounts and type this section requires. Petitioner shall obtain insurance only from insurers on the approved Federal Treasury List and authorized by the Kansas Commissioner of Insurance. The "Certificates of Insurance" shall include a clause requiring the insurer to notify Secretary thirty (30) calendar days in advance of a change in or cancellation of the insurance contracts.

10.3 Petitioner shall maintain the insurance required in Section 10.1 until the District Engineer releases the Petitioner from any Permit obligation.

11.0 DAMAGE TO UTILITIES: KDOT shall not be liable for damage to any utility not installed in the location authorized by any permit or agreement issued pursuant to the Utility Accommodation Policy.

12.0 PIPELINE LIABILITY: For attachments to bridges or other structures and for roadway crossings of PIPELINES CARRYING PETROLEUM, HAZARDOUS AND/OR CORROSIVE PRODUCTS, Petitioner shall solely assume all risk and liability for accidents and damages that may occur to persons, property or natural resources by reason of the operation of the pipeline attached to said bridge, structure or crossing of roadway.

12.1 Petitioner shall maintain the insurance required in Section 9.0 for as long as the pipeline remains attached to the bridge or other structure or for as long as the pipeline crosses the roadway. The insurance contract shall cover claims for such length of time as the law permits such claims.

13.0 ENVIRONMENTAL LIABILITY AND INDEMNIFICATION: Petitioner shall comply with all applicable federal, state, and local statutes, regulations and ordinances relating to environmental protection, and health and safety in Petitioner's acts on, or occupation of, the Highway right-of-way(s). Petitioner assumes all risk and liability for, or resulting from, any environmental condition on, at, or leaving the Highway(s) caused by or arising out of Petitioner's, or its agents' or contractors' acts, omissions, or occupation, in whole or in part, of the Highway right-of-way(s). Petitioner shall hold harmless and indemnify the Secretary against all liability, cost, expense, and fines incurred by or levied against the Secretary under any federal, state or local environmental law, regulation, or ordinance resulting from Petitioner's breach of this paragraph or as a result of Petitioner's acts or occupation of the Highway right-of-way(s) pursuant to this Permit. For purpose of this provision, the term Petitioner includes Petitioner's employees, agents, subcontractors (at any tier), suppliers (at any tier), successors and assigns.

14.0 HIGHWAY IMPROVEMENTS AND/OR MAINTENANCE: If Secretary makes any alteration or improvement along or upon the highway right-of-way which is the subject of this Permit, Petitioner shall hold Secretary harmless for any and all damage or injury to Petitioner's Facilities, whether finished or unfinished, as well as damage or injury to Petitioner's equipment, materials, employees, agents or contractees. Petitioner shall conduct all work approved on this permit in such a manner as not to interfere with construction or other work being performed by the KDOT (or City) or its contractors in the vicinity of Petitioner's work or project.

14.1 Within a reasonable time after receiving written notice from Secretary that Petitioner's Facilities are in conflict with KDOT's new construction or major maintenance operations, Petitioner shall alter, change location or move their construction work or Facilities without cost or expense to the Secretary. If Petitioner fails to relocate their Facilities within a reasonable time, KDOT may move the Facilities. Except for Rural Water Districts meeting the requirements of K.S.A. 68-415(c), Petitioner shall reimburse KDOT for the costs of relocating the Facilities upon receipt of an itemized statement. (See, K.S.A. 68-415). Petitioner shall reimburse KDOT for any construction costs, claims or expenses KDOT incurs as a result of Petitioner's failure to timely relocate the Facilities.

14.2 Written notice will not be required for KDOT's normal maintenance.

15.0 ABANDONED OR RETIRED IN PLACE: Petitioner shall notify Secretary when the Facilities will be abandoned or retired in place and shall submit a plan for abandonment or retirement in place to the District Engineer or designee for review and approval. Petitioner shall remove or abandon the Facilities in place in accordance with the approve plan. Petitioner shall pay all costs associated with removal of abandoned or retired in place upon highway right-of-way Facilities.

This Permit is hereby accepted and its provisions agreed to by the Parties.

APPROVED:

PETITIONER:

CITY OF _____
(when applicable)

Mayor City Mgr. City Engr.

City Clerk

Signature

Printed Name

Street Address (City, State, Zip Code)

Agent Lessee Contractor

Street Address (City, State, Zip Code)

Contact Email

RECOMMENDED BY:

Area/Metro Engr. Area Supt. Utility Coord.

PERMIT APPROVAL:

SECRETARY OF TRANSPORTATION
OF THE STATE OF KANSAS

BY:

District Engineer

Date

8.9.6 Variance Report (Form 1404)

Variance Report

Petitioner: _____

Route: _____

Access Route Class: _____

Permit No: _____

District Plan

Type: Type _____

Speed Limit: _____

| | | | | | |
|-------------------------------|--------------------------|--------------------------|------------------------------------|--------------------------|--------------------------|
| | Actual | Required | | Actual | Required |
| Access Width: | <input type="text"/> ft. | <input type="text"/> ft. | Access Radius: | <input type="text"/> ft. | <input type="text"/> ft. |
| Access Thickness: | <input type="text"/> in. | <input type="text"/> in. | | | |
| Up Stopping Sight Distance: | <input type="text"/> ft. | <input type="text"/> ft. | Left Intersection Sight Distance: | <input type="text"/> ft. | <input type="text"/> ft. |
| Down Stopping Sight Distance: | <input type="text"/> ft. | <input type="text"/> ft. | Right Intersection Sight Distance: | <input type="text"/> ft. | <input type="text"/> ft. |
| Access Spacing Upstation: | <input type="text"/> in. | <input type="text"/> in. | Access Spacing Downstation: | <input type="text"/> in. | <input type="text"/> in. |

Culvert Information:

Other:

Area Comments:

Reason for Variance:

AMU Reviewed By _____