

Recommended Roadway Plan
Section 2 - Land Development and Roadway Access

Land Development and Roadway Access

2.1 Land Use and Access Management

The Federal Highway Administration (FHWA) defines access management as “the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed.” Properly implemented access management will improve traffic operations, increase highway safety and minimize adverse environmental impacts. Unplanned land development and uncontrolled access connections reduce highway safety and capacity, and result in early obsolescence of the roadway. Unregulated access increases accidents, delay, and congestion for users of the highway systems within Kane County.

Access management in Kane County is controlled by the KCDOT *Permit Regulations and Access Control Regulations* approved by the County Board on January 14, 2004 and implemented by February 2004. These regulations provide updated policies and detailed procedures for permitting access to County highways.

The guiding philosophy of the Access Control Regulations is to “provide safe, efficient transportation systems compatible with land use” by controlling access on roadways to minimize curb cuts and local street intersections and maintaining existing roadway capacity. The highest degree of access control is applied to the County Limited Access Freeways (CLAFs)¹ and major arterial roads with less access control on minor arterial and collector roads.

The regulations apply different degrees or levels of access control depending on the type and operational characteristics of the highway in question, in combination with the type and intensity of the land use generating the need for access. Therefore, the desirable intersection spacing and access guidelines vary according to the type of highway and proposed land use. Three levels of access control are described in the regulations.

Level 1 - High level of access control based upon conservative parameters of driver behavior, vehicle performance characteristics and a high margin of safety. This level of access control is applied to major access points on Strategic Regional Arterials (SRAs), CLAFs and high-speed rural highways.

Level 2 - Moderate level of access control based on normal or median parameters for both driver behavior and margin of safety. This level of access control is applied to minor access on all highways and major access on urban/suburban arterials.

¹ Note that the term “freeway” used here does not correspond with this functional classification as described later in the report. County Limited Access Freeways (CLAF) consist of portions of five major arterial roadways in the county (Fabyan Parkway, Kirk Road, Dunham Road, Orchard Road and Randall Road).

Level 3 – Minimum guidelines typically representative of physical or geometric constraints or considerations, not based on driver or vehicle performance criteria. This level of access control is applied to all minimum use access on County highways.

The use of a particular access control guideline is based on the type of land use generator and the classification of highway on which the generator is located. The operating speed of the subject highway is built into the individual access guideline. Table 2-1 is a guide to application of the various levels of access control.

TABLE 2-1
Access Guidelines Application Matrix

Traffic Generation Movements Per Day	Highway Classification			
	Urban/Suburban	Rural Highway	CLAF & SRA Commercial	CLAF & SRA Residential
Minimum Use				
<10 movements	Access Level 3	Access Level 3	Access Level 3	Access Level 3
Minor Access				
<150 movements	Access Level 2	Access Level 2	Access Level 2	Access Level 2
Major Access				
>150 movements	Access Level 2	Access Level 1	Access Level 1	Access Level 1

Notes:

1. "Major Access" includes all commercial accesses and public streets classified as collector or above which includes most subdivisions.
2. The County Engineer may in his/her professional discretion elect to apply a different priority level or deviate above or below the standard for a given priority level based on unique property, site development, highway design and/or traffic conditions.

Source: KCDOT Permit Regulations and Access Control Regulations, Table 1, Page 2-17.

2.1.1 Location of Access Points

Guidelines were also established regarding the location of access points. The first guideline provides that access points be located so that ingress and egress maneuvers will not severely degrade safe and efficient traffic movements and operations on the County highways. The locations should provide adequate sight distance by avoiding placement of access points on a horizontal curve or just below a crest of a vertical curve. If the sight distance is not adequate for specific movements those movements will not be allowed. Whenever possible, access should be provided via existing cross streets in lieu of additional County highway access points and will be prohibited when a property abutting a county highway has frontage on one or more roadways and reasonable access can be provided from the roadway. New access locations should be aligned with access points for existing development on the opposing side of the highway. Adjacent access points should be spaced to insure that conflicting movements do not overlap and that safe and efficient traffic movements and operations will be maintained. The distance between adjacent access points should be spaced far enough apart as to provide for full left turn tapers and storage bays for both access points to the county highway. The county may require joint or shared access facilities. Access points in the vicinity of interchanges, interchange ramp terminals, crossroads, frontage roads, and service drive

connections shall be restricted to minimize hazardous and congested conditions. Finally, access points shall be located to provide safety and convenience for pedestrians, bicyclists, and other users of the roadway right-of-ways.

2.1.2 Number of Access Points

A set of guidelines is specified for the number of access points to be provided. Each development or property regardless of the number of parcels is limited to one access point. When subdividing existing developed parcels to create new lots, no additional access will be permitted. An additional access point may be permitted if it is demonstrated that the LOS at the primary access point would be substantially improved and the additional access point will not adversely affect traffic safety or operations on the county highway. If the approved access is signalized, no additional full access points are allowed. A right turn only access point may be permitted, provided that the property owner demonstrated the need and complies with all other policies. The access guidelines for abutting property located at the intersection of two county highways provide that the access point shall be permitted on the county highway with lower volumes. For corner lots at an intersection where only one of the abutting roads is a county highway, access should be provided to the other intersecting road rather than the county highway.

2.1.3 Internal Circulation

Providing adequate internal circulation within a development aids in the operation of major facilities. The county recognizes this need by specifying a guideline that when property abutting a county highway is to be developed, direct access to the county highway shall not be used in lieu of an adequate internal traffic circulation system. Access will not be permitted if internal traffic patterns are not acceptable based on overall traffic circulation, drive-in reservoir and parking space capacities, internal turning movements, and projected trip/parking generation rates. No access shall be permitted if such access would require backing or turning maneuvers onto a county highway or would result in parking on a county highway or within the right-of-way of a county highway.

2.2 Transportation Connectivity

The phrase “transportation connectivity” refers to the continuity of the roadway system within each of the functional classifications and the compatibility of design and capacities of the roadways within the county. To insure continuity, the requirements for main line capacity, functional classification, roadway design and access must be balanced into a roadway system which will provide continuous travel paths and avoid abrupt transitions between these elements along the length of the roadway.

System continuity along an individual roadway may address the alignment, functional classification, the length of the roadway, and the roadway cross section. The methodology for estimating lane requirements for the 2040 roadway system are initially based on a segment-by-segment assessment of traffic volume and capacity derived from the computerized travel demand model. System continuity requires the selection of a basic number of lanes for a reasonable length of roadway between logical termini.

The connectivity of streets is also a major concern for public transit, and emergency and public service vehicles. Collector streets should be through streets, not winding cul-de-sacs, to provide efficient access for buses, paratransit vehicles, and emergency and public services. The design should afford adequate intersection geometrics to accommodate the turning movements of buses, fire trucks and public service vehicles.

2.3 Street Standards

2.3.1 Design Requirements

County regulations call for design of access points and accompanying highway improvements complying with the county requirements. The standards and specifications set forth in these regulations are to ensure a safe and efficient highway system for the motoring public. Design features addressed in the regulations are design speed, intersection and driveway sight distance requirements, access design widths and standards, radius return, angle of intersection, islands, medians, driveway profile, culverts, mailbox turnouts, shoulders, curb and gutter, bike paths, bike lanes, sidewalks, cross-section and materials, traffic control and on-site design elements.

This section discusses general aspects of road design criteria that should be applied to proposed roads as each project becomes more defined. The recommendation of future roads alone is not enough to ensure adequate transportation infrastructure. These planned improvements must be constructed to design standards to ensure public safety and appropriate investment of public resources. This section provides a general description of preferred practice for road design in Kane County.

2.3.2 Functional Classification

The functional classification of a road describes the character of service the road is intended to provide. The various functional classifications serve two competing functions to different degrees, access to property and travel mobility. Each road will provide varying levels of access and mobility depending on its intended function. When a system is viewed in whole, the objective is to realize an optimal balance between access and mobility functions. The following are definitions for the four general road functional classifications.

- **Freeways and Expressways** are limited access facilities characterized by their ability to quickly move large volumes of traffic with minimal disturbances. All access to freeways is via ramps and all crossings are grade separated. Freeways provide for high-speed long distance trips.
- **Principal and Minor Arterials** are highways which are generally characterized by their ability to quickly move relatively large volumes of traffic with less provision for access to adjacent properties. Arterial highways provide for high-speed travel and longer distance trips.
- **Collector roads** are characterized by a relatively even distribution of access and mobility functions. Traffic volumes, speeds, and trip lengths are typically lower on collector roads than on arterials routes.

- All public roads and streets not classified as arterials or collectors are classified as **local roads**. Local roads and streets are characterized by numerous points of direct access to adjacent properties. Speeds and volumes are low and trip distances short.

Figure 2-1 shows the schematic relationship between access and mobility functions of streets and highways. The highest classification (freeways) is intended solely for traffic movement and does not provide access to abutting land uses except at interchanges. The lowest category (local street) allows unrestricted access, and is not intended to accommodate through traffic. Classifications between these extremes perform a combination of functions with varying emphasis on traffic movement or access. Most of the roads included in this long-range plan are principal and minor arterials.

The proper application of road design criteria depends in part on the functional classification of the road. Not all roadways are created equal. They not only vary in width and design, but also in the function they are intended to perform rather than by their cross section or traffic volume.

2.3.2.1 Typical Sections

The general design criteria for the design of a road depends in part on its functional classification and its location, either urban/suburban or rural. The typical cross-section describes requirements for width of traveled way, median type and width, curb or shoulder treatment, sidewalks, bicycle lanes, clear zones, and grading.

Urban/Suburban Arterials and Collectors

Typical cross-sections for Urban/Suburban arterial roads and collector roads are shown in Figure 2-2. A large number of commercial driveways and possibly pedestrian or bicycle traffic can be expected along these facilities. Center turn lanes are recommended wherever there are frequent entrances into high-volume commercial driveways. Where center turn lanes are not provided, left-turn lanes should be provided at all major intersections. In locations with an expectation of higher speeds and with higher volumes, it is recommended that right-turn lanes also be provided.

Parking should be prohibited along arterials. Signalized intersections should be spaced one-quarter mile apart at a minimum. For SRAs, half-mile spacing of signalized intersections is preferred. Sidewalks to accommodate both pedestrians and bicycles may be provided to separate them from vehicle traffic.

Rural Arterials and Collectors

Typical cross-sections for rural arterials and collector roads are shown in Figure 2-3. In rural areas with widely dispersed access points, a rural cross-section is recommended. For higher-volume roads through less developed rural areas, a divided cross-section is recommended. Signal spacing on rural arterials should be maximized with a minimum of one-quarter mile spacing.

2.3.2.2 Intersection Channelization

Channelizing an intersection refers to the provision of lanes dedicated to each movement, through vehicles, left turners, and right turners. Many existing intersections provide for

exclusive lanes only for high-volume turning movements. As new projects are designed and constructed, the KCDOT, as a matter of policy, is providing full channelization at intersections. Doing so provides separate lanes for the through, left, and right movements. This separation enhances vehicle safety, increases intersection capacity, and provides for more flexibility when setting signal timings. Providing for full channelization does require additional right-of-way than a more restricted design and may present challenges for pedestrian movements.

2.3.2.3 Right-of-Way

Right-of-way guidelines have been defined by functional class to ensure appropriate land acquisition for future widening of roadways. These definitions incorporate land for the road cross-section including the traveled way, median, parking, shoulders, sidewalks, drainage, and grading. Acquisition of right-of-way could occur before widening is warranted, allowing land to be set aside before development occurs. Often, early acquisition is the most cost effective way to preserve right-of-way for road widening. The Table 2-2 shows right-of-way guidelines for County roads by road functional classification.

TABLE 2-2
Minimum Right-of-way Guidelines for County Roads by Road Functional Classification

Functional Classification	Right-of-Way
SRA's and County Freeways	170 feet to 200 feet
Principal Arterials	120 feet to 150 feet
Minor Arterials	120 feet
Collectors	80 feet to 120 feet
Local	66 feet to 80 feet

Section 2
Figures
