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Kentucky's Proposed Access Management Program - Executive Summary

The Access Management Manual published by the Transportation Research Board in 2003 defines access management as the "systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway[1]." The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system. Access management principles stress traffic flow for higher-class roadways and access for lower-class roadways and place an emphasis on safety for all classes of roads. An effective access management program can reduce crashes as much as 50 percent, increase roadway capacity by 23 to 45 percent, and reduce travel time and delay as much as 40 to 60 percent[2]. The safety benefits of access management have been demonstrated by more than four decades of research. Several studies have shown that every access point reduces highway safety to some degree, and that there is a clear relationship between the density of access points and crash rates. For highway agencies, access management can also serve as a strategy to save highway improvement dollars by preserving the function and capacity of roadways and thereby extending the useful life of those roadways. The benefits of access management are achieved through a series of policies that define specific guidelines and standards for allowable access levels, access spacing criteria, access permit procedures, and the means for enforcing these concepts.

All state highway agencies exercise some control over highway access, but traditionally these programs have focused primarily on driveway design and location. In Kentucky, management of highway access (at the state level) is currently limited to the Transportation Cabinet's case-by-case access permit review process for state-maintained routes and to negotiated access spacing improvements that are incorporated in the design of major highway improvement projects. Administrative regulations issued under the Transportation Cabinet's authority to limit highway access define three levels of access control: fully-controlled access, partially-controlled access, and access by permit. Direct highway access is not allowed on fully-controlled access highways. For partially-controlled access routes the minimum spacing between access points is 1,200 feet in rural areas and 600 feet in urban areas, with an allowable reduction in the spacing of up to 15% if supported by a traffic study. For access by permit routes, which make up the vast majority of the state-maintained highway system, access points may be allowed for the convenience of the land owner, subject to considerations of safety and the interest of the highway user. The Transportation Cabinet's Permits Guidance Manual provides general guidance rather than specific spacing standards for this level of access control. This guidance does not address the accumulative detrimental effects of an increasing frequency of access points and traffic signals.

At least 21 states have implemented comprehensive access management programs in recent years. Other states are likely to change their policies to a more comprehensive approach in the near future following the release of the TRB Access Management Manual. A review of the policies of states that have implemented access management programs revealed that the key elements for a successful program are a classification system of roadways specifically for access management purposes and a set of access spacing standards and design guidelines for each class. Access spacing standards and design guidelines are typically applied in conjunction with the following management techniques: interchange spacing and interchange crossroad access spacing, signalized intersection spacing, unsignalized intersection/driveway spacing, corner clearances, traversable and non-traversable medians, median opening spacing, turning lanes, U-turns, frontage/backage roads, specific access design elements, and provisions for alternative access.

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[1] *Access Management Manual.* Transportation Research Board, Washington, DC (2003).

[2] Federal Highway Administration. *Access Management, Location, and Design.* NHI Course No. 133078. S/K Transportation Consultants (April 2000).

The essence of an access management system can be summarized in the following steps:

1. Classification of roadways to reflect the importance and intended function of each roadway, with particular attention given to the relative priority that should be given to traffic flow versus land access;
2. Definition of allowable levels of access for each road class, including criteria for the spacing of access points and appropriate geometric design criteria;
3. Adoption of appropriate regulations and administrative procedures, including a procedure for considering variances from the adopted standards.

Roadway Classification

Most of the systems developed by other states have utilized existing functional classification as the basis for their roadway classification system. The rationale for this approach is that allowable access should be correlated with a roadway's purpose and importance. Additional indicators that have been used by other states include traffic volume, speed, geometric features (number of lanes and median type), and land use. For Kentucky, it is recommended that functional classification be used in conjunction with traffic volume and posted speed limit for developing the initial access management classification system.

The proposed classification system is presented in Table 1. This system uses a set of four classes each for urban and rural roadways that do not already have full control of access. Interstates, parkways and other freeways that have full access control are treated separately. The initial correspondence between functional class and these categories is: I - Principal Arterial, II - Minor Arterial, III - Collector (both Major and Minor in rural areas), and IV - Local. A speed limit of 45 mph is used in conjunction with the traffic volume ranges shown in the table to identify those roadway segments where functional class designations should be adjusted for access management purposes.

Table 1 - Use of Functional Class, Traffic Volumes and Speed Limits for Roadway Classification

	Rural			Urban		
Principal Arterial		Volume			Volume	
	Speed	<5,000	≥5,000	Speed	<10,000	≥10,000
	≥45	I	I	≥45	I	I
	<45	II	I	<45	II	I
Minor Arterial		Volume			Volume	
	Speed	<2,500	≥2,500	≥5,000	Speed	<5,000	≥5,000	≥10,000
	≥45	II	II	I	≥45	II	II	I
	<45	III	II	II	<45	III	II	II
Collector		Volume			Volume	
	Speed	<2,500	≥2,500	Speed	<5,000	≥5,000
	≥45	III	II	≥45	III	II
	<45	III	III	<45	III	III
Local	All speeds & volumes		IV	All speeds & volumes		IV

The proposed access classification system would be implemented in two stages. First, each state-maintained roadway segment would be assigned to one of the new classes using data contained in the Cabinet's Highway Information System (HIS) database and computerized procedures. The initial classification assignments would then be refined based on GIS mapping and a manual review process. Adjustments to the initial classifications would be made to incorporate considerations such as adjacent land use and planned highway improvements that are not in the HIS database and to ensure appropriate system continuity and logical break points. In order to maintain the effectiveness of the access management system, frequent and/or piecemeal changes in classification should be avoided.

Access Spacing

Every access point introduces conflicts and friction into the traffic stream. As the number of conflicts increases the potential for crashes becomes higher, and the resulting friction translates into higher crash rates, reduced travel speeds, and increased road user delays. To address these issues, access management programs establish minimum access spacing standards for each access classification that are consistent with the intended function of the roadways within each class. Kentucky's program also incorporates two access type categories and allows significantly reduced spacings in certain situations for residential driveways (to three or fewer dwellings) and farm entrances. Appendix A shows the access management spacing standards that have been recommended for Kentucky.

It should be understood that the access management standards proposed here are not intended to be applied retroactively. They will apply to requests for new access and to changes in existing access. Legal access that exists at the effective date of the new access management policy would be allowed to continue, subject to change in use regulations. Further, in cases where the Cabinet formally negotiates access modifications with property owners in conjunction with a highway improvement project, it is expected that such negotiations would take precedence over the spacing standards shown in Appendix A.

In addition to the recommended access spacing distances, a set of recommended practices that have the potential to improve traffic flow and increase safety have also been developed. These practices include:

- An examination of the spacing distances in conjunction with sight distance requirements, which should take precedence over the recommended distances in Table-2;
- An evaluation of existing signals along reconstructed roadways to determine whether their presence is still warranted and removal of unnecessary and/or unwarranted signals;
- Encouraging corner properties with frontage on roadways with different access classes to obtain access via the lower class roadway and provision of a non-traversable median to eliminate left-turns if access must be provided along the higher class roadway;
- Locating access to corner properties as far form the intersection as feasible;
- Consolidation of driveways to adjacent properties whenever feasible;
- Elimination of left-turn access movements across turn lanes or within the limits of regularly forming traffic queues;
- Completion of detailed studies for driveway permits within the influence area of major intersections to ensure minimum disruption of operations at the intersection; and
- Provision of access for outparcels at large developments from within the site and prohibition of direct access to outparcel developments.

Variance and Appeals Processes

Some flexibility is required when administering access management regulations. In conjunction with the standards that are adopted for access spacing and design, a variance or deviation process is needed to allow for a lesser spacing where special or unique conditions make application of the minimum standards inappropriate. Allowing for variances in access management standards requires that these situations be handled in a consistent manner, although deviations may be categorized as minor or major in character, with the latter requiring a more extensive review. A two-level review process is proposed for applications that are in conflict with the access standards.

A *minor variance* would involve a minor deviation from the standards and a negligible impact on highway operations and safety. The consideration of requests for minor variances would be relatively straightforward. The basic test for favorable consideration would be proof of necessity and that there are no reasonable engineering or construction alternatives to provide access to the site which would meet or be in closer compliance to the standard. A *major variance* would involve a more significant deviation from the standards and the potential for significant impacts on highway operations and safety. The consideration of requests for major variances would require more extensive justification, analysis, and review. In addition to the basic test described above for minor variances, applicants for a major variance would have to prove that traffic operations and safety would not be degraded to an unacceptable level by proposed development and access plan or that the level of safety/operational performance would be comparable to that provided with full adherence to access management standards.

In addition to the variance process, an appeals process will be built into the administrative procedures for access management to assure due process for access applicants. In the practice of access permitting an appeal could arise when a permit or variance request is denied or if the Transportation Cabinet establishes a permit condition that is not acceptable to the applicant. This process would offer two levels for potential appeals prior to a property owner resorting to a judicial recourse. The first level would involve a review of the case by a Transportation Cabinet committee. An ensuing appeal of this committee's decision would be addressed through Kentucky's Administrative Hearing (KRS 13B) process. Any further appeal would be handled by District Court.

Appendix A - Proposed Standards

Kentucky's Access Management Program includes standards for the following types of access management controls:

Spacing distances and notes associated with each control type are shown in the tables that follow. Unless indicated otherwise, all distances in these tables are given in feet. It was decided early in the development of Kentucky's Access Management Program that spacing standards should be in fractions and multiples of 600 ft. and 1,200 ft. because of the legacy of Kentucky's partial control of access regulation.

Diagrams illustrating how the spacing standards for traffic signals, median openings, and driveways fit together along a roadway section are shown on pages 12 and 13.

Freeway Interchange Spacing Standards

Access Classification	Interchange Spacing Standard
Freeway – U	1 mile
Freeway – R	3 miles

Note

1. For new interchanges or interchange modifications on the Interstate Highway System preparation of a justification study and approval by the Federal Highway Administration are required.

Commentary

These standards align with the AASHTO Interstate Policy

Signalized Intersection Spacing Standards

Access Classification	Signalized Intersection Spacing
Freeway – U	NA
Freeway – R	NA
Urban I	2,400
Urban II	2,400
Urban III	1,200
Urban IV	1,200
Rural I	2,400
Rural II	2,400
Rural III	1,800
Rural IV	1,200

Commentary

The signal spacing of approximately ½ mile spacing on all Class 1 & 2 roads is to ensure adequate bi-directional signal progression.

Median Type Standards

Access Classification	Preferred Median Type*
Freeway – U	Nontraversable
Freeway – R	Nontraversable
Urban I	Nontraversable
Urban II	Nontraversable (multilane facility) TWLTL (2-lane facility)
Urban III	TWLTL (typical) Nontraversable (high control situations)
Urban IV	NA
Rural I	Nontraversable Undivided w/Left Turn (2-lane facility) TWLTL (suburban environment)
Rural II	Nontraversable Undivided w/Left Turn (2-lane facility) TWLTL (suburban environment)
Rural III	NA
Rural IV	NA

***** Median types listed provide general guidance for typical routes within each class. Refer to the detailed Median Type Guidelines listed below for more specific guidance for a particular situation.

Median Type Guidelines

Individual left-turn lanes recommended for:

- Locations where left-turn volume exceeds warrant (to be determined), and
- Access point density <= 10 ap/mi

TWLTL generally appropriate for:

- Urban/suburban 3-lane roadways with:
  - projected ADT<17,000
  - access point density > 10 ap/mi and < 85 ap/mi
  - left-turn volume < 150 vph
- Urban/suburban multi-lane roadways with:
  - projected ADT<24,000
  - access point density > 10 ap/mi and < 85 ap/mi
  - left-turn volume < 100 vph

Non-traversable medians preferred for:

- All new multilane arterials
- Existing roadways where ADT, access density, and/or turning volumes exceed thresholds established above for TWLTLs
- Existing rural multilane arterials
- Crossroads in the vicinity of interchanges
- Multilane roadways with high pedestrian activity

Notes:

1. Traversable raised medians are not recommended since they neither facilitate left turns nor do they provide positive control over left turn movements.
2. If a project design team determines that a different median type is needed for safety or traffic operational reasons, a variance may be requested.

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Median Opening Spacing Standards

Access Classification	Median Opening Full	Median Opening Directional
Freeway – U	NA	NA
Freeway – R	NA	NA
Urban I	2,400	1,200
Urban II	2,400/1,200*	1,200/600*
Urban III	600	300
Urban IV	NA	NA
Rural I	2,400	1,200
Rural II	2,400	1,200
Rural III	900	450
Rural IV	NA	NA

* For roadways with an 85th percentile speed greater than or equal to 45mph, use larger values. For roadways with an 85th percentile speed less than or equal to 45 mph, the larger values should be utilized where feasible but the lower values may be applied, where necessary. Use of the lower values does not alter the 2,400 ft. minimum traffic signal spacing standard.

Notes

Mid-block median openings (used for U-turns only) may be located 300 feet from an intersection at which left-turns are restricted if the following conditions are met:

(1) adequate sight distance;
(2) adequate space for accommodating the U-turn design vehicle;
(3) adequate space for incorporation of a "left-turn" auxiliary lane (including taper and storage); and
(4) there is no potential for use by drivers desiring to turn left from nearby driveways.

Commentary

- For Class I, II and Urban Class III, full median opening standards are developed to align with the signal spacing standards with the exception noted above for Class 2 roadways.
- For Rural Class 3, full median opening is developed to be ½ of the signal spacing standard. Consecutive median openings will not be signalized.
- Typically, roads classified as Class 4 will not contain a median.

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Unsignalized Intersection Spacing Standards

Access Classification	Type A Access*	Type B Access**
Freeway – U	NA	NA
Freeway – R	NA	NA
Urban I	1,200/600 ***	300
Urban II	600	150
Urban III	300	150
Urban IV	150	100
Rural I	1,200	300
Rural II	600	300
Rural III	450	150
Rural IV	150	150

* Type A Access - All commercial, industrial, and recreational uses; residential subdivision entrances; public roadways; and all other access not specified as Type B Access

** Type B Access - Single family residences; multiple-family residences (3 units or less); and farm/field entrances

*** For roadways with an 85th percentile speed greater than 45mph use larger values. For roadways with an 85th percentile speed less than or equal to 45 mph, the larger values should be utilized where feasible but the lower values may be applied, where necessary.

Restrictions and Notes Applicable to Type B Access

1. All other standards will apply according to the roadway classification.
2. Type B access spacing may be utilized only if alternative reasonable access meeting Type A standards is not feasible.
3. Change of land use from that previously permitted under Type B access to that classified as Type A requires a new permit and application of Type A standards.
4. Only one access allowed per parcel or for contiguous parcels under one ownership. Additional access points may be allowed only if they meet Type A standards and are deemed necessary for the convenience or welfare of the traveling public.
5. Type B access should not be allowed within the functional area of another intersection. No entrance shall be permitted within the limits of a turning lane.
6. Type B access shall not be permitted on routes designated as having "Partial Control" access.
7. When a median is present, Type B access will be limited to right turns only.
8. Unified access using cross access, combined entrances, backage roads and frontage roads is strongly encouraged.

Commentary

- Corridor agreements for new or retrofit projects may result in different negotiated access spacing. Such agreements, signed by KYTC and appropriate local government(s) would take precedence over these standards.
- Project teams may still elect to implement Partial Control access for a new design project.

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Corner Clearance Standards

Access Classification	Type A Access	Type B Access
Freeway – U	NA	NA
Freeway – R	NA	NA
Urban I	1,200/600*	300
Urban II	600	150
Urban III	300	150
Urban IV	150	100
Rural I	1,200	300
Rural II	600	300
Rural III	450	150
Rural IV	150	150

* For roadways with an 85th percentile speed greater than 45mph, use 1,200 ft. upstream of intersection.

Notes

1. In addition to the spacing standard for the appropriate roadway classification, requirements for adequate corner clearance include:
   - Driveways should not be permitted within the limits of turning or other auxiliary lanes in cases where the length of the auxiliary lane, including taper, is greater than the applicable spacing standard.
   - Driveways should not be permitted within the limits of regularly forming queues.

2. For corner properties, Type B corner clearance may only be applied along the roadway with lower access function, based on the access classifications of the intersecting routes. In cases where the access classifications are the same a determination of relative access function will be made by the Cabinet. For intersections of a local road or street with a state-maintained route, it is presumed that the local facility will have the lower access function.

Commentary

Requirements for corner clearance are necessary to insure that the functional area of the intersection is not impacted. Requests for access near important or congested intersections may require a detailed traffic engineering analysis to determine the intersection's functional area.

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Interchange Area Spacing Standards (1)

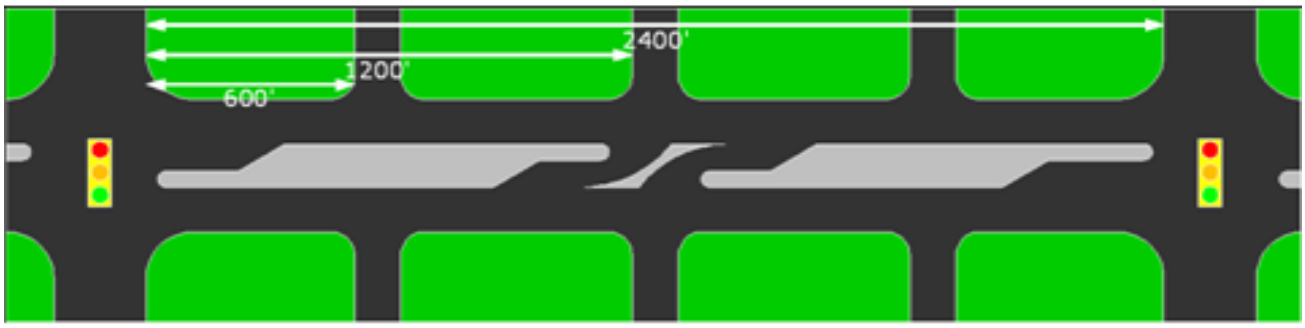
Access Classification	Full Access Intersection (2)	Limited Access Connection (3)	Right-In/Right-Out Access Only (4)
Freeway – U	NA	NA	NA
Freeway – R	NA	NA	NA
Urban I	1,200/600*	300	300
Urban II	600	150	150
Urban III	300	150	150
Urban IV	150	100	100
Rural I	1,200	300	300
Rural II	600	300	300
Rural III	450	150	150
Rural IV	150	150	150

(1) Spacing measured from ramp end of taper (end of radius if no taper) to access connection closest edge of pavement.
(2) Distance to first four-way intersection. Beyond this point spacing standards based on crossroad access class apply.
(3) Distance to first access connection limited to Right-In/Right-Out and Left-In movements. Applicable where left-turn movements restricted by median barrier with directional median opening.
(4) Applicable where left-turn movements restricted by median barrier.

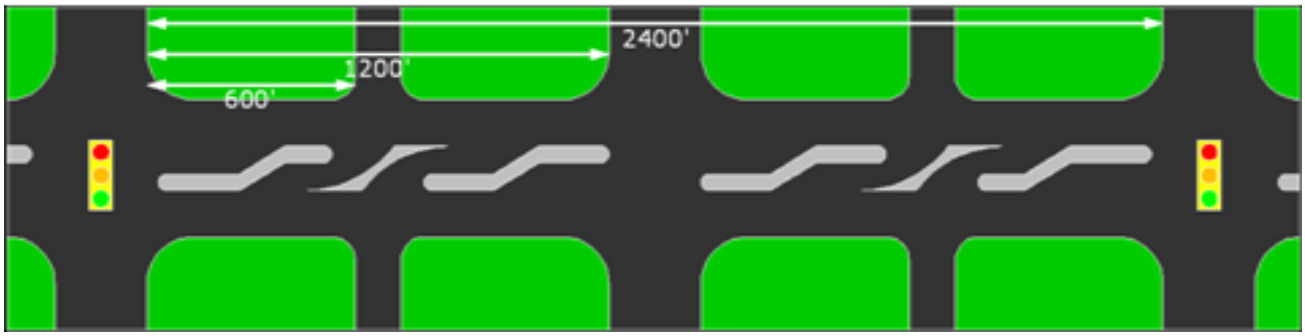
Notes

1. Spacing distances for Limited Access Connections apply only where adequate left-turn lanes can be physically accommodated.
2. Spacing distances for Limited Access Connections may be applied to unsignalized full movement connections if there is no possibility for access on opposite side.
3. Access connections shall not permitted within limits of ramp taper.
4. Access connections should not permitted within limits of auxiliary lane for downstream intersection.
5. Type B access spacing not permitted with between ramp and first Limited Access Connection.

Urban Access Classification I



Urban Access Classification II



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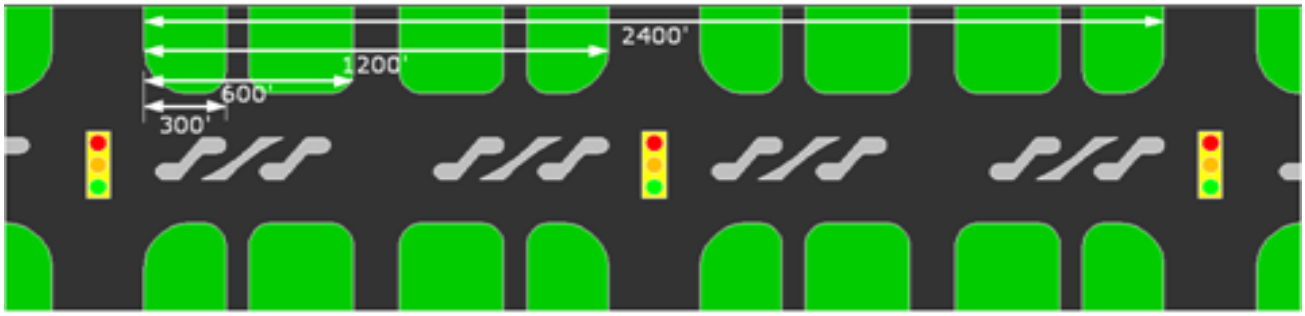
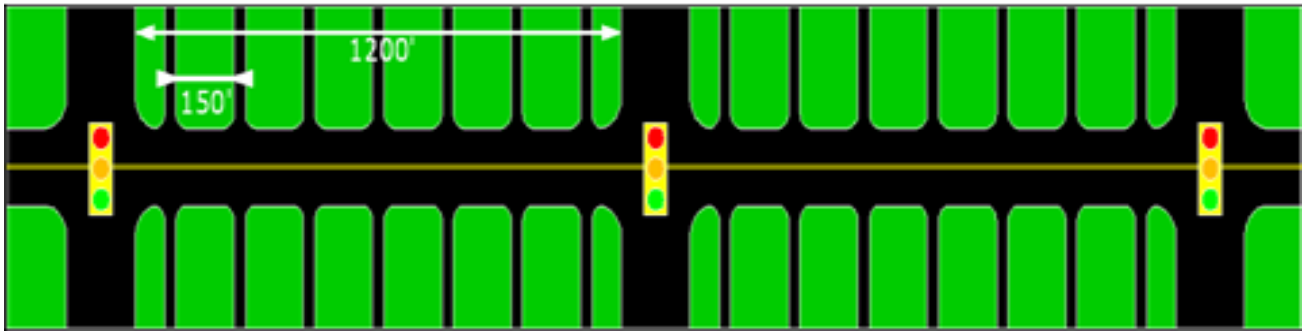
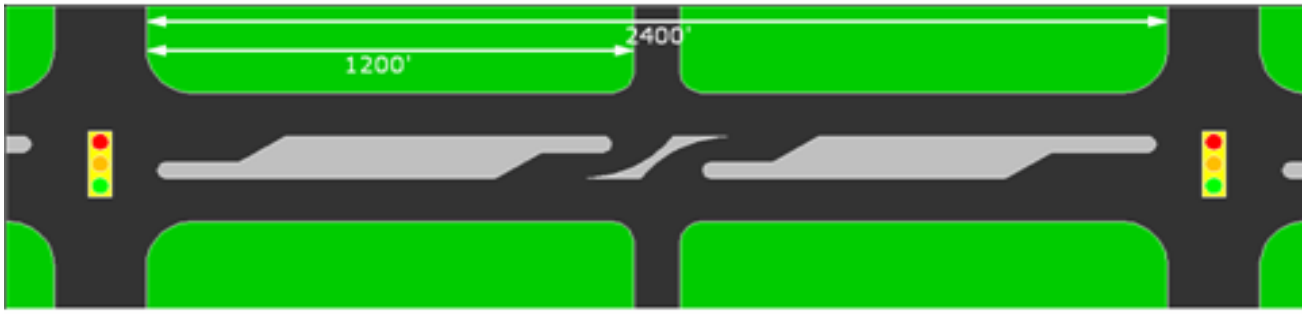


Urban Access Classification IV



Rural Access Classification I



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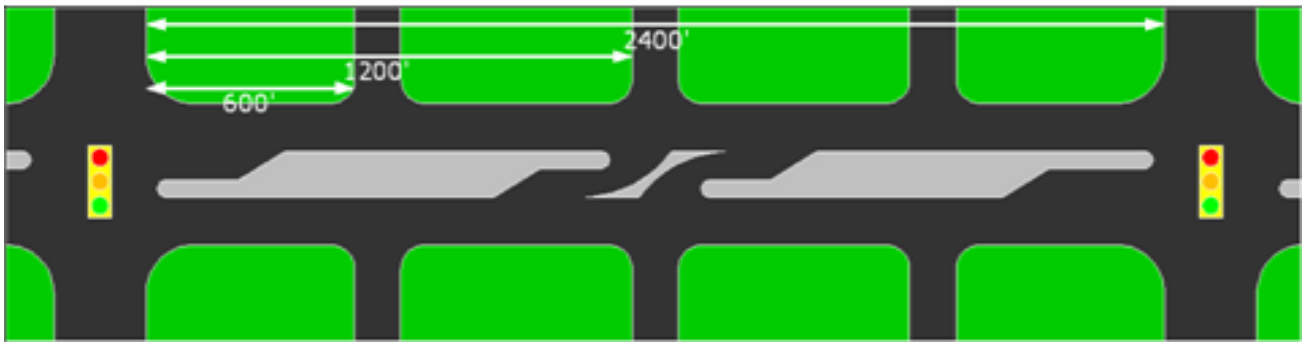
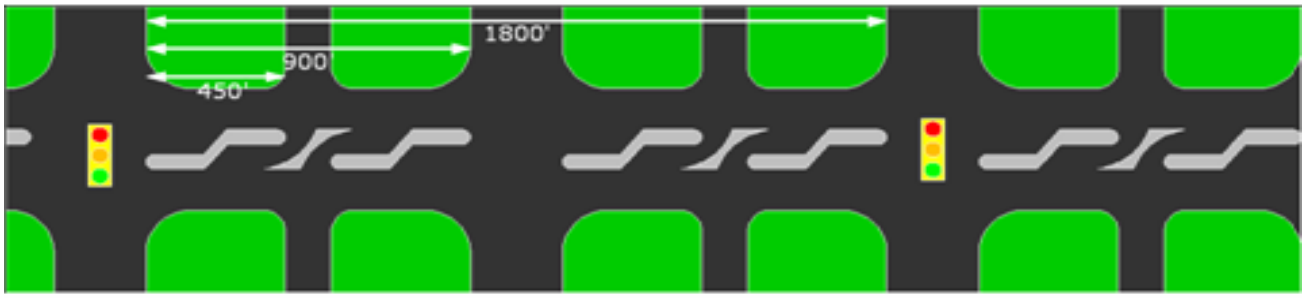


Rural Access Classification III



Rural Access Classification IV