City of Hilliard
Thoroughfare Plan

Technical Appendix:
Access Management Plan

Prepared by
Trans Associates Engineering Consultants, Inc.

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Overview

Access Management is an efficient way of reducing crashes and congestion and improving traffic flow. By minimizing potential conflict points such as driveways and median openings, streets become safer for all users, especially motorists, bicyclists, and pedestrians. Congestion and the likelihood of crashes become greater as the number of driveways and intersections increase and the distance between them decreases. Depending on the condition and treatment used, access management techniques can reduce crashes by upwards of 50 percent.

The City of Hilliard has adopted an Access Management Plan based on the following principles:

- To promote public safety by minimizing crashes.
- To improve the driving experience by increasing mobility and decreasing delay.
- To provide necessary and safe access to property.
- To promote the use of non-vehicular modes to safely access private property by all modes.
- To minimize costs by making more efficient use of existing and proposed roadways.

The Access Management Plan considers: (1) modifications to existing roadways to provide better access management, (2) proper access management along all new roadways, and (3) proper management and design of the site access and circulation systems associated with new and infill development. The following sets forth the guidelines associated with the location and design of driveways. In terms of this Access Management Plan, a driveway is a point of vehicular access connecting adjacent property to a public roadway. Driveways can provide full access, (allowing drivers to enter or exit in any direction) or partial access (restricting one or more movement to improve roadway safety and reduce congestion).

Road Access Categories and Characteristics

The roadways located in Hilliard have been categorized according to their functional and operational intent. The categories are based on maintaining the roadway's function in terms of capacity, traffic flow, property access, and safety. The functional descriptions of the eight basic categories are outlined below. The classification of roadways relative to these access management categories is provided in the Roadway Characteristics table.

Category A

These are generally higher level arterial roadways that cross I-270 and carry significant traffic volumes. Access to these roadways is limited now, and no new access will be permitted. Access to adjacent private property will not be maintained off Category A

roadways, but rather through access point(s) on other Category B-H roadways, possibly via access easement(s) through adjacent private property where necessary. Multi-use paths along these corridors are critical and should be continuous.

Category B
These are generally arterial roadways that include a center median. Access to these roadways is limited. Full access driveway has been/will be established with development text and/or as a part of roadway design. New right-in, right-out driveway access may be considered under special circumstances. Reconstructed roadway sections or extensions should follow driveway spacing of adjacent sections (typically 600' to 800' minimum depending on proximity to major intersections). Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical.

Category C
These are generally arterial roadways. Access to these roadways is limited. Though medians may be considered near major intersections, or to provide pedestrian refuge at key pedestrian crossings, continual medians would not be used throughout a corridor. Driveways should be consolidated or combined as a condition of redevelopment when it occurs. Driveways should be located as far from major intersections as possible. Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical.

Category D
This category is generally comprised of arterial and collector roads. Access may be controlled with a median, near intersections, or to allow pedestrian refuge for crossings and to help control vehicle speeds. Minimum spacing of full access residential driveways is 500 feet. Minimum spacing of full access commercial driveways is 750 feet. Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical.

Category E
This category is generally comprised of arterial and collector roads. Access is not planned to be controlled by a median except as needed near intersections, or to provide pedestrian refuge at key crossings. The minimum spacing for minor driveways is 350 feet. The minimum spacing for major driveways is 500 feet. Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical.

Category F
This category is generally comprised of collector roads, serving adjacent residential areas. Access to these streets is not planned to be controlled with a median except near major intersections where needed. If nearby land uses change from predominantly residential, access control may need to be reevaluated. Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical.

Category G
This category covers local roadways in areas where a grid street system is implemented. In such areas, alleys should be used to provide vehicular connections to adjacent development. Pedestrian connections to adjacent properties, paths, sidewalks, and public rights-of-way are critical. Good street connectivity disperses traffic, creates a walkable block system and results in smaller streets more suitable for walking.

Category H
This category applies to local streets that provide access to individual properties that abut the street. Full access will be permitted to each adjacent parcel or lot.

Driveway Types

Five types of driveways have been defined as a part of this Access Management Plan. These are:

- Farm or Field Drives: A driveway providing access to an agricultural tract of land.
- Single Family Residential: A driveway providing access to one or two structures, which may be single family homes or duplexes.
- Multi-Family Residential: A driveway providing access for up to 20 dwellings, generally multi-family housing development.
- Commercial: A driveway providing access to any commercial, industrial, institutional use (that services fewer than ten trucks per day), or multi-family housing development with more than 20 units.
- Industrial/Delivery: A driveway serving as the primary entrance or exit of an industrial property (serviced by semi-trucks), or for driveways leading to or from a truck dock for a commercial/retail use. Commercial properties may have drives designated for deliveries and others designated for customers. These drives would then follow the guidelines for one of the other drive types.

For Access Management purposes, driveways are also classified by traffic volumes as follows:

- Low Volume Driveway (LVD): greater than 5 and up to 100 two-way vehicle-trips in one or more 60-minute periods of a day.
- Medium Volume Driveway (MVD): greater than 100 and up to 200 two-way vehicle-trips in one or more 60-minute periods of a day.
- High Volume Driveway (HVD): greater than 200 two-way vehicle-trips in one or more 60-minute periods of a day.

Driveway Locations and Spacing

- The number of driveways afforded any one site shall be minimized. The need for more than one driveway must be justified to City staff, and may require a Traffic Impact Study).
- Access for multiple properties shall be combined, where feasible.
- Driveways and parking areas shall be interconnected for all non-residential uses, and mixed-use developments (with or without a residential component). This includes existing situations, as well as planning for future situations.
- Driveways shall be located in accordance with applicable **sight distance requirements** (Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) as contained in Section 200 of the ODOT Location and Design Manual).
- **Minimum driveway spacing – based on posted speed limits** -- shall be determined using the values for high speed roadways (greater than 40 mph) and low speed roadways (equal to or less than 40 mph) as follows:

High Speed Road		Low Speed Road	
Posted Speed	Minimum Distance	Posted Speed	Minimum Distance
55 mph	600 ft.	40 mph	325 ft.
50 mph	550 ft.	35 mph	250 ft.
45 mph	500 ft.	30 mph	200 ft.
		25 mph	150ft.*

It should be noted that these are desirable minimum distances. It is recognized that site frontage and property limits may, by necessity, alter these dimensions. At the same time, City staff reserves the right to call for greater spacing distances where feasible. Where necessary, City staff may exercise discretion to allow closer spacing of infrequently used drives such as those for deliveries. *Single Family Residential driveways are likely to require closer spacing and need not be combined to satisfy driveway spacing requirements on local, Category H roadways.

- Full access driveway spacing shall consider the location of driveways on both sides of a roadway. ***If the City Engineer deems appropriate, a driveway*** may be required to be located in such a way as to form an intersection with any existing driveways across the street.
- Driveways shall be located where they will not interfere with movements to and from an existing or planned street, highway, or driveway on the opposite side of the roadway.

- Driveways shall be located a sufficient distance from an adjacent public road intersections so as not to interfere with the traffic operations at the intersection. Particularly, private driveways shall not be located within the "influence area" of an adjacent intersection. The "influence area" is defined as the area within the limits of the peak hour traffic queues for the intersection.
- The following table provides the **minimum acceptable distances between drive locations and adjacent intersections**. For all access categories, where two roads of different access levels intersect, the restrictions and distances of the higher level roadway will apply along the lower classified roadway. (The defined distances are measured from the centerline of the intersecting road to the centerline of the proposed driveway.)

Recommended Drive Distances from Intersection by Classification

Roadway Classification	Distance from Intersection
Intersecting Category A	No Access Permitted
Intersecting Category B, C, or D	600 feet
Intersecting Category E, F, or G	300 feet

Path and/or Walk Locations and Spacing

Pedestrian/bike connections will be made to all structures containing non-residential and all multi-family uses (with the exception of accessory uses such as storage facilities), as required as part of any rezoning or building permit. Path location and circulation patterns will be reviewed and governed by the site review process and provided as directed by City staff.

All non-residential, and multi-family residential uses will be required to provide at least one pedestrian/bike connection per driveway from the existing or proposed pedestrian/bike network within the right-of-way to the edge of one's property.

Properties with frontage in excess of 660 feet (1/8 mile) shall provide two or more connections, with the location to be approved by City staff. Paths should provide access from nearby intersections, or from any corners of the property along the right-of-way. Properties with frontages in excess of 1,320 feet (1/4 mile) shall provide an additional connection(s) near the middle of the frontage, at a location approved by City staff.

Properties provided a signalized driveway access will be required to provide pedestrian push buttons and pedestrian signal heads on such a signal as a condition of permitting the signal. A pedestrian/bike path shall be provided from the signal into the development and to any building for which employees work, customers shop, or visitors visit. The design of said path should be protected with landscaping and curbs from

vehicle paths and shall be shaded by street trees per the direction of the Planning Director in review of the site development plan, as directed by the City staff.

Properties with frontages on two or more public roads shall provide an access point from the intersection to structures on the property, as well as additional access points on each frontage from the far corners of the property (away from the signal), as directed by the City staff.

Properties that adjoin existing pedestrian/bike paths, or (re)developable parcels of which may include pedestrian/bike paths, must connect to any existing pedestrian/bike path stubs, or provide new stubs to adjacent properties that may be connected to by future (re)development as directed by the City staff.

These are minimum pedestrian/bike connectivity standards. Modification to the location of pedestrian/bike access may be impacted by the site design and if so, property owners/developers should work with City staff to ensure an appropriate location for these path access points. The intent is to have access to major multi-use paths approximately every 660 feet.

Access Management Standards

This section defines the standards and specifications to be used in conjunction with the access categories and driveway types to protect the functional integrity of roads in and near the City. The following describes the access standards to be applied for each access category.

(See table on page 64)

Roadway	Driveway	Permitted?	Minimum Spacing *(a)(b)*	Traffic Control	Movements
Category B, D					
	HVD	Yes *(c)*	½ mile *(d)*	Signal if warranted, or Roundabout	All *(e)*
	MVD	Yes *(c)*	SSD/ISD & Table *(f)*	Stop	All *(e)*
	LVD	Yes *(c)(g)*	SSD/ISD & Table *(f)*	Stop	All *(e)*
Category C, E					
	HVD	Yes *(c)*	¼ mile *(h)*	Signal if warranted, or Roundabout	All *(e)*
	MVD	Yes *(c)*	SSD/ISD & Table *(f)*	Stop	All *(e)*
	LVD	Yes *(c)(g)*	SSD/ISD & Table *(f)*	Stop	All *(e)*
Category F, G					
	HVD	Yes *(c)*	¼ mile *(h)*	Signal if warranted, or Roundabout	All *(e)*
	MVD	Yes *(c)*	SSD/ISD	Stop	All *(e)*
	LVD	Yes *(c)*	SSD/ISD	Stop	All *(e)*

HVD = High Volume Drive, MVD = Medium Volume Drive
LVD = Low Volume Drive
SSD/ISD = Stopping Sight Distance and Intersection Sight Distance

(a) These are desirable minimum distances. It is recognized that site frontage and property limits may, by necessity, alter these dimensions. At the same time, the City reserves the right to call for greater spacing distances.

(b) Spacing requirements shall properly consider driveways on both sides of the highway.

(c) One direct private access shall be permitted per parcel or contiguous parcels under common ownership. Additional access may be permitted if: (1) the access will not adversely affect the safety and operation of the highway, (2)

such access is necessary for the safe and efficient use of the property, and (3) such access will not adversely affect access to adjacent or nearby properties.

(d) ½ mile is recommended, however, ¼ mile may be allowed when there is no reasonable alternative access to the general street system. If these cannot be achieved, then the restrictions of SSD, ISD, and minimum spacing based on posted speed limit shall apply

(e) All movements permitted if not deemed detrimental by the City Engineer; certain movements may be restricted due to operational and safety considerations.

(f) Spacing shall be determined using the greatest value identified for SSD, ISD, and minimum driveway spacing based on posted speed limit.

(g) Low volume driveways shall be discouraged on roadways with speed limits greater than 50 mph. Where there is an opportunity, low volume drives should be consolidated and combined using appropriate means such as service roads, cross easements, and joint access to reduce the number of access points.

(h) ¼ mile is recommended, however, one-eighth mile may be allowed when there is no reasonable alternative access to the general street system. If these cannot be achieved, then the restrictions of SSD, ISD, and minimum spacing based on posted speed limit shall apply.

- *Category H Roadways*: Full access permitted per parcel or lot.

Driveway Geometrics and Design

Driveway widths and turning radii are determined by the number and use of lanes on the driveway and the design vehicle chosen for the driveway. The width and radii of the driveway shall permit vehicles to enter and exit with a minimum of interference to through traffic, yet be restrictive enough to discourage erratic maneuvers or significant injury or death to a pedestrian crossing the driveway. Farm lot and Single Family Residential driveways shall be designed according to City standards, code, subdivision regulation, or development agreements. The following table provides guidelines for driveway dimension guidelines based on driveway type and design vehicle.

Driveway Type	Multi-Family Residential		Commercial		Industrial/Delivery	
Design Vehicle	P		SU-30		WB-50/WB-67	
Nominal Width 1/	Min. (feet)	Max. (feet)	Min. (feet)	Max. (feet)	Min. (feet)	Max. (feet)
One-way Drive	10	14	14	20	14	26
Two-way Drive	20	24	26	32	26	38
Corresponding RT Radius	25	15	35	25	75	50

1/ Driveway throat width measured parallel to highway and clear of the turn radii.
P: Passenger car
SU-30: Single-unit truck; 30 feet in length
WB-50: Large semi-trailer truck; 55 feet in length
WB-67: Interstate semi-trailer truck; 74 feet in length
RT Radius: Right turn radius (Note: the smaller the drive width, the larger turn radius required to accommodate the path of the vehicle.)

- Driveway characteristics, typical user types, and roadway speed will impact the recommended right turn radius (from the edge of the through lane).
    - Multi-Family Residential driveway radii (measured in feet) shall be equal the speed limit minus five with a minimum RT Radius of 25 feet, giving preference to a narrower nominal width.
    - Commercial driveways shall have a radius at least equal to the speed limit (e.g. 35 mph roadway requires a 35 foot radius). Driveways entering large, multi-tenant commercial uses (e.g. shopping center, and/or other retail use, etc.) may require deceleration right turn lanes or other special considerations based on the discretion of City staff.
    - Industrial/Delivery driveways should be designed to utilize the smallest turning radii possible, minimizing disruption to any sidewalk or multi-use path the driveway crosses.
- Driveways that enter a public roadway at traffic signals shall have the number of lanes as determined by a capacity analysis. Turn templates shall be used to ensure adequate radius-throat width combinations. Lane widths of the proposed driveway should match the planned lane widths of the roadway being accessed.
- Two-way driveways shall intersect the highway at an intersection angle between 70º and 90º. An angle less than 70º will not be permitted on new two-way driveways. One-way operation driveways (right in only or right out only) shall not have an angle less than 45º.
- Driveway curb radii may be reduced on roadways with on-street parking. The turn radius, in such a case, is measured from the edge of the through lane, allowing a smaller curb radii of which will reduce crossing distances for pedestrians.
- For low and medium volume driveways it may be allowable for larger vehicle paths to encroach upon adjacent lane to keep driveways narrower, especially in higher pedestrian areas.
- All driveways will be required to meet both ADA accessibility standards and the City's design standards.
    - Single Family Residential and Multi-family Residential driveways should be designed to allow the sidewalk to continue through the driveway. Where necessary, sidewalks may be lowered to reduce the slope of the driveway

apron between the curb and sidewalk so long as the sidewalk is at least two inches higher than the bottom of the gutter pan.

  - For all other driveways, their profile shall be designed to meet accessibility standards, include a marked crosswalk (for all crossings in excess of 24 feet) and include the proper placement of curb ramps, if necessary.

- Drives shall not be obstructed within the right-of-way by gates, or similar obstacles. Any access with a gate shall be designed so that the longest vehicle can completely clear the traveled way, including a public walk or path, when the gate is closed.
- The need for traffic signals shall be determined by warrant analyses using the Ohio Manual of Uniform Traffic Control Devices. Even if a signal is warranted, the City's signal spacing guidelines will need to be consulted to determine where such a new signal can be erected. The use of roundabouts in lieu of traffic signals may be considered in many intersection types.
- High volume driveways that do not meet signal warrants may be denied certain traffic movements if traffic volumes and conditions on the highway would make the full movement operation unsafe.

Driveway Islands at Public Street Intersections

In some situations, it is desirable to prohibit certain movements through the use of median or channelizing islands. However, because driveway islands increase the size of a driveway, the use of driveway islands is to be limited to situations where the installation of a driveway island is a benefit to traffic operations, and/or pedestrians. Driveway islands shall not be used for landscaping or for private signs; these aesthetic treatments shall be placed outside the limits of the driveway travel lanes to keep driveways as narrow as possible.

AUXILIARY TURN LANES

The requirement for separate left and/or right turn lanes on the main roadway at site access points shall be based on the following guidelines:

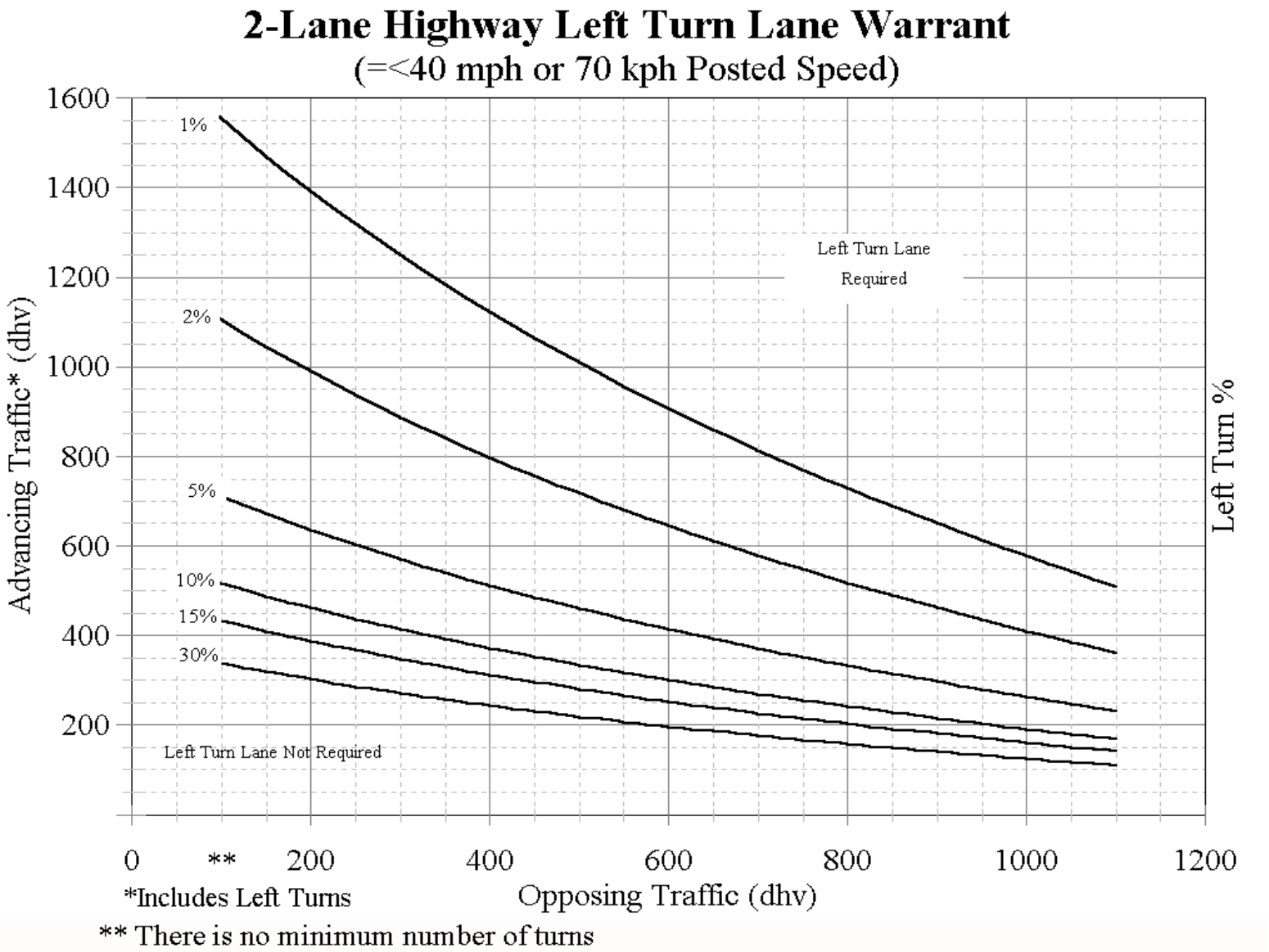
- Left turn lanes shall be provided in accordance with the following conditions:
  - Per Graph 1, 2, or 3 (the left turn warrant charts) contained in the ODOT State Highway Access Management Manual (See Figures 21, 22, and 23 on pages 69 through 71), or
  - On major and minor arterial roadways with posted speed limits greater than 40 mph, or
  - On network collector roadways with posted speed limits greater than 40 mph and more than 10 left turning vehicles during a design hour.

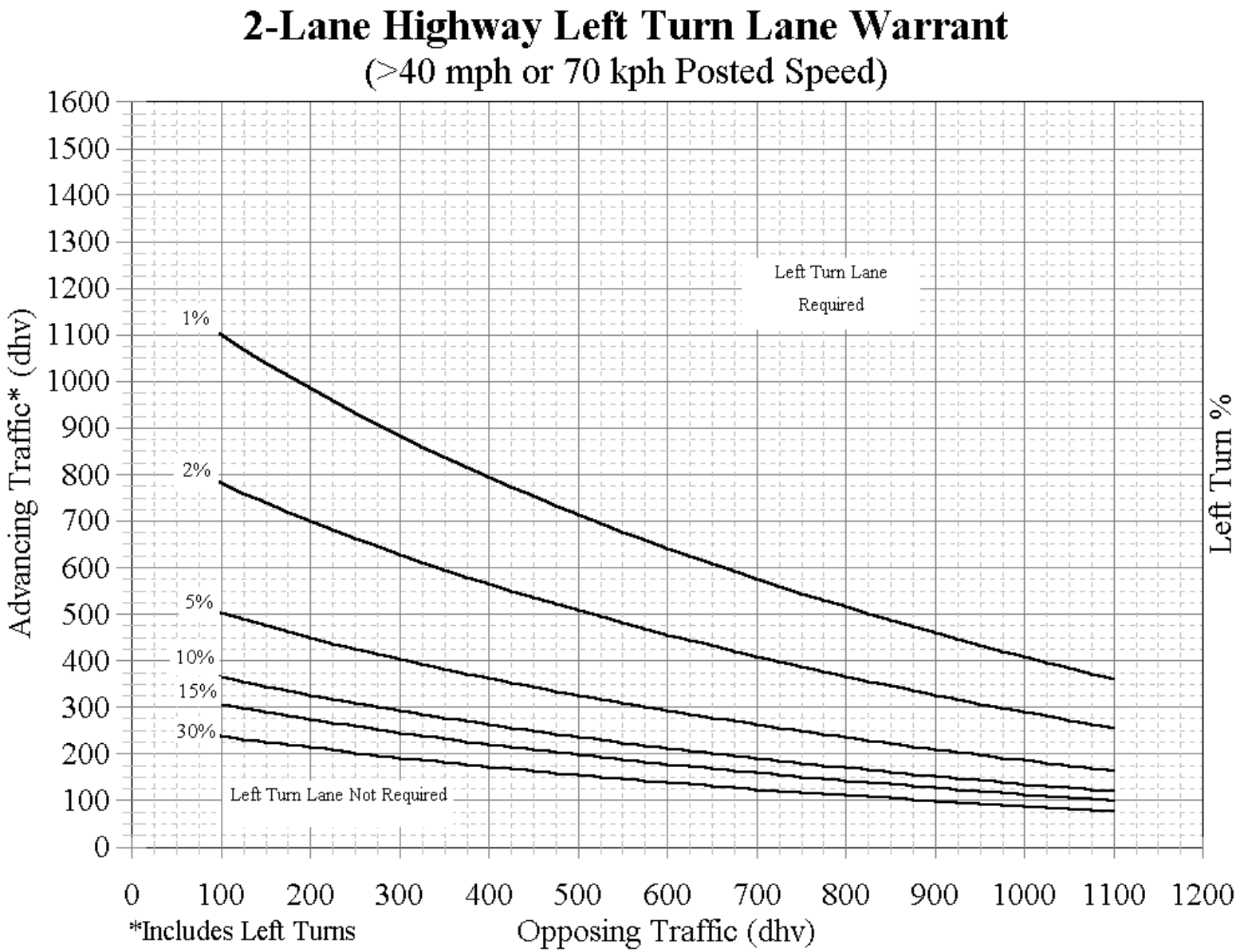
- Right turn lanes shall be provided in accordance with right turn warrant charts contained in the ODOT State Highway Access Management Manual (see figures 24, 25, 26, and 27 on pages 72 through 75) with the following exceptions:
  - Right turn lanes are not required for right turn volumes of less than 10 vehicles during a design peak hour.

- Left or right turn lanes may also be required when deemed necessary for safety purposes by the City.

- These requirements shall apply to both new and existing arterial and network collector streets at intersecting driveways. They shall also apply to existing driveways serving properties that are redeveloped.

- The length of left and right turn lanes shall be based on the criteria contained in the ODOT Location and Design Manual or, where appropriate, on the results of queuing analyses associated with the capacity calculations contained in the applicable traffic impact study.


2-Lane Highway Left Turn Lane Warrant
(=<40 mph or 70 kph Posted Speed)
Advancing Traffic* (dhv)
Left Turn %
1600
1400
1200
1000
800
600
400
200
1%
2%
5%
10%
15%
30%
Left Turn Lane
Required
Left Turn Lane Not Required
0
**
200
400
600
800
1000
1200
*Includes Left Turns
Opposing Traffic (dhv)
** There is no minimum number of turns


2-Lane Highway Left Turn Lane Warrant
(>40 mph or 70 kph Posted Speed)
Advancing Traffic* (dhv)
Left Turn %
Left Turn Lane
Required
Left Turn Lane Not Required
1%
2%
5%
10%
15%
30%
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
0
100
200
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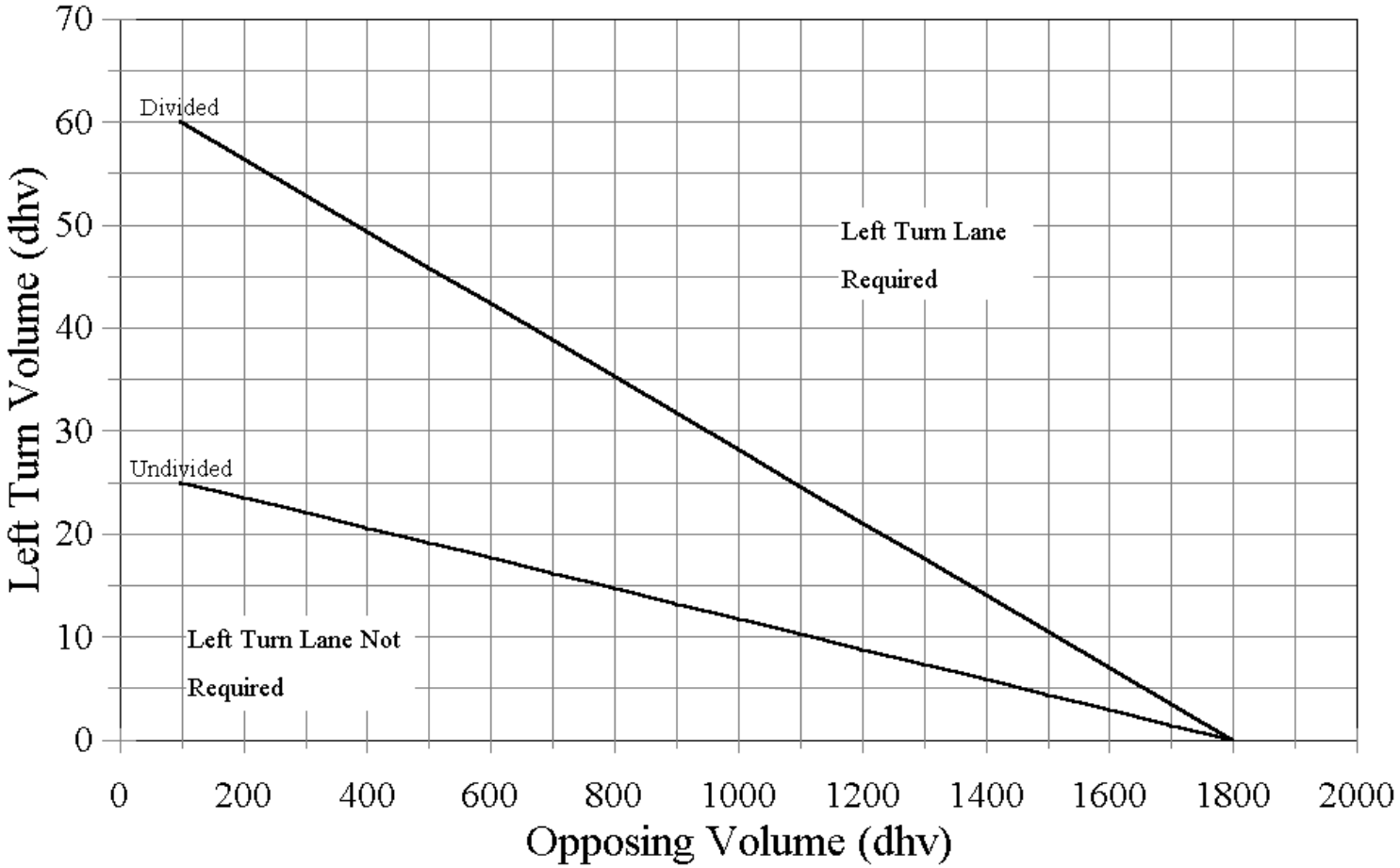
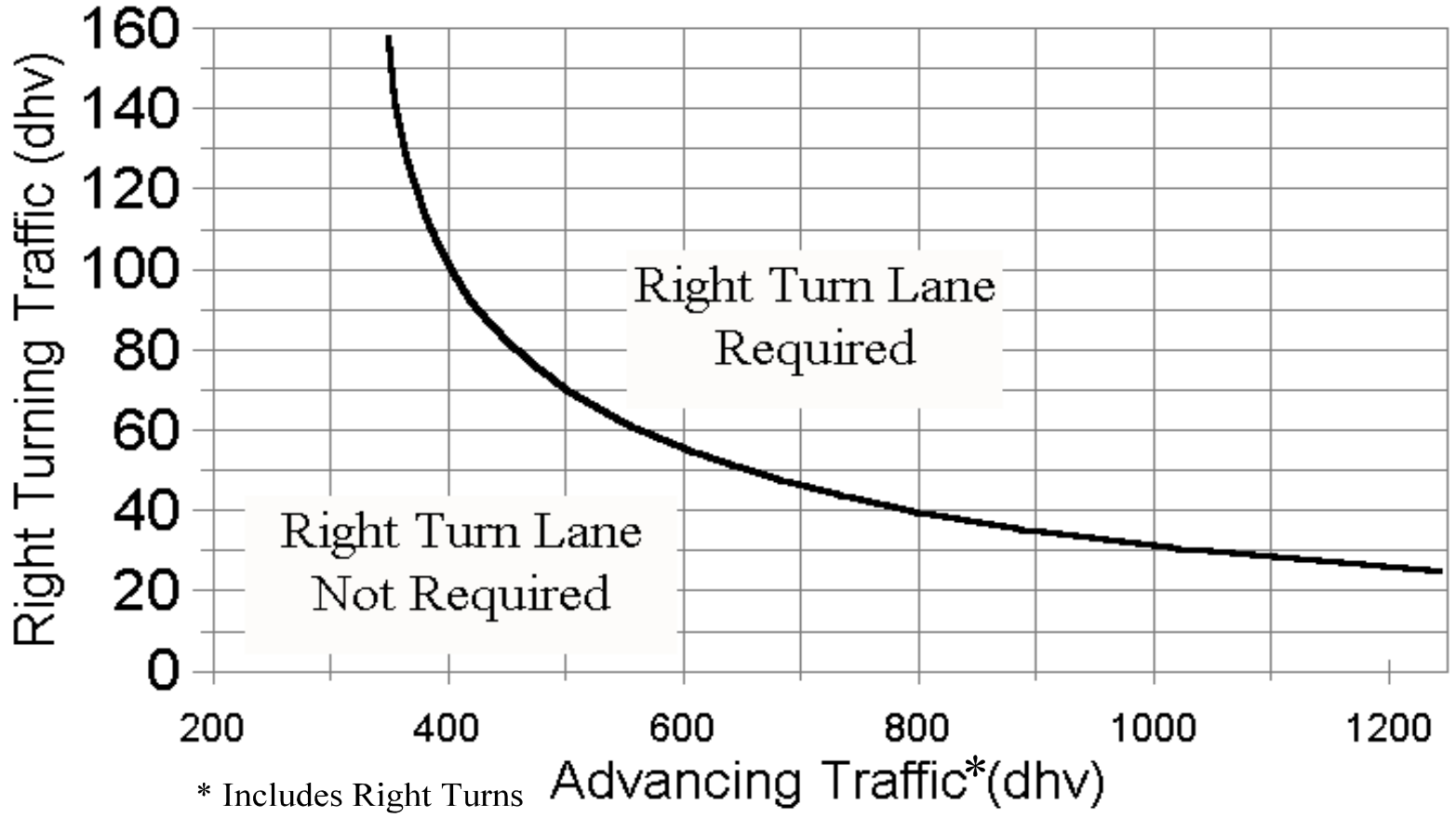
1000
1100
1200
*Includes Left Turns
Opposing Traffic (dhv)

4-Lane Highway Left Turn Lane Warrant



2-Lane Highway Right Turn Lane Warrant

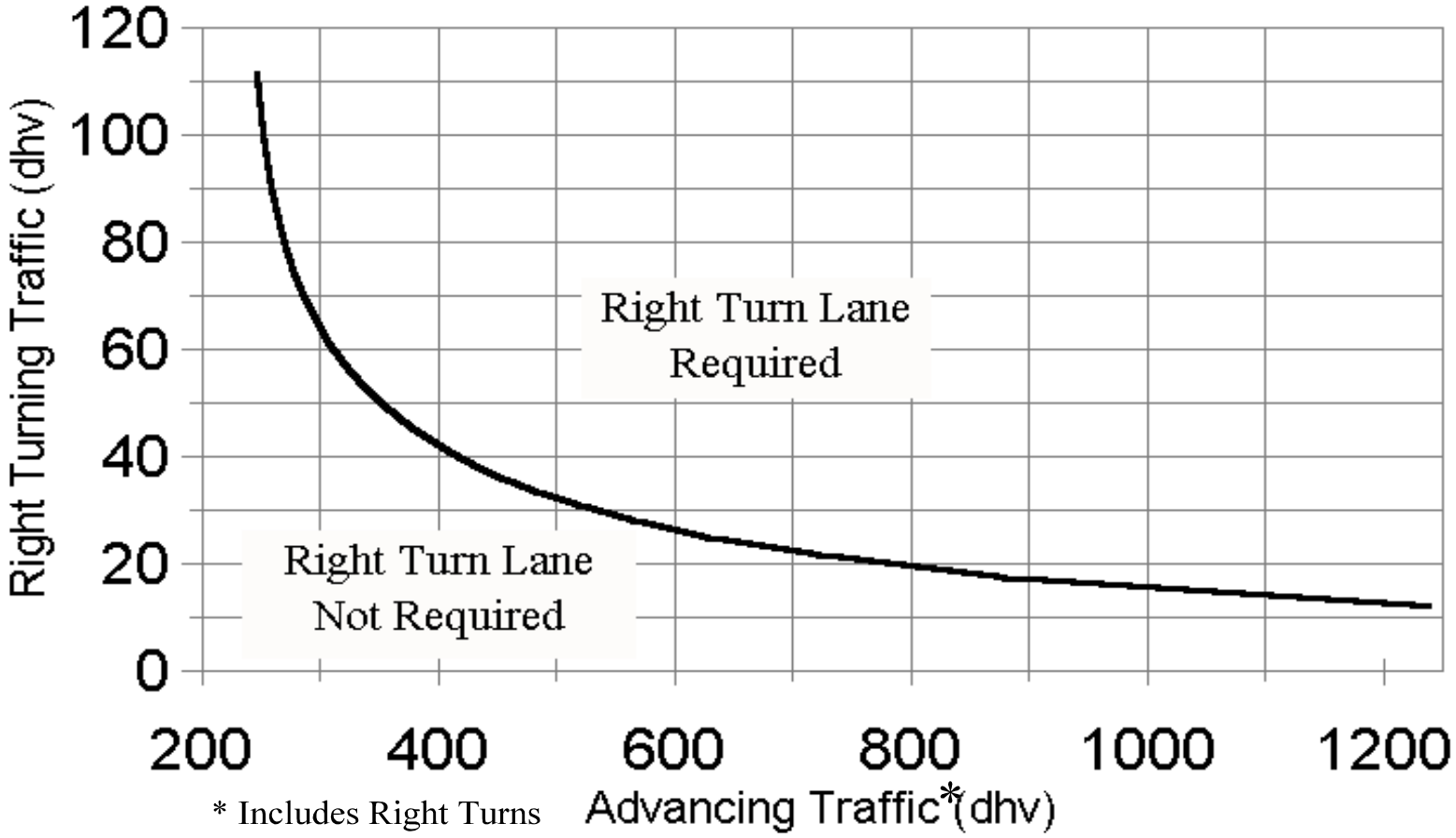
=< 40 mph or 70 kph Posted Speed



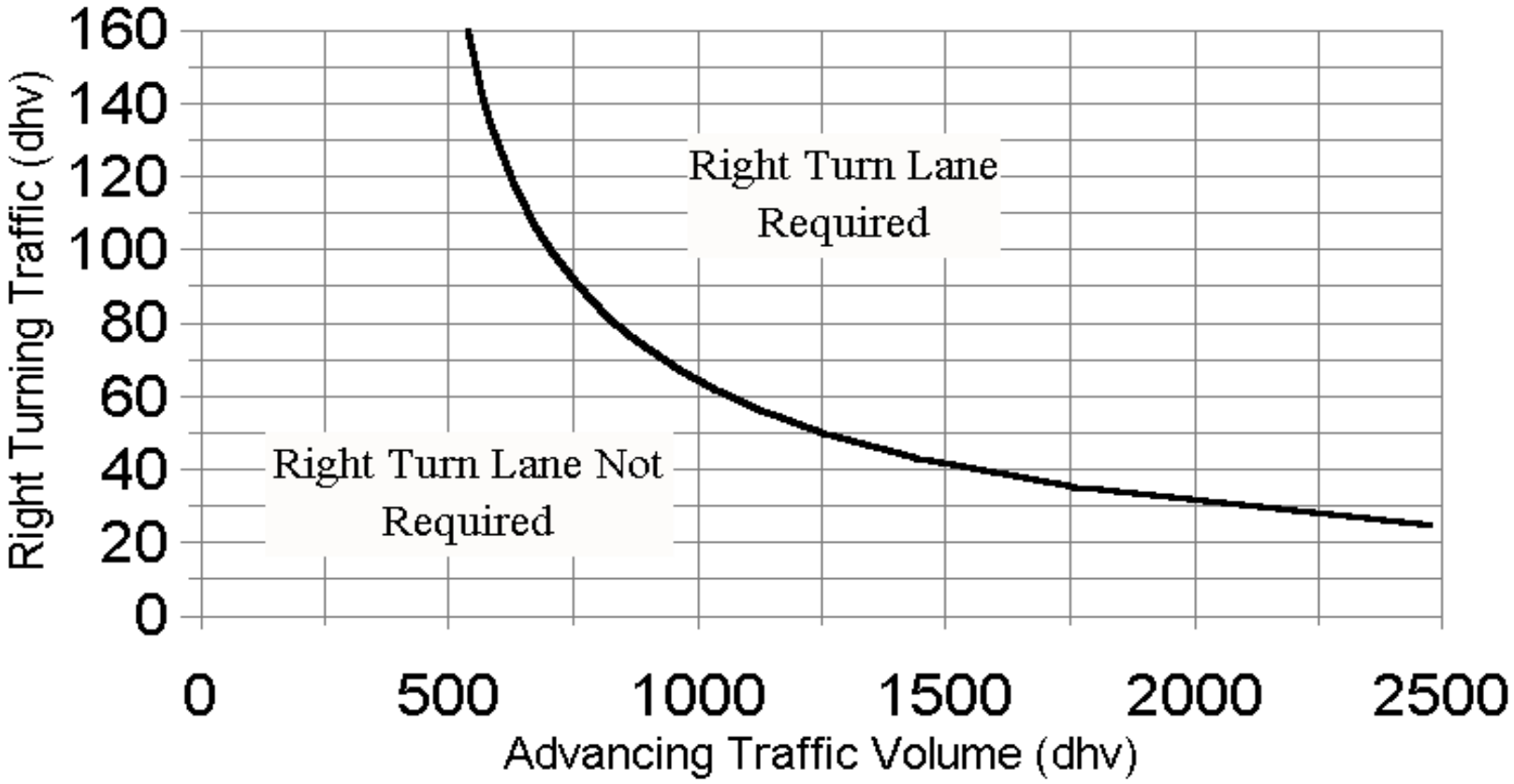
* Includes Right Turns

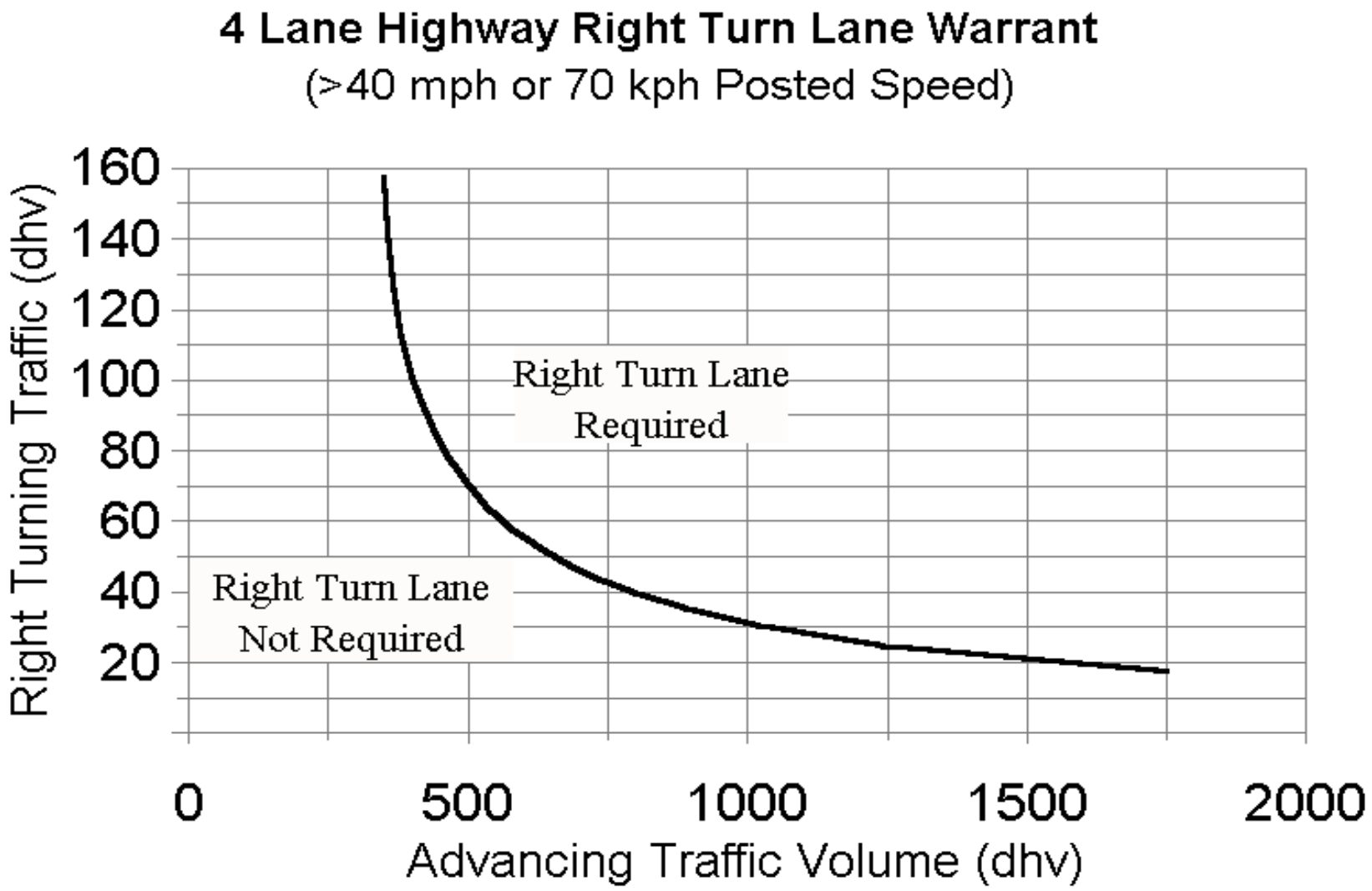
2-Lane Highway Right Turn Lane Warrant

> 40 mph or 70 kph Posted Speed



4 Lane Highway Right Turn Lane Warrant
(=<40 mph or 70 kph Posted Speed)




4 Lane Highway Right Turn Lane Warrant
(>40 mph or 70 kph Posted Speed)
Right Turning Traffic (dhv)
160
140
120
100
80
60
40
20
Right Turn Lane Required
Right Turn Lane Not Required
0
500
1000
1500
2000
Advancing Traffic Volume (dhv)