



GWINNETT COUNTY

DEPARTMENT OF TRANSPORTATION

Criteria and Guidelines for Left Turn Lanes

GWINNETT COUNTY DEPARTMENT OF TRANSPORTATION

Criteria and Guidelines for Left Turn Lanes

GENERAL: The following guidelines shall be used in the determination of the requirement for left turn lanes for development projects and in the design and construction of left turn lanes. Design of left turn lanes shall be in accordance with American Association of State Highway and Transportation Officials standards and Gwinnett County Development Regulations. Construction, material specifications and workmanship shall conform to Gwinnett County Development Regulations.

LEFT TURN LANE WARRANTS: Center/median left turn lanes (LTL) shall be provided into each project driveway or subdivision street that accesses a Minor Collector Street or Major Thoroughfare if the Average Daily Traffic (ADT) on the Minor Collector or Major Thoroughfare, and the number of lots, units, or left turning vehicles (LTV) meet or exceed the amounts shown in Tables 1 thru 3. Gwinnett County DOT (GCDOT) traffic counts shall be used provided they are less than two years old. GCDOT traffic counts are available on the County Web Site (www.gwinnettcountry.com). If GCDOT traffic counts are not available, or they are greater than two years old, Georgia DOT (GDOT) counts may be used provided they are also less than two years old. If counts are not available from either source, and/or both sources are greater than two years old, the developer shall be responsible for obtaining new, 24-hour counts, from an approved contractor, as directed by GCDOT.

LTL DESIGN CRITERIA: The basic design elements of left turn lanes are illustrated in Figures 1 and 2. Figure 1 is for a symmetrical widening about the centerline of the road, and Figure 2 is for an unsymmetrical widening. Every effort should be made to obtain the approach, departure and bay taper lengths shown on these figures. However, GCDOT recognizes that prevailing field conditions might influence the length of tapers that can be reasonably achieved. Therefore, with the prior approval of GCDOT, these taper lengths may be adjusted to match the prevailing field conditions.

STORAGE LANE LENGTH: The required length of full width storage lane provided shall be based on the peak hour turning volumes and the design vehicle length. Use 25 feet of storage for passenger cars, 35 feet for Single Unit Trucks (SU), 50 for WB-40 trucks, 60 feet for WB-50 and 75 feet for WB 62 trucks. Refer to AASHTO [A Policy on Geometric Design of Highways and Streets](#) for other vehicle lengths. For un-signalized/stop-controlled intersections the storage lane length shall, typically, be based on the number of design vehicles arriving during a two-minute period within the peak hour. Similarly, for signalized intersections, the storage length shall, typically, be sufficient to accommodate the number of design vehicles arriving during 1.5 signal cycles during the peak hour. The minimum storage lane length shall be 100 feet on Collector Roads and 150 feet on Arterial Roads. Other storage lane lengths may be used with the prior approval of GCDOT.

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SHOULDER WIDTHS: Desirable shoulder width shall be eleven feet from back of curb or edge of pavement. However, consideration for a reduced shoulder width may be given due to right-of-way limitations or field conditions.

If there is no curb and gutter, the first two feet of the shoulder shall be paved using the same pavement section and cross slope as the adjacent pavement.

CLEAR ZONE: Clear Zone requirements on roads widened for construction of a LTL shall be in accordance with Section 9.5.4 of the County Development Regulations, latest edition. If warranted by traffic volume, posted speed limit and field conditions, GCDOT may require a greater clear zone dependent upon the availability of existing right-of-way.

Except for those items mentioned in the Development Regulations, the Clear Zone should be clear of obstructions such as poles, guy wires, and trees. Obstructions shall be removed from the Clear Zone as directed by the GCDOT at no cost to the County. If obstructions are unavoidable, appropriate protection such as breakaway poles, guardrail, and safety end treatment on culverts shall be used as directed by GCDOT.

CURB AND GUTTER: In general, curb and gutter will not be required in the construction of left turn lanes. However, any existing curb and gutter disturbed or removed by left turn lane construction shall be replaced. In some cases, curb and gutter may be necessary due to right-of-way limitations, drainage considerations or physical constraints or conditions where its installation would be appropriate.

RIGHT-OF-WAY/EASEMENTS: Any offsite right-of-way and/or easements required for left turn lane construction shall be acquired by the developer at no expense to the County. If the developer demonstrates that he has made a determined effort, but is unable to acquire the necessary right-of-way and/or easements, the GCDOT shall initiate acquisition proceedings, at the expense of the developer, after authorization by the Board of Commissioners.

In the event that the developer is unable to negotiate acquisition of the necessary right-of-way and easements prior to completion of the project site work, GCDOT would not object to acceptance of the "Certificate of Development Conformance" (CDC), in accordance with Article 11 of the Development Regulations, provided the developer submits a Performance Bond for a minimum twenty four month period for 150% of the total project cost, including, but not limited to, engineering, right-of-way and/or easement acquisition, utility adjustments, and furnishing and installing all materials. The developer will be responsible for providing the cost estimate for review and approval by the GCDOT.

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MULTIPLE ENTRY POINTS: Each entry point for a development shall be considered individually in the determination of the requirement for a left turn lane, based upon a reasonable distribution of entry volumes among the entry points. A left turn lane will be required at any entry point that meets the thresholds in Tables 1 through 3.

EXISTING DRIVEWAYS/STREETS: If a new project, that requires a LTL, has an access driveway or street that aligns with an existing development driveway/street, and the existing development driveway/street does not have a LTL, the developer shall be responsible for providing a LTL for both driveways/streets. Other existing development driveways/streets (either on the same or opposite side of the street as the project driveway/street) that fall within the construction limit of the LTL will be handled on a case by case basis.

Instances may arise where an existing driveway will be used to access a site/property that will be redeveloped or expanded. For an expansion, if the traffic generated by the existing land use, plus the traffic generated by the expansion, meet the thresholds in Tables 1 thru 3, then a LTL will be required and shall meet the requirements contained herein. For a redevelopment, the traffic generated by the new land use shall be used to determine the LTL requirement.

PHASED DEVELOPMENTS: In the event that a phased development is proposed, and the first phase(s) of the development does (do) not meet the requirements of Tables 1 thru 3, as applicable, the developer will not be required to install a LTL with the first phase. However, when the development meets the thresholds in the Tables, the LTL will be required and shall meet the requirements contained herein. The developer will be encouraged to install the LTL during the earlier stages of the development.

DIVIDED ROADWAYS: Developments on roadways divided by an existing median will not be required to install a left turn lane in the median. Such developments may request a median break. If the median break is approved by GCDOT, a left turn lane shall be constructed. If the development access point aligns with an existing access point on the opposite side of the roadway, or if directed by GCDOT, a left turn lane shall also be constructed for opposing traffic.

COORDINATION WITH GCDOT PROJECTS: A development requiring left turn lane construction on a roadway with a planned GCDOT improvement project will require coordination with the GCDOT. At the option of the GCDOT, an equivalent amount of funds, in lieu of the left turn lane construction, will be deposited with the GCDOT for its use in the construction of the left turn lane during the GCDOT improvement project.

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Minimum Requirements for Left Turn Lanes

Gwinnett County – Residential Developments *
Left Turn Lane Criteria

TABLE 1

Posted Speed Limit (mph)	2 Lane Routes -----ADT-----		More Than 2 Lanes on Main Road -----ADT-----	
	<6000	>=6000	<10,000	>=10,000
30 to 35	120 Lots	75 Lots	160 Lots	120 Lots
40 to 50	100 Lots	65 Lots	130 Lots	100 Lots
>= 55	75 lots	55 Lots	100 Lots	75 Lots

* Zoning Districts R-XX(X)

Gwinnett County – Multi-Family Residential Developments **
Left Turn Lane Criteria

TABLE 2

Posted Speed Limit (mph)	2 Lane Routes -----ADT-----		More Than 2 Lanes on Main Road -----ADT-----	
	<6000	>=6000	<10,000	>=10,000
30 to 35	175 units	110 units	245 units	175 units
40 to 50	145 units	95 units	195 units	145 units
>= 55	110 units	75 units	145 units	110 units

** Zoning Districts RM-X(X)

Gwinnett County – Non-Residential Developments
Left Turn Lane Criteria

TABLE 3

Posted Speed Limit (mph)	2 Lane Routes -----ADT-----		More Than 2 Lanes on Main Road -----ADT-----	
	<6000	>=6000	<10,000	>=10,000
30 to 35	30 LTV/hr	20 LTV/hr	40 LTV/hr	30 LTV/hr
40 to 50	25 LTV/hr	20 LTV/hr	35 LTV/hr	25 LTV/hr
>= 55	20 LTV/hr	15 LTV/hr	25 LTV/hr	20 LTV/hr

LTV/hr. – Left turning vehicles entering development (in peak hour)

- ASSUME:
1. Peak hour factor (K) = 10%
 2. 50% of all entering traffic is turning left into the development

NOTE: Developer will be required to provide a trip generation analysis of the traffic volume for the proposed Non-Residential Development. This analysis will be determined using the latest edition of **Trip Generation** by the Institute of Transportation Engineers (ITE).

SPEED LIMIT	'L'	'B'	'S'
30MPH	90'	50'	*
35MPH	125'	50'	*
40MPH	160'	50'	*
45MPH	270'	100'	*
50MPH	300'	100'	*
55MPH	330'	100'	*

The above table and the drawing below are based on a symmetrical widening of six feet (6') about the centerline of the existing road.

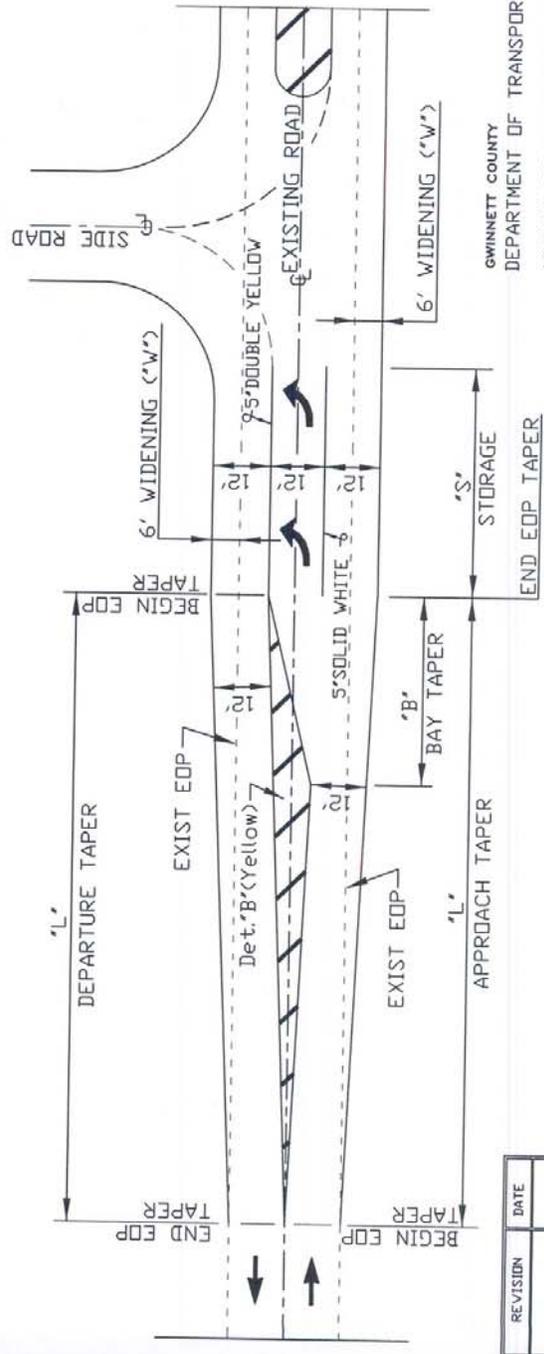
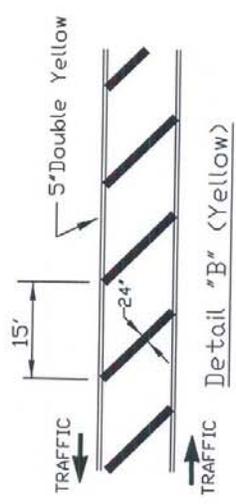
* TO BE CALCULATED. 100' MINIMUM ON COLLECTOR ROADS
150' MINIMUM ON ARTERIAL ROADS

Minimum lane shift taper lengths for center left turn lanes are based on the following empirical equations:

- For posted speeds less than or equal to 40 mph, $L = WS^{2/60}$.
- For posted speeds equal to or greater than 45 mph, $L = WS$

Where: L=Minimum Taper Length
W=Width of the offset from the centerline and/or the edge of pavement.
S=Posted Speed Limit

S**2=Speed raised to the power of 2



BY	REVISION	DATE

GWINNETT COUNTY
DEPARTMENT OF TRANSPORTATION
MINIMUM DESIGN ELEMENTS OF LEFT TURN LANES
(SYMMETRICAL WIDENING ABOUT THE CENTERLINE)
D A T E: APRIL 2007
BY: EOP

FIGURE 1

SPEED LIMIT	'L'	'B'	'S'
30MPH	180'	50'	*
35MPH	250'	50'	*
40MPH	320'	50'	*
45MPH	540'	100'	*
50MPH	600'	100'	*
55MPH	660'	100'	*

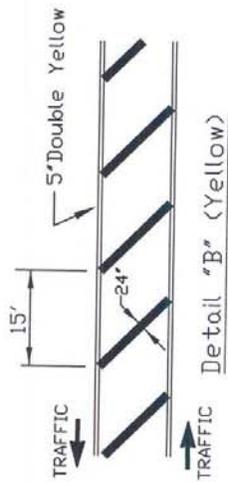
Minimum lane shift taper lengths for center left turn lanes are based on the following empirical equations:

- For posted speeds less than or equal to 40 mph, $L = WS^{2/60}$.
- For posted speeds equal to or greater than 45 mph, $L = VS$

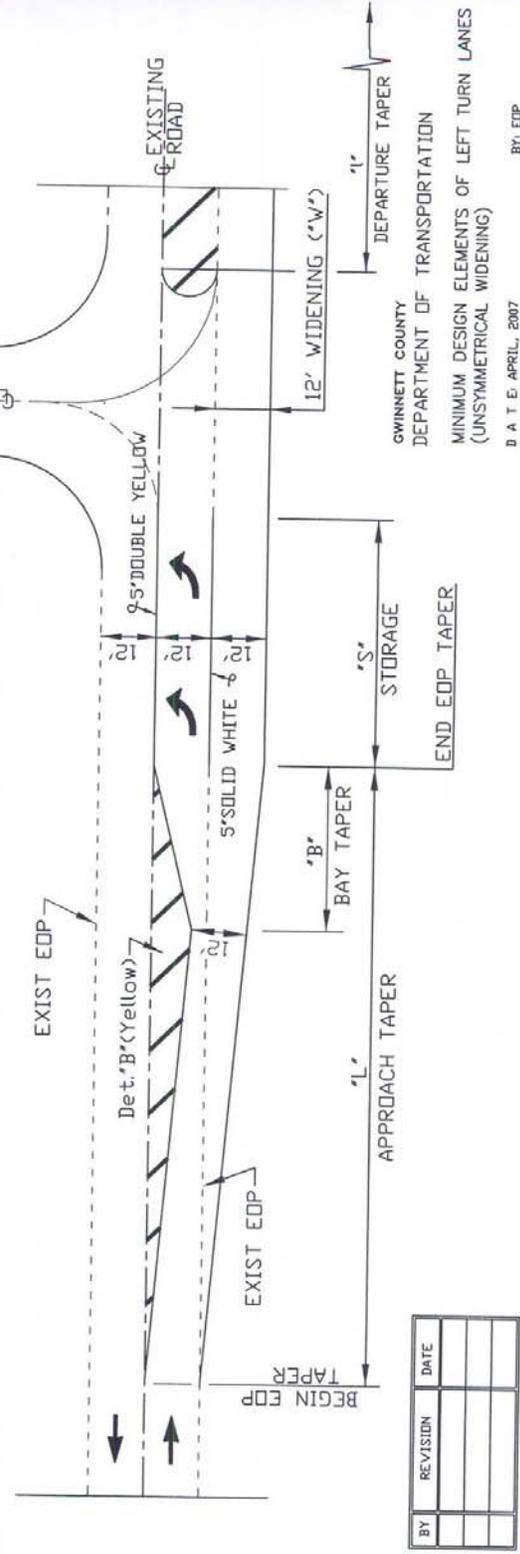
Where: L=Minimum Taper Length
W=Width of the offset from the edge of pavement.
S=Posted Speed Limit

$S^{2/60}$ =Speed raised to the power of 2

The above table and drawing below are based on a 12 foot lane shift to one side of the road to provide the center turn lane. All distances are minimums.



* TO BE CALCULATED. 100' MINIMUM ON COLLECTOR ROADS. 150 MINIMUM ON ARTERIAL ROADS.



BY	REVISION	DATE

WINNETT COUNTY
DEPARTMENT OF TRANSPORTATION
MINIMUM DESIGN ELEMENTS OF LEFT TURN LANES
(UNSYMMETRICAL WIDENING)
DATE: APRIL, 2007
BY: EDP

FIGURE 2