

CHAPTER 900. DEVELOPMENT STANDARDS

SECTION 901. TRANSPORTATION

901.3. Access Management

A. Intent and Purpose

The intent and purpose of access management is to provide safe access to land development while preserving the flow of traffic in terms of safety, capacity, and speed by:

1. Controlling and regulating the spacing and design of driveways, medians, and traffic signals.
2. Limiting the number of conflict points a vehicle experiences in its travel.
3. Separating conflict points as much as possible where they cannot be completely eliminated.
4. Removing slower turning vehicles which require access to adjacent sites from the traffic lanes of through vehicles.
5. Requiring cross access between development parcels.

B. Applicability

This section shall apply to the following:

1. Any project connecting directly or indirectly to collector, arterial, or controlled access roadways, including projects connecting to roadways on the State highway system, unless compliance with these regulations is specifically prohibited or deemed not permissible by the Florida Department of Transportation (FDOT).
2. This section also applies to projects connecting to County-owned or maintained right-of-way within municipalities in the County. In the case of the State system or municipalities, the County Engineer shall consult with the FDOT and/or any affected municipality in the application of these regulations. In the event of a conflict between these regulations and State or municipal access-management regulations, permits, or approvals, the more restrictive regulations shall apply.
3. Any project connecting to a local roadway, but deemed to require access-management review by the County Engineer. If access-management review is required, standards for collector roads shall apply to local roads.

4. This section shall apply to the following applications and substantial amendments of same filed on or after November 9, 2004:
 - a. Development of Regional Impact (DRI)
 - b. MPUD Master Planned Unit Development zoning
 - c. Preliminary site plans
 - d. Preliminary development plans
 - e. Right-of-Way Use Permits

In the event of any conflict between these regulations and any prior County approval(s) or permits for a project, these regulations shall govern; however, existing driveways that have been constructed as of November 9, 2004, shall be governed by this Code, Section 901.3.D.

C. Exemptions

This section shall not apply to the following:

1. Projects within any municipality in the County that connect only to roadways that are not owned or maintained by the County, unless such municipality enters into an Interlocal Agreement with the County providing for the application of these regulations within the municipality.
2. Government owned or leased property that contains fire stations or other emergency response vehicles.
3. Utility, government, or government contracted vehicles utilized to construct or maintain collector, arterial, controlled access, or local roadways.
4. Utility, government, or government-contracted vehicles utilized for construction or maintenance on utility or government-owned or leased property adjacent to collector, arterial, controlled access, and local roadways.

D. Nonconforming Access/Significant Change

Driveway connections constructed as of November 9, 2004, not conforming with the standards herein shall be designated as nonconforming and shall be brought into compliance when:

New or modified access connection permits are requested.

Substantial improvements are proposed to the nonconforming property that affect the existing driveway connection.

There is a change in the use of the property, including land structures or facilities that results in (a) an increase in the trip generation of the property exceeding twenty-five (25) percent (either peak hour or daily), or exceeding 50 gross peak hour trips, AM or PM, whichever is higher, more than the existing use; or (b) an increase in truck traffic equal to or greater than ten (10) percent of the total gross trips generated by the site. Trip generation shall be determined in accordance with the *Institute of Transportation Engineers (ITE) Trip Generation Manual* (ITE Manual) trip rate, latest edition, or other trip rate as approved by the County Administrator or designee. When such additional traffic is projected, the County will review data to determine if modifications to an existing connection will be required.

If the principal activity on a property with nonconforming access features is discontinued for a consecutive period of 365 days.

When due to site specific conditions, such as limited sight distance, high-traveling speed (forty-five [45] mph or greater), or the presence of 10% or more heavy vehicles utilizing the access, a modification of access is required by the County Engineer to ensure public safety.

E. Access Management Analysis/Traffic Impact Study

All projects subject to this section shall complete the Access Connection Permit Application Form 901.3.A and complete any analysis required pursuant to Form 901.3.A. However, the County Engineer may require more detailed access-management information or a more detailed access-management study where the County Engineer determines:

1. That the information on the Access Connection Permit Application Form 901.3.A is inadequate to determine compliance with these access-management regulations.
2. That the information or study is necessary to ensure the safety of the traveling public.
3. In the event a study is done, the following standards shall be followed:
 - a. The Level of Service standards for through movements on all Major County Road segments (facilities) shall be consistent with the standards in the County's latest adopted Comprehensive Plan.
 - b. The volume/capacity (v/c) ratio of turning movements on Major County Roads cannot exceed 1.2 for Trip-Reducing Projects or exempt uses and 1.0 for other nonexempt uses with a maximum delay of 120 seconds. Delays of up to 150 seconds are acceptable for turning movements with a v/c ratio less than 0.8. However, in all cases, the turn-lane length provided

should be long enough to accommodate the forecasted demand.

- c. For all access driveways and local street connections to Major County Roads, approach delays of up to 150 seconds will be acceptable.

Based on the information or study provided, the County Engineer may impose conditions on any access permit or project approval granted including, but not limited to, conditions requiring improvements, such as turn lanes.

F. Access Order

Every owner of property which abuts a road on the County road system has a right to reasonable access to the abutting County road system if no other access is provided, but does not have the right of unregulated access to such roadways.

The order of preference for providing access to collector, arterial, and controlled access roadways for all land uses shall be as follows:

1. Connections in accordance with corridor access-management plans where adopted and approved by the County or approved by the FDOT for roads on the State highway system.
2. Connections to existing or extended local public streets where such access will not create an operational or safety conflict with residential uses and accesses.
3. Access to collector roadways.
4. Access to arterial roadways.
5. Access to controlled-access roadways.

G. Driveway Design Criteria

The access rights of an owner of property abutting County roads are subject to reasonable regulation to ensure the public's right and interest in a safe and efficient roadway system. For the purposes of determining whether an access is safe and efficient, Section 335.184(3)(a), Florida Statutes, and the FDOT *Driveway Manual*, latest edition, may be used. Property owners are encouraged to use joint access where available.

In addition, driveway design and construction shall be in substantial conformance with the standards outlined in the latest editions of the American Association of State Highway and Transportation Officials manuals, the FDOT *Roadway and Traffic Design Standards Manual*, and the FDOT *Manual on Uniform Minimum Standards* (Green Book).

H. Number and Spacing of Driveways

Every owner of property which abuts a road on the County road system has a right to reasonable access to the abutting County roadway system, but does not have the right of unregulated access to such roadways. No building shall be erected on a lot or parcel of land subject to this Code, nor shall any Building Permit be issued unless such lot or parcel abuts or has legal access to a street dedicated to and accepted by the Board of County Commissioners, is shown on a legally recorded subdivision plat, or such lot or parcel is authorized pursuant to this Code.

One (1) driveway shall be permitted for ingress/egress purposes to any project. For projects proposing more than one (1) two (2) way driveway based upon parcel size, projected trip generation of the site, amount of roadway frontage, and other design considerations, additional drives may be permitted if approved by the County Administrator or designee.

Notwithstanding the foregoing, the County Administrator or designee may require any project which is permitted one (1) or more driveway connections to provide cross access or a frontage/reverse-frontage road connecting such project to neighboring projects or properties in accordance with Section 901.3.M, and if such project later has reasonable access to a collector or arterial roadway through such cross access or frontage/reverse-frontage road, the County Administrator or designee may terminate the permit(s) for the original driveway(s).

The County Administrator or designee may issue one (1) or more Temporary Access Permits for the project where the County Administrator or designee anticipates that a future access for a project will:

1. Be safer.
2. Create better traffic circulation.
3. Create less traffic conflicts.
4. Be more consistent with these access management regulations, but such future access is not feasible at the time such project is reviewed.

The issuance of any Temporary Access Permit pursuant to these regulations is not a vested right or property right and is subject to modification or termination by the County provided that each project maintains reasonable access.

All accesses shall be functional at the time of development impact. A functional access shall be defined as a constructed two (2) lane connection to a Type 1 street or a street functionally classified as Major County Roads. Unless otherwise approved at the time of preliminary plan approval, an emergency access is a constructed, single-lane connection to a Type 1 street or a street functionally classified as Major County Roads, which may be barricaded.

The following access requirements are established:

TABLE 901.3.A

Number of Dwelling Units Within Development	Developments in Coastal Zones		Developments in Noncoastal Zones	
	Functional Accesses	Emergency Accesses	Functional Accesses	Emergency Accesses
0-50	1	0	1	0
51-100	1	1	1	0
101-200	1	1	1	1
201-400	1	1	1	1
401-600	2	1	1	1
601 or greater	2	2	2	0

Where no feasible alternative exists in the opinion of the County Engineer or designee, an emergency access may be provided by adding a lane to any Type 1, 2, 3, or 4 street. Additional functional accesses shall be preferred in lieu of emergency accesses.

I. Access Control

The following general standards shall be used in evaluating proposed access connections to County and State arterials and collectors:

TABLE 901.3.B

Arterial/Collector Standards

Facility Type	Posted Speed	Corner Clearance/ Connection Spacing (Min.)	Median Opening Spacing (Min.)		Signal Spacing (Min.)
			Directional	Full	
Arterial	>45	660	1,320	2,640	2,640
	≤45	440	660	1,320	2,640
Collector	>45	440	660	1,320	1,320
	≤45	245	330	660	1,320

NOTE 1: Corner clearance and connection spacing are measured from the edge of the pavement on one (1) connection to the closest edge of the pavement of the neighboring roadway or connection.

NOTE 2: Distance between median openings and signals are measured from the center of the opening or intersection to the center of the adjacent opening or intersection.

NOTE 3: Up to ten (10) percent deviations from these requirements may be permitted for good cause upon approval by the County Engineer. Deviations greater than or equal to ten (10) percent require approval in accordance with this Code, Sections 901.3.T and 407.5.

J. Isolated Corner Properties

If, due to a property's size, the County Engineer finds that corner clearance standards cannot meet Table 901.3.A, and where cross access which meets or exceeds the minimum corner clearance standards cannot be obtained with a neighboring property or is not feasible in the opinion of the County Engineer, then the following minimum corner clearance measurements can be used to permit connections:

TABLE 901.3.C

Corner Clearance for Isolated Corner Properties

Median Type	Position	Access Allowed	Minimum (Feet)
With Restrictive Median	Approaching Intersection	Right-In/Out	115
	Approaching Intersection	Right-In Only	75
	Departing Intersection	Right-In/Out	230
	Departing Intersection	Right-Out Only	100
Without Restrictive Median	Approaching Intersection	Full Access	230
	Approaching Intersection	Right-In Only	100
	Departing Intersection	Full Access	230
	Departing Intersection	Right-Out Only	100

NOTE 1: Corner clearance and connection spacing are measured from the edge of the pavement on one (1) connection to the closest edge of the pavement of the neighboring roadway or connection.

NOTE 2: Up to ten (10) percent deviations from these requirements may be permitted for good cause upon approval by the County Engineer. Deviations greater than or equal to ten (10) percent require approval in accordance with this Code, Sections 901.3.T and 407.5.

K. Throat Distances

The length of driveways or "throat length" shall be designed in accordance with the anticipated storage length for entering vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation.

>200,000 GLA	Minimum 100 feet
<200,000 GLA	75-100 feet
Other driveways	40-75 feet

Up to ten (10) percent deviations from these requirements may be permitted for good cause upon approval by the County Engineer. Deviations greater than or equal to ten (10) percent require approval in accordance with this Code, Sections 901.3.T and 407.5.

L. Driveway Width and Radii

The following minimum standards shall be utilized for all driveways:

1. Access width for any type of access with or without curbs shall be measured exclusive of the radii or flared sections.
2. One (1) way access shall have a minimum width of fifteen (15) feet.
3. A minimum twenty-four (24) feet in width shall be used for any two (2) way access.
4. The initial fifty (50) feet of the inbound lane from a County road into the project shall be a minimum fifteen (15) feet in order to facilitate the movement of traffic off high-speed facilities with a posted speed equal to or greater than forty-five (45) miles per hour.
5. A minimum thirty-four (34) feet of width shall be used for any two (2) way access when one (1) or more of the following apply to the access:
 - a. Multiunit vehicles are intended to use the access; or
 - b. Single unit vehicles in excess of thirty (30) feet in length will use the access.
6. Maximum widths shall be determined during the plan review process.
7. No access shall have a turning radius of less than twenty-five (25) feet, when a radial return is required.
8. Radii on collector or arterial roads shall have a minimum radius of thirty-five (35) feet. A fifty (50) foot radius shall be required for an access when multiunit or single unit vehicles exceeding thirty (30) feet in length are intended to use the access or on high-speed facilities with a posted speed equal to or greater than forty-five (45) miles per hour. Wheel-tracking diagrams shall be submitted to determine radii used to support entrance geometrics.

Up to ten (10) percent deviations from these requirements may be permitted for good cause upon approval by the County Engineer. Deviations greater than or equal to ten (10) percent require approval in accordance with this Code, Sections 901.3.T and 407.5.

M. Cross Access/Frontage/Reverse-Frontage Roads

1. General Requirement

To further the goals of reducing conflict points and improving traffic circulation along collector and arterial roadways, each project shall be required to provide one (1) or more minimum twenty-four (24) foot wide travel lane(s) connecting the project to neighboring properties, projects, travel lanes, or roadways in a location to be determined by the County Administrator or designee during the review of the project, except in cases where all neighboring properties or projects are existing, platted, single-family residential subdivisions with no legally available roadway points of connection. Such travel lane(s) shall be free and clear of buildings, parking spaces (except as permitted by the cross-access/parking standards set forth below), landscaping, retention ponds, or any other obstruction that would prevent the free flow of traffic between the project and neighboring properties, projects, or roadways. The County Administrator or designee may determine that a travel lane or frontage/reverse-frontage road wider than twenty-four (24) feet is required if warranted based on the size and trip generation of the project and adjacent projects, or if required pursuant to an adopted frontage/reverse-frontage road or access-management plan or other approved master roadway plan.

2. Cross Access/Parking Standards

- a. For properties with an existing developable depth less than or equal to 400 feet along arterials and collector roadways, parking spaces may connect to the twenty-four (24) foot travel way, but shall not obstruct the connection point between the properties.
- b. For properties along arterial and collector roadways exceeding a developable depth of 400 feet; or for properties otherwise required to provide for a frontage/reverse-frontage road pursuant to the Comprehensive Plan, zoning amendment, DRI conditions of approval, an approved frontage/reverse-frontage roadway plan, access-management plan, or other approved master roadway plan, parking spaces shall not connect to the twenty-four (24) foot travel way and shall not obstruct the connection point between properties.
- c. For infill development, parking-space connections to the twenty-four (24) foot travel way shall be similar to the adjacent property(ies), but shall not obstruct the connection point between the properties.
- d. When only two (2) adjacent developments can interconnect, parking spaces may connect to the twenty-four (24) foot travel

way, but shall not obstruct the connection point between the properties.

- e. If all uses along a proposed/possible interconnect are office and/or industrial, and the combined trip generation rate is less than 600 daily trips, parking spaces may connect to the twenty-four (24) foot travel way, but shall not obstruct the connection point between the properties.

3. Cross-Access/Construction Standards

- a. If the development is located within the RES-3 (Residential - 3 du/ga) or higher Land Use Classification, the cross access shall be constructed with a minimum pavement structural number of 2.96 with a minimum two (2) inches of asphaltic-concrete surface course.
- b. If the development is located within the RES-1 (Residential - 1 du/ga) Land Use Classification, the cross access shall be stabilized to LBR-40.
- c. If the development is located within the AG (Agricultural) and AG/R (Agricultural/Rural) Future Land Use Classifications, a cross-access easement is only required to be reserved.

N. Median Openings

To ensure traffic safety, capacity, and control, median openings shall be spaced the maximum distance apart that will allow safe and adequate traffic circulation.

Median openings may be permitted only where the need and location is justified in the opinion of the County Engineer, taking into consideration, but not limited to, the following:

1. Potential number of left turns into or out of the driveway.
2. Length of frontage along the street right-of-way line of the property proposed to be developed.
3. Distance of proposed opening from intersections or other openings.
4. Lengths and widths of proposed storage lanes as functions of the estimated, maximum number of vehicles to be in the lane during peak hour.
5. Safety concerns.

O. Requirements for Turning Lanes

Turning lanes for County collector and arterial roadways shall be required in accordance with the standards outlined in Table 901.5.A. In addition, where safety concerns are present, such as limited sight distance, high traveling speed (forty-five [45] mph or greater, posted or operating, whichever is higher), or the presence of 10% or more heavy vehicles, turn lanes shall be required, as determined by the County Engineer.

At the intersection of an arterial/collector road with another arterial, collector or subdivision collector roadway, left and right turn lanes will be required.

Turn lanes shall not be provided along subdivision or local roads unless the County Engineer determines that turn lanes are warranted due to safety concerns. The exception is the intersection of a subdivision collector road with another subdivision collector/collector/arterial roadway, in which case turn lanes shall be provided if warranted based on Table 901.5.A of this Code.

Roads with a 35 mph speed or less (design or posted, whichever is higher), that are located within the compact area of a MUTRM project, or within a TND or TOD area shall not be required to provide right turn lanes, regardless of whether they are warranted. The intent is to maximize pedestrian safety.

All required turning lanes shall be designed and constructed in accordance with FDOT Indexes 301 and 526.

P. Drainage

1. Each access shall be constructed in a manner that shall not cause water to enter onto the roadway and shall not interfere with the existing drainage system on the right-of-way (FDOT Index 515).
2. The permittee shall provide, at the permittee's expense, drainage structures for the permittee's access which will become an integral part of the existing drainage system. The type, design, and condition of these structures must be in accordance with FDOT standards and meet the approval of the County.
3. The County drainage system is designed for the protection of the County roadway system. It is not designed to serve the drainage requirements of abutting properties beyond that which has historically flowed to the County right-of-way. Drainage to the County system shall not exceed the undeveloped, historical flow.

Q. Other Design Elements

1. Within the right-of-way, maximum grades shall be limited to ten (10) percent, unless the County Engineer finds that significant physical constraints require the use of a steeper grade, the steeper grade is in conformance with FDOT Index 515, and access by the largest anticipated vehicle can be properly accommodated.
2. The horizontal axis of an access to the roadway shall be at a right angle to the centerline of the road. An angle between ninety (90) and sixty (60) degrees may be approved only if the County Engineer finds that significant physical constraints require a skew angle less than ninety (90) degrees.
3. An access that has a gate across it shall be designed so that a minimum three (3) car stack distance (seventy-five [75] feet) is provided between the right-of-way line and the gate.
4. The access shall be designed to facilitate the movement of vehicles off the highway to prevent the queuing of vehicles on the traveled way. An access shall not be approved for parking areas that require backing maneuvers within the County right-of-way. All off-street parking must include on-site maneuvering areas to permit vehicles to enter and exit the site in a forward gear.

R. Maintenance

The permittee, successors-in-interest, and occupants of the property serviced by the access shall be responsible for the maintenance beyond the edge of the traveled way. The County shall maintain the culverts under the accesses which are an integral part of the drainage system in the right-of-way.

S. Controlled Access Roadways

Notwithstanding anything in these regulations to the contrary, direct access to the following roadways shall be restricted to specific locations approved by all governmental entities with jurisdiction over such roadways:

1. The Suncoast Parkway and the impacted portion of collector/arterial roadways forming the interchanges with the Suncoast Parkway as determined by applicable Florida Turnpike Enterprise (FTE) and FDOT regulations, where access is restricted to those locations approved by the FTE and FDOT, in consultation with the County.
2. I-75 and the impacted portion of collector/arterial roadways forming the interchanges with I-75 as determined by applicable Federal Highway Administration (FHA) and FDOT regulations, where direct access is restricted to those locations approved by the FHA and FDOT, in consultation with the County.

T. Alternative Standard Procedures

Except where these regulations specifically allow for deviation by the County Engineer, if an applicant wishes to deviate from the requirements of this section, an alternative standards request in accordance with Section 407.5 must be submitted and approved by the Development Review Committee (DRC). A recommendation to the DRC shall be made by the County Engineer. Before making a recommendation on any alternative standard affecting the State highway system or within any municipality, the County Engineer shall consult with the FDOT and/or the affected municipality, if applicable.

U. Access Violations

1. **Violations:** At any time under the provisions of this Code, Section 108, the County may elect to cite the owner(s) or occupant(s) of the property or project for any conditions on such property or within the right-of-way that are prohibited by these regulations or applicable permit conditions.
2. **Corrective Action:** When closure or modification of an access or driveway or other corrective action is required or when the owner(s) and/or occupant(s) of the property in violation has not corrected the condition(s) in violation, the County or other authority may complete the necessary corrective action with public funds or may contract with an individual, firm, or other legal entity for such services. An invoice shall be submitted to the owner(s) for payment of the costs incurred by the County or its contractor. The owner(s) shall be required to pay all costs incurred, including any administrative costs, within thirty (30) days of the date of the invoice. If payment is not made by the owner(s) within thirty (30) days of the date of the invoice, the County may impose a lien upon the property for the costs of performing the corrective action, administrative costs, interest, and recording fees. The lien shall be of the same priority as liens for ad valorem taxes and, as it represents costs expended for the benefit of the property itself, the lien shall be superior to all other encumbrances, whether secured and regardless of priority. Such lien shall be duly recorded in the official records of the County and shall accrue interest at the rate of eight (8) percent per annum from the date of recording. Upon foreclosure of the lien, the County shall be entitled to all costs and attorney's fees incurred as a result.
3. The authority to correct dangerous conditions provided by this section does not impose any affirmative duty on the County to warn of or to correct such conditions. Making such repairs does not create a continuing obligation on the part of the County to make further repairs or to maintain the property, and does not create any liability against the local governing body for any damages to the property if such repairs were completed in good faith.

FORM 901.3.A

PASCO COUNTY ACCESS CONNECTION PERMIT APPLICATION

The following information is required from all applicants directly or indirectly accessing any collector or arterial road or as otherwise directed by the County Engineer:

Basic Information:

Step 1. Name of Project: _____
County Assigned Project No.: _____
Project Location (road name/vicinity): _____

Speed Limit: _____

Step 2. Existing Property Use (size in square feet and/or the number of units, etc.):

Step 3. Proposed property use, including any interim traffic generating uses such as heavy vehicles in brackets [] (size in square feet and the number of units):

Step 4. Provide the location of all existing and proposed connections to the property. This will include a location map and site plan of any physical features (existing and/or proposed) that will have an impact on traffic circulation and sight distance on the County road system and may include an aerial photograph. Examples of such physical features are walls, fences, trees, gates, utility poles, etc.:

Step 5. Describe any unique traffic-safety issues with the access; i.e., sight-distance problems:

Step 6. Trip Generation Data and Total Trip Generation: The *Institute of Transportation Engineers (ITE) Handbook*, latest edition, is acceptable as a source. Other sources may be required by and/or authorized of the County Engineer. Land excavation and mining (as defined in Appendix A) and removal of more than 30,000 cubic yards, even as an interim use, is presumed to be a separate and distinct land use requiring

separate trip-generation estimates. Such land use is also presumed to generate more than ten (10) percent heavy vehicles. Heavy vehicles adversely affect traffic, because they occupy more roadway space and have poorer operating capabilities than passenger cars, particularly with regard to acceleration, deceleration, and the ability to maintain speed on upgrades. Accordingly, for trip-generation purposes, if heavy vehicles are ten (10) percent or more of the trips generated by the proposed land use, the total estimated trips for heavy vehicles shall be multiplied by two (2) unless ITE heavy vehicle data or other County-approved, heavy vehicle, trip-generation data for the land use support a different multiplier; however, in no event shall the multiplier be less than one (1). Provide trip generation from interim traffic generating uses in brackets [].

Source: _____

ITE code (if used): _____

Existing maximum peak hour trip generation: _____ (1)

Net increase in maximum peak hour trip generation: _____ (2)

Total maximum peak hour trip generation: _____ (Add 1 & 2)

Estimated peak hour trips from heavy vehicles* included in the total maximum:

_____ (a)

Heavy vehicle multiplier _____ (b)

Additional heavy vehicle trips (multiply a X b-1) _____ (c)

If (c) is \geq ten (10) percent of total maximum peak hour trip generation, list additional heavy vehicle trips from (c) _____ (3).

Total maximum peak hour trip generation with heavy vehicles _____ (Add 1, 2, & 3)

If the total maximum peak hour trip generation from Step 6 above does not exceed the thresholds set forth in Exhibit 901.4.A, "Size of Development that Generates 50 Peak Hour Trips," no further information is required. However, a substandard road fair-share payment pursuant to this Code, Section 901.4, as it may be amended from time-to-time, may still be required.

If the total maximum peak hour trip generation from Step 6 above exceeds the thresholds set forth in Exhibit 901.4.A, "Size of Development that Generates 50 Peak Hour Trips," then Steps 7 and 8 are required to be completed. Step 7 is required prior to proceeding with "Turn Lane Warrants and Design Criteria," and Step 8 is required to address any substandard road issues.

The County Engineer may require more detailed access-management information or a more detailed access management study where the County Engineer determines (1) that the information on this form is inadequate to determine compliance with the

- c. Provide a sketch illustrating the distribution of the project traffic during the a.m. and p.m. peak periods of the adjacent public road.



Proceed with Warrants and Turn-Lane Design Criteria.

- Step 8. Perform a Substandard Roadway Analysis in accordance with this Code, Section 901.4.

TURN-LANE WARRANTS AND DESIGN CRITERIA

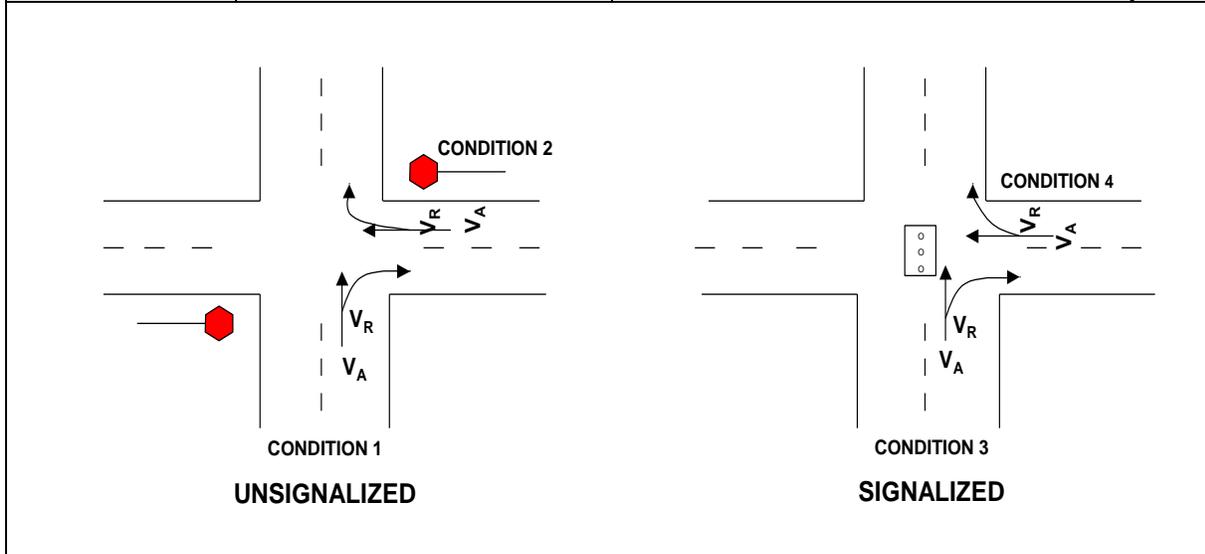
DEFINITIONS OF TERMS

Access Road	Driveways or roads connecting developments, such as shopping centers or office parks, to major roads and do not serve major road through traffic.
Vehicles Per Hour (VPH)	The design hourly volume during the peak fifteen (15) minutes of the highest peak hour expressed in terms of VPH (peak fifteen [15] minute volume times four [4]).
V_A —Approaching Volume (VPH)	Total volume approaching the intersection from the subject direction includes right- and left-turning and through vehicles.
V_O —Opposing Volume (VPH)	Total volume approaching the intersection from the opposite direction.
V_L —Left Turning Volume (VPH)	Volume of vehicles turning left at the subject intersection.
V_R —Right Turning Volume (VPH)	Volume of vehicles turning right at the subject intersection.
% of Left Turns in V_A	Volume of left-turning vehicles divided by the approaching volume at the subject intersection.

TABLE 1

Right-Turn Warrants

Unsignalized		
Condition 1	On major roads without stop control (approach).	See Graph Nos. 1A and 1B
Condition 2	Access roads or major through roads with stop control (approach).	$V_R \geq 150$ OR There are 5 or more related accidents in 1 year.
Signalized		
Condition 3	On major roads (approach).	$V_R \geq 150$ AND The total outside lane approach volume (V_A) is at least 200 VPH (including right turn). OR There are 5 or more related accidents in 1 year.
Condition 4	On access roads approach.	$V_R \geq 150$ OR There are 5 or more related accidents in 1 year.



NOTES:

1. When public safety so requires due to site-specific conditions, such as limited sight distance, high-traveling speed, or the presence of a significant percentage of heavy vehicles, a turn lane may be required by the County Engineer even though the criteria in Graphs 1A and 1B are not met.
2. The provisions of the right-turn warrants may be modified by the County Engineer if it is determined that due to site-specific constraints, the implementation will not be feasible or practical.
3. At high speed (forty-five [45] mph or greater), unsignalized/signalized intersections, a separate right turn lane may be required by the County Engineer for safe operations. A high speed shall be the greater of the posted or operating speed where an operating speed study has been conducted.

TABLE 2

Left-Turn Warrants

Unsignalized		
Condition 1	On major roads without stop control (approach).	See Graph Nos. 2A through 2D
Condition 2	On access roads or through roads (approach).	$V_L \geq 100$ OR There are 4 or more related accidents in 1 year.
Signalized		
Condition 3	On major roads (approach).	$V_L \geq 100$ OR 20 percent or more of the total approach volume in the inside lane is left turn. OR There are 5 or more related accidents in 1 year.
Condition 4	On access roads or through roads approach.	$V_L \geq 100$ OR There are 5 or more related accidents in 1 year.

UNSIGNALIZED

SIGNALIZED

NOTES:

1. An exclusive left-turn lane at signalized intersections or on access roads and through roads with stop control are more often needed to reduce the total delay to the approaching vehicles; therefore, use of traffic engineering software, with the approval of the County Engineer, may be used.
2. When public safety so requires due to site-specific conditions, such as limited sight distance, high-traveling speed, or the presence of a significant percentage of heavy vehicles, a turn lane may be required by the County Engineer even though the criteria in Graphs 2A through 2D are not met.
3. The provisions of the left-turn warrants may be modified by the County Engineer if it is determined that due to site-specific constraints, the implementation will not be feasible or practical.
4. A dual left-turn lane may be required by the County Engineer when the left-turn volume exceeds 300 VPH.
5. At high speed (forty-five [45] mph or greater), unsignalized/signalized intersections, a separate left-turn lane may be required by the County Engineer for safe operations. A high speed shall be the greater of the posted or operating speed where an operating speed study has been conducted.

TABLE 3

**Right-Turn Lane Length
(Deceleration and Storage)**

Unsignalized		
Condition 1	On major roads without stop control and on major through roads with stop control (approach).	Deceleration Length: FDOT Index 301 Storage Length: 25 feet desirable unless there are site-specific conditions that require a longer storage length.
Condition 2	On access roads (approach).	Deceleration Length: Taper only Storage Length = $V_R/2$
Signalized		
Condition 3	On major roads (approach).	Deceleration Length: FDOT Index 301 Storage Length = $V_R/2$
Condition 4	On access roads (approach).	Deceleration Length: FDOT Index 301 Storage Length = $V_R/2$

NOTES:

1. In many instances, the storage length of a right-turn lane at signalized intersections or access/major roads with stop control is dictated by the required storage length for left and/or through movements. Refer to the left-turn section for determining the storage length for a left turn.
2. If the right-turn flow is limited due to heavy volume of conflicting movements, then the storage length shall be based on the left-turn storage length formula.
3. The provision of storage lengths and deceleration lengths may be modified or waived by the County Engineer if it is determined that, due to site-specific constraints, the implementation will not be feasible or practical.
4. Traffic engineering software, with the approval of the County Engineer, may be used to determine the storage length for right turns.

TABLE 4

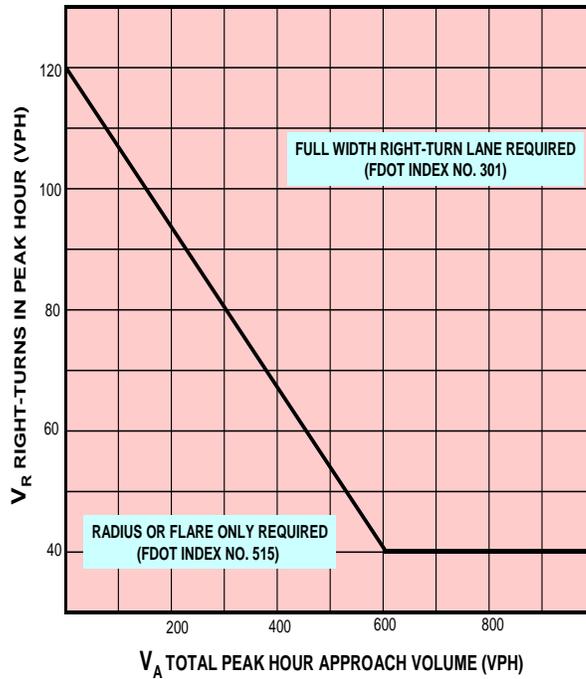
**Left-Turn Lane Lengths
(Deceleration and Storage)**

Unsignalized		
Condition 1	On major roads (approach).	Deceleration Length: FDOT Index 301 Storage Length = $25 \times V_L/30$
Condition 2	On access roads (approach).	Deceleration Length: Taper only Storage Length = $25 \times V_L/30$
Signalized		
Condition 3	On major roads (approach).	Deceleration Length: FDOT Index 301 Storage Length = $2 \times 25 \times V_L/N$
Condition 4	On access roads (approach).	Deceleration Length: FDOT Index 301 Storage Length = $2 \times 25 \times V_L/N$

NOTES:

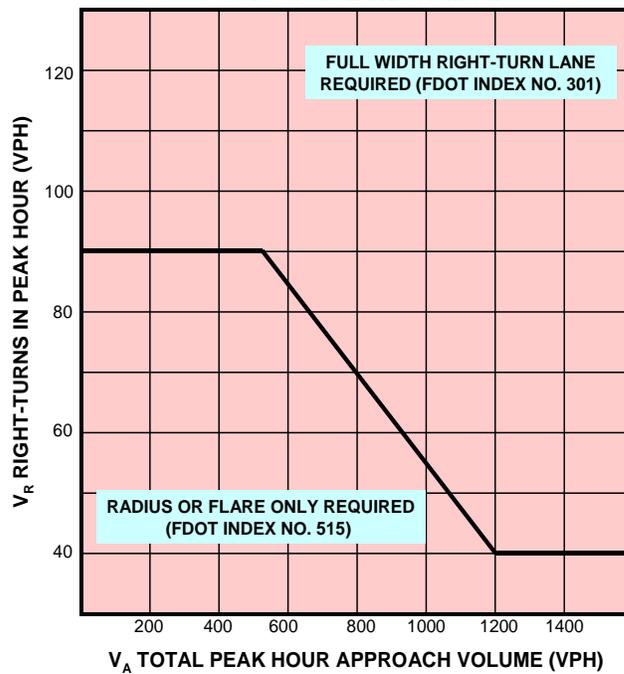
1. N = The number of traffic signal cycles per hour. Use thirty (30) as a default (assumes 120-second cycle length).
2. If the formula yields a storage length of less than fifty (50) feet for unsignalized intersections, then a minimum storage of fifty (50) feet shall be provided.
3. If the formula yields a storage length of less than 100 feet for signalized intersections, then a minimum storage of 100 feet shall be provided.
4. The provision of storage and deceleration lengths may be modified or waived by the County Engineer if it is determined that due to site-specific constraints, the implementation will not be feasible or practical.
5. In some instances at signalized intersections or on access/major roads with stop control, the storage length of the left turn is dictated by the through or right movements. Unless otherwise approved by the County Engineer, the storage length for all movements shall be calculated and the highest length shall be used. For through-storage length, the same formula as the left turn can be used. Refer to right-turn section for determining the storage length for right turns.
6. Traffic engineering software, with the approval of the County Engineer, may be used to determine the storage length for right turns.

GRAPH 1A. RIGHT-TURN LANE WARRANTS – TWO-LANE FACILITIES



NOTE: For posted speeds at or under forty-five (45) mph, peak hour right turns greater than forty (40) VPH, and total peak hour approach less than 300 VPH, adjust right turn volumes. Adjust peak hour right turns = peak hour right turns-twenty (20).

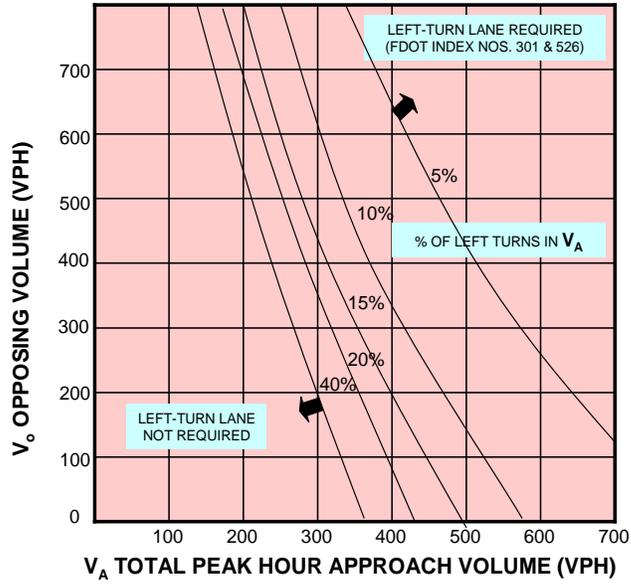
GRAPH 1B. RIGHT-TURN LANE WARRANTS
FOUR- OR SIX-LANE FACILITIES



NOTE: For application on high speed highways.

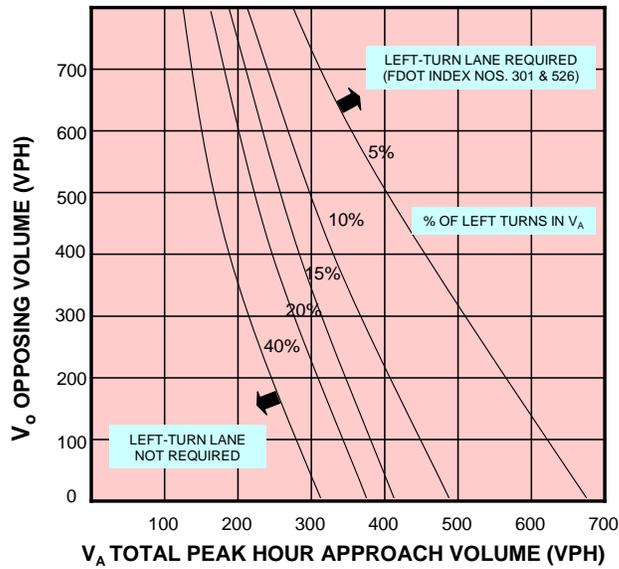
Graphs 1A & 1B Source: National Cooperative Highway Research Program, Report No. 279.

GRAPH 2A. LEFT-TURN LANE WARRANTS – TWO-LANE FACILITIES (≤ 40 MPH)



NOTE: Left-turn lane not required when intersection of V_A and V_O is below the curve corresponding to the % of left turns in V_A .

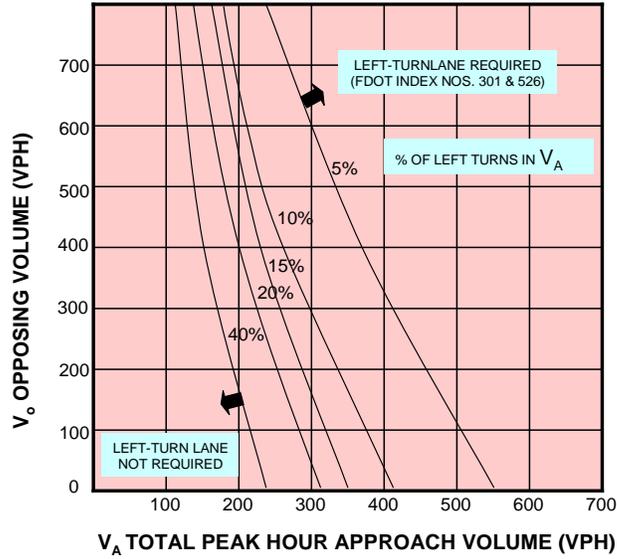
GRAPH 2B. LEFT-TURN LANE WARRANTS – TWO-LANE FACILITIES (45-50 MPH)



NOTE: Left-turn lane not required when intersection of V_A and V_O is below the curve corresponding to the % of left turns in V_A .

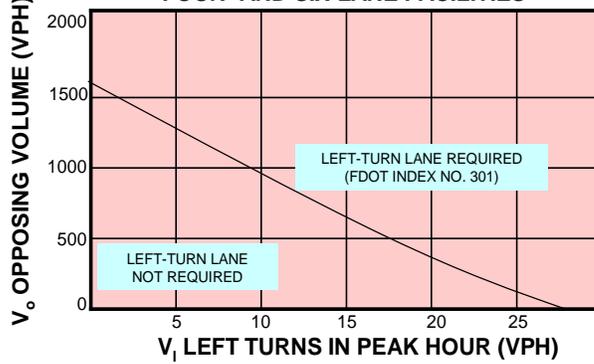
Graphs 2A & 2B Source: National Cooperative Highway Research Program, Report No. 279.

GRAPH 2C. LEFT-TURN LANE WARRANTS – TWO-LANE FACILITIES (55-60 MPH)



NOTE: Left-turn lane not required when intersection of V_A and V_O is below the curve corresponding to the % of left turns in V_A .

GRAPH 2D. LEFT-TURN LANE WARRANTS – FOUR- AND SIX-LANE FACILITIES



NOTE: When $V_O < 400$ VPH, a left-turn lane is not normally warranted unless the advancing volume (V_A) in the same direction as left-turning traffic exceeds 400 VPH. ($V_A > 400$ VPH).

Graphs 2C & 2D Source: National Cooperative Highway Research Program, Report No. 279.

SAMPLE PROBLEM NO. 1

Steps 1-6

1. Ninety-four (94) unit apartment complex. West side of Rowan Road, north of Nebraska Avenue (Main Street). Four (4) lane urban. Speed limit forty-five (45) mph.
2. Existing use—vacant.
3. Proposed use—apartments.
4. Site plan, etc., not included in sample.
5. Proposed access on Rowan Road, west side, at existing median opening, approximately 365 feet north of Indiana Avenue. No existing turn lane facilities north or southbound. No other access to this site is proposed.
6. Source: ITE, 6th Edition
 ITE Code: 220
 Existing Maximum Trip Generation: 0
 Net Increase in Maximum Trip Generation: 698
 From ITE: No. of Trips = (5.994 X 94 units) + 134.114 = 698
Total Maximum Peak Hour Trip Generation: 698

If the total maximum peak hour trip generation is greater than 50 and no Traffic Impact Study is required pursuant to this Code, Section 1301, proceed with Step 7.

Step 7

7. From the Pasco County Traffic Operations Division, Traffic Count File for Rowan Road (C.R. 77) (Section 820.1):

P.M. Peak	<u>455</u> NB	<u>385</u> SB	<u>N/A</u> EB	<u>N/A</u> WB
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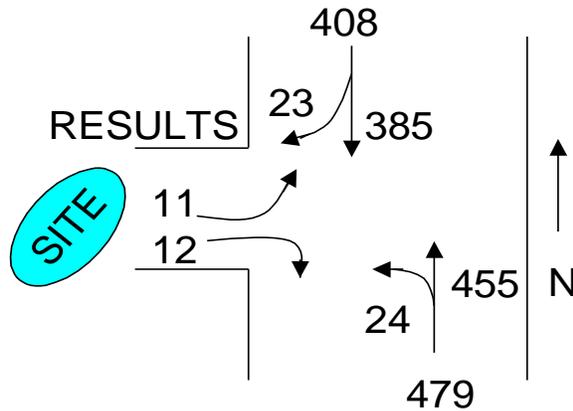
A.M. Peak Not Available

Total Daily Count: 23,624 (ADT) 10/4/01

From ITE Manual, P.M. Peak Hour Trips = (0.541 X 94 units) + 18.744 = 70 trips

A.M. Peak Hour Trips: N/A

From ITE, 67 percent (47) entering and 33 percent (23) exiting. Say 50/50 directional distribution.



Proceed to Warrants and Turn-Lane Design Criteria.

Right-Turn Warrants

From Table 1, Condition 1, see Graph 1B to check warrants for the southbound, right-turn lane on Rowan Road.

$$V_R = 23, V_A = 385 + 23 = 408$$

From Graph 1B, a full width, right-turn lane is not warranted.

Left-Turn Warrants

From Table 2, Condition 1, see Graph 2D to check warrants for the northbound, left-turn lane on Rowan Road.

$$V_L = 24, V_A = 455 + 24 = 479, V_O = 385 + 23 = 408$$

From Graph 2D, the intersection of V_O and V_L is to the right of the curve; therefore, a left-turn lane is required.

Left-Turn Lane Lengths

From Table 4, Condition 1, the required deceleration length is determined by FDOT Index No. 301. A total deceleration distance length of 185 feet is required for the forty-five (45) mph urban condition and includes the fifty (50) foot taper length.

The required storage length (queue) is calculated as follows:

$$\text{Storage Length} = 25 \times V_L / 30 = 25 \times 24 / 30 = 20 \text{ feet}$$

Per Note 1, the required minimum storage length is fifty (50) feet. This is in addition to the 185-foot deceleration, for a total deceleration and storage length of 235 feet.