

COMMISSIONERS COURT OF FORT BEND COUNTY, TEXAS

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

**Policies and Procedures Relating to Access along the Fort Bend  
Grand Parkway Toll Road, Segment D**

*Policy & Background.* The primary purpose of The Fort Bend Grand Parkway Toll Road, Segment D, (the “Toll Facility”) is to provide a corridor that affords vehicular traffic a high level of service.

The development of property adjacent to the Toll Facility for commercial and residential purposes is a secondary purpose of the Toll Facility and should not negatively impact the primary purpose of mobility.

The purpose of this document is to establish a framework to receive and evaluate requests for access to the Toll Facility, including mainlanes, ramps, and frontage roads.

The policy of the Fort Bend Grand Parkway Toll Road Authority (the “Authority”), and Fort Bend County Commissioners Court, shall be to recommend access only where the applicant has demonstrated that the requested access will not significantly diminish the level of service on the Toll Facility and traffic safety will not be impaired. Preference for access will be given to dedicated public roadways that are on local thoroughfare plans. Driveway access will be considered only when access from a public roadway is not possible.

*Application Procedures.* The adjacent land owner or designated representative may submit an application to the Fort Bend County Engineer’s Office requesting access. The application shall contain the following information:

- 1 The applicant’s full legal name, address, and daytime phone number. If the applicant is a corporate or partnership entity, the application shall contain the name of the person designated by the entity as the contact person for the application. If the applicant is not the owner of the property, the applicant shall provide the name, address and daytime phone number of the owner.
- 2 A copy of the recorded deed or purchase money contract evidencing the applicant’s ownership interest in the property from which the applicant is requesting access to the Toll Facility.
- 3 A plat or map showing the applicant’s property, the adjoining Toll Facility property, the proposed location of the access points and distances to other access points, and a site plan indicating existing and proposed land uses. The map should be submitted both on paper and electronically.
- 4 A traffic impact study prepared in accordance with the County’s standards. If the applicant’s property is located in a City or ETJ, the traffic impact study prepared for the City may be submitted.
- 5 Evidence of compliance with all applicable federal, state, and local environmental laws and regulations and permitting requirements.
- 6 Plans of the access, signed and sealed by a registered or licensed professional engineer in Texas, that meet the requirements as described in this document.
- 7 Such other information as the County may request. Applications should be submitted to Fort Bend County Engineering, P. O. Box 1449, Rosenberg, TX 77471.

**DEFINITIONS**

*Acceleration Lane:* A speed-change lane, including tapered areas, for the purpose of enabling a vehicle entering a roadway to increase its speed to a rate at which it can more safely merge with through traffic.

**Access Connection:** Facility for entry and/or exit such as a driveway, street, road, or highway that connects to the Toll Facility or frontage road within the Fort Bend Grand Parkway right of way.

**ADT:** The average daily traffic volume. It represents the total two-way traffic on a roadway for some period less than a year, divided by the total number of days it represents, and includes both weekday and weekend traffic. Usually, ADT is adjusted for day of the week, seasonal variations, and/or vehicle classification.

**Authority:** The Fort Bend Grand Parkway Toll Road Authority

**Auxiliary Lane:** A lane striped for use as an acceleration lane, or deceleration lane, right-turn lane, or left-turn lane, but not for through traffic use.

**Connection Spacing:** The distance between connections, which is measured along the edge of the traveled way from the closest edge of pavement of the first access connection to the closest edge of pavement of the second access connection.

**Capacity:** The number of vehicles that can traverse a point or section of a lane or roadway during a set time period under prevailing roadway, traffic, and control conditions.

**Commercial Driveway:** A private (i.e. non-public road) entrance to, or exit from, any commercial, business, or similar type establishment

**Corner Clearance:** The distance along the edge of the traveled way from the closest edge of pavement of the intersecting roadway to the closest edge of pavement of the nearest access connection.

**Corner Lot:** A lot located at the intersection of two roadways that has frontage on each roadway.

**County:** Fort Bend County

**Deceleration Lane:** A speed-change lane, including tapered areas, for the purpose of enabling a vehicle that is exiting a roadway to leave the travel lanes and slow to a safe exit.

**Directional Median Opening:** An opening in a non-traversable median that accommodates specific movements, such as U-turn movements and/or left-turn movements from the highway, and physically restricts other movements.

**Divided Highway:** A toll road, highway, or freeway with a median designed to separate traffic moving in opposite directions.

**Drainage Structure:** A circular pipe, elliptical pipe, arch pipe, box culvert, or other similar conduit installed for the purpose of draining the flow of surface water.

**Field Driveway:** A limited use driveway for the occasional/infrequent use by equipment used for the purpose of cultivating, planting, and harvesting or maintenance of agricultural land, or by equipment used for ancillary mineral production.

**Frontage Road:** A local street or road along the Toll Facility within the Fort Bend Grand Parkway right of way or arterial highway allowing control of access and service to adjacent areas and property. A frontage road may also be referred to as a service road.

**Full Median Opening:** In a non-traversable median, an opening that allows all turning movements from the highway and the adjacent connection, as well as crossing movements.

**Functional Area (Intersection):** The area of an intersection necessary to provide all required storage lengths for separate turn lanes and for through traffic plus any maneuvering distance for separate turn

lanes. The functional boundary of an intersection includes more than just the physical area of the intersection.

**Intersection:** Any at grade connection with a roadway, including two roads or a driveway and a road.

**Level of Service (LOS):** A measure of traffic flow and congestion. As defined in the Highway Capacity Manual (published by the Transportation Research Board - National Research Council), it is a qualitative measure describing operational conditions within a traffic stream, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

**Limited Access Roadway:** A roadway especially designed for through traffic and over, from, or to which owners or occupants of abutting land or other persons have no right or easement of access by reason of the fact that their property abuts such limited access facility or for any other reason. Tollways, highways, parkways, and freeways are usually developed as limited-access facilities.

**Local Access Management Plan:** A plan or guideline in a formally adopted rule or ordinance that is related to the application of access management within the municipality's or eligible county's jurisdiction.

**Local Access Road:** A local public street or road, generally one parallel to the Toll Facility and outside the Fort Bend Grand Parkway right of way to which access for businesses or properties located between the Toll Facility or highway and the local access road is provided as a substitute for access to the Toll Facility or highway. A local access road may also be called a lateral road or reverse frontage road, depending on individual location and application.

**Median:** That portion of a divided highway separating the opposing traffic flows. A median may be traversable or non-traversable.

**Median, Non-traversable:** A physical barrier in a roadway or driveway that separates vehicular traffic traveling in opposite directions. Non-traversable medians include physical barriers (such as a concrete barrier, a raised concrete curb and/or island, and a grass or a swale median) that prohibit movement of traffic across the median.

**Median Opening Spacing:** The allowable spacing between openings in a non-traversable median to allow for crossing the opposing traffic lanes in order to access property or for crossing the median to travel in the opposite direction (U-turn). The distance is measured from centerline to centerline of the openings along the traveled way.

**Median, Traversable:** A median that by its design does not physically discourage vehicles from entering or crossing over it. This may include painted medians.

**Permit:** Authorization for entry to and/or exit from the Toll Facility, highway or frontage roads and adjacent real property, issued by the County after consultation with Authority.

**Permittee:** A real property owner, or the owner's authorized representative, who receives an access connection permit from the County to construct or modify an access connection from the owner's property to a highway on the state highway system.

**Private Driveway:** An entrance to or exit from a residential dwelling, farm, or ranch for the exclusive use and benefit of the permittee.

**Public Driveway:** An approach from a publicly maintained street, road, or highway.

**Reverse Frontage Road:** See "local access road".

**Right of Way:** A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

**Service Road:** See "frontage road".

**Shared Access:** A single connection serving two or more adjoining lots or parcels.

**Sight Distance:** The distance visible to the driver of a passenger vehicle measured along the normal travel path of a roadway from a designated location and to a specified height above the roadway when the view is unobstructed by traffic.

**Signal:** A traffic control signal.

**Stopping Sight Distance (SSD):** The distance required by a driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object on the roadway becomes visible. It includes the distance traveled during driver perception-reaction time and the vehicle braking distance.

**Storage Lane Length:** The portion of an auxiliary lane required to store the number of vehicles expected to accumulate in the lane during an average peak period.

**Temporary Access:** Time-limited provision of direct access to a roadway. Such access must be closed when permit conditions for access removal are satisfied. Typically, such conditions relate to such time when adjacent properties develop in accordance with a joint access agreement or frontage road plan.

**Traffic Impact Analysis:** A traffic engineering study to the level of analysis determined by the County after consultation with Authority that determines the potential current and future traffic impacts of a proposed traffic generator and is signed, sealed, and dated by an engineer licensed to practice in the state of Texas.

**TxDOT:** Texas Department of Transportation.

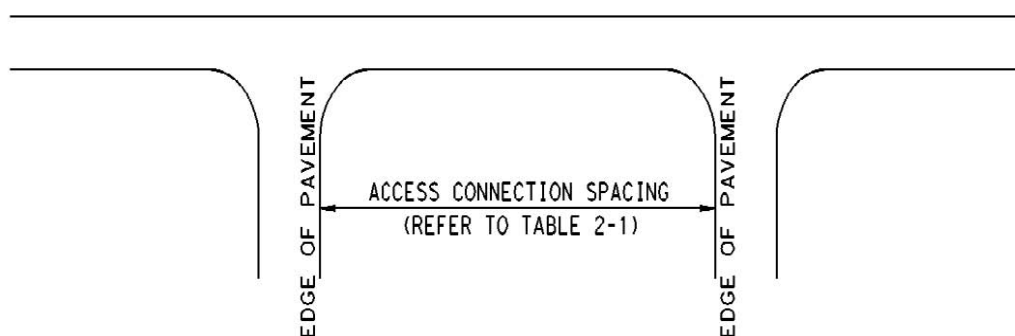
## NUMBER, LOCATION, SPACING OF ACCESS CONNECTIONS

### Overview

The access connection distances in the following subsections are based on stopping sight distance and are intended for passenger cars on a level grade. These distances may be increased for downgrades, truck traffic, or where otherwise indicated for the specific circumstances of the site and the roadway. In other cases, shorter distances may be appropriate to provide reasonable access, and such decisions should be based on safety and operational factors supported by an engineering study.

The distance between access connections is measured along the edge of the traveled way from the closest edge of pavement of the first access connection to the closest edge of pavement of the second access connection (Refer to Figure 2-1).

Figure 2-1. Access Connection Spacing Diagram



Conditions for granting access will be stated in the access permit. Violation of the conditions under which the permit was granted, as determined by the County after consultation with Authority, may require reevaluation of the access by the County.

Where topography or other existing conditions make it inappropriate or not feasible to conform to the connection spacing intervals, the location of reasonable access will be determined with consideration given to topography, established property ownerships, unique physical limitations, and/or physical design constraints. The selected location should serve as many properties and interests as possible to reduce the need for additional direct access to the tollway and highway facility. In selecting locations for full movement intersections, preference will be given to public roadways that are on local thoroughfare plans.

In the absence of any safety or operational problems, additional access connections may be considered. Any additional access must not interfere with the location, planning, and operation of the public street system. Where the property abuts or has primary access to a lesser function road, to an internal street system, or by means of dedicated access easement, any access to the state highway will be considered as an additional access.

#### **Toll Road and Freeway / Highway Mainlanes**

Toll roads and freeway/highways are intended to provide a very high degree of mobility. Accordingly, mainlanes provide no direct access to property and access to the mainlanes is provided only at interchanges and ramps. The spacing of interchanges and ramps needs to allow entering and exiting vehicles to weave safely and to provide adequate acceleration/deceleration.

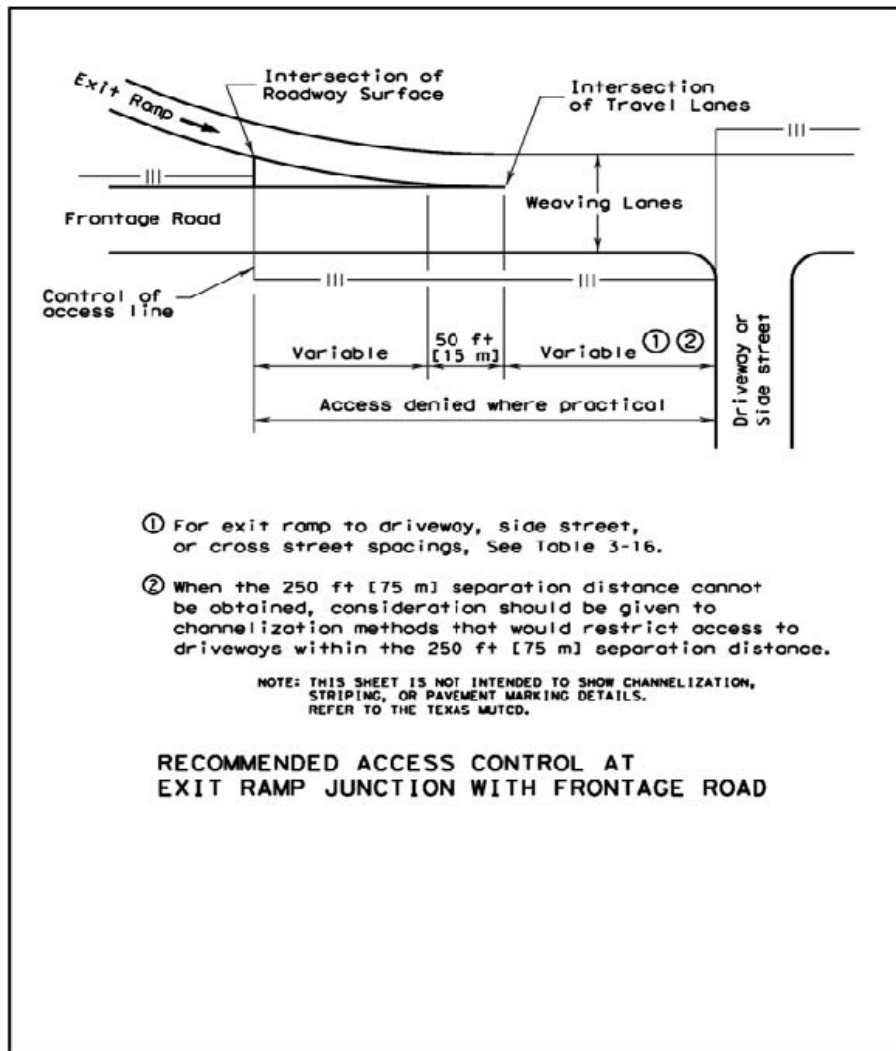
The design of toll roads and freeways is governed by the TxDOT *Roadway Design Manual*, Chapter 3, Section 6, Freeways; and subject to the SH 99 (Grand Parkway) Business Terms and Conditions for market evaluation (Resolution No. 2008-08, Transportation Policy Council for the Houston-Galveston Transportation Management Area).

#### **Frontage Roads**

Frontage roads are roadways that are constructed generally parallel to a toll road, freeway or other highway. Toll road frontage roads normally have at-grade interchanges with the arterial streets, which are generally perpendicular to the freeway and are grade-separated from the toll road mainlanes. Under fully developed conditions, the at-grade intersections of frontage roads and arterials are typically signalized.

Ramps provide connections between the frontage roads and the toll road. Traffic traveling from an arterial street to the toll road / freeway first turns from the arterial onto the frontage road and then travels along the frontage road to a toll road / freeway entrance ramp. Traffic traveling from the toll road / freeway to an arterial street leaves the toll road / freeway by means of an exit ramp that connects to the frontage road and then travels along the frontage road to its intersection with the arterial street.

Direct access to the frontage road is prohibited in the vicinity of ramp connections, as described in the TxDOT *Roadway Design Manual*, Chapter 3, Section 6, and shown in the two figures below:



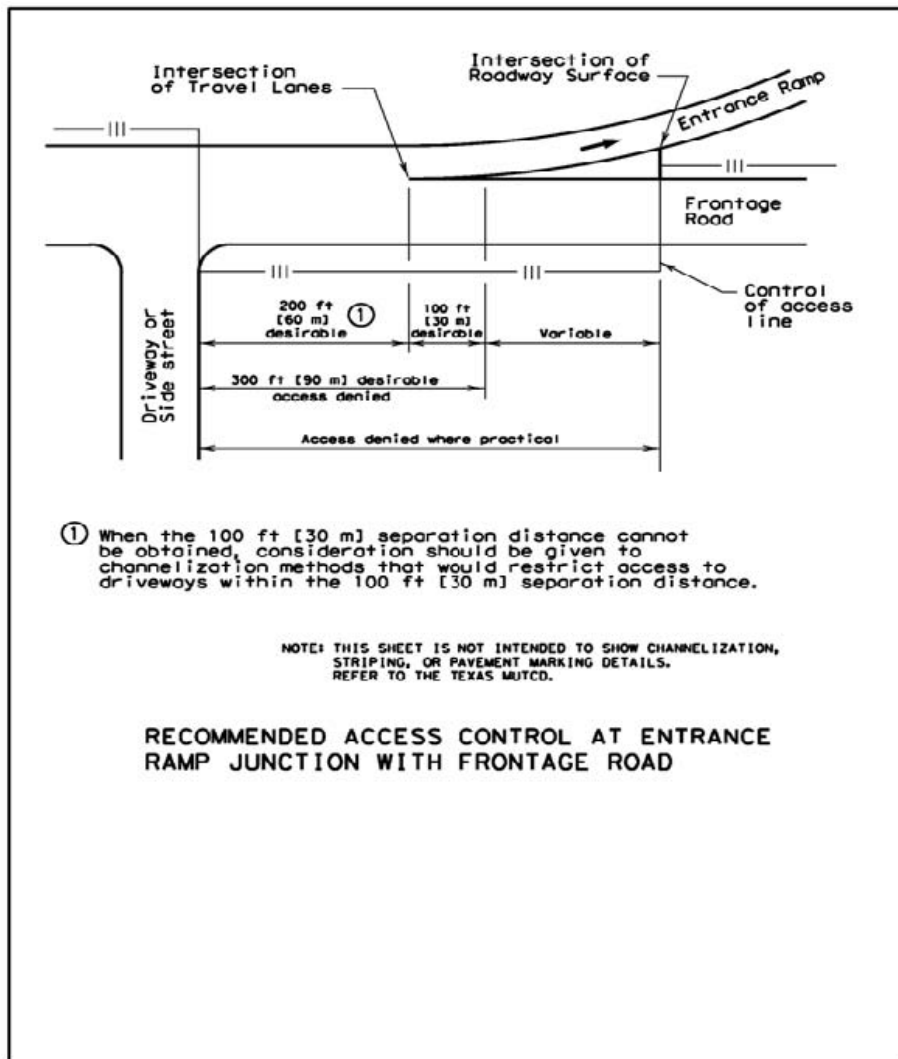


Table 3-16: Desirable Spacing between Exit Ramps and Driveways, Side Streets, or Cross Streets

Total Volume (Frtg rd + Ramp) (vph)	Driveway or Side Street Volume (vph)	Spacing (ft)		
		Number of Weaving Lanes		
-	-	2	3	4
<2500	<2500	460	460	560
-	>2500	520	460	560
-	>750	790	460	560
-	>1000	1000	460	560
>2500	<250	920	460	560
-	>250	950	460	560
-	>750	1000	600	690
-	>1000	1000	1000	1000

Table 2-1 gives the minimum connection spacing criteria along frontage roads. However, a lesser connection spacing than set forth in this document may be requested by variance submitted to the County Engineer and approved by the County after consultation with Authority.

Table 2-1: Frontage Road Connection Spacing Criteria

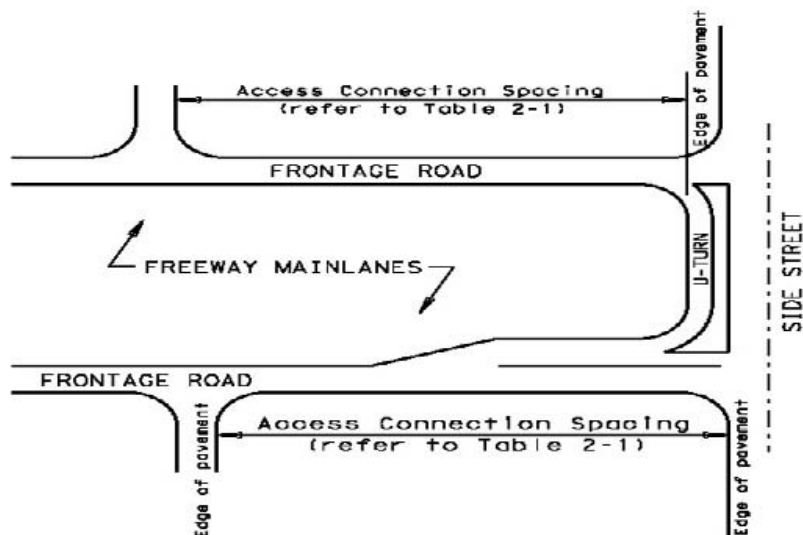
Minimum Connection Spacing Criteria along Frontage Roads (1)(2)	
	Minimum Connection Spacing (feet)
Posted Speed (mph)	One-Way Frontage Roads
≤30	200
35	250
40	305
45	360
≥50	425

(1) If an auxiliary lane is required, connection spacing criteria will change to incorporate length of auxiliary lane. (2) Distances are for passenger cars on level grade. These distances may be adjusted for downgrades and/or significant truck traffic. Where present or projected traffic operations indicate specific need, consideration may be given to intersection sight distance and operational gap acceptance measurement adjustments.

It should be noted that for areas with conventional diamond ramp patterns, where an exit ramp is just prior to the arterial street, the most critical areas for operations are between the exit ramp and the arterial street and between the arterial street and the entrance ramp. In X-ramp configurations, where the exit ramp is just after the arterial street, the most critical areas are between the exit ramp and the subsequent entrance ramp. While Table 2-1 gives minimum connection spacing criteria, the critical areas with respect to the ramp pattern may need greater spacing requirements for operational, safety, and weaving efficiencies.

The distance between access connections is measured along the edge of the traveled way from the closest edge of pavement of the first access connection to the closest edge of pavement of the second access connection (Refer to Figure 2-1). Additionally, the access connection spacing in the proximity of frontage road U-turn lanes will be measured from the inside edge of the U-turn lane to the closest edge of the first access connection (Refer to Figure 2-3).

Figure 2-3. Frontage Road U-Turn Spacing Diagram



### Auxiliary Lanes

This subsection describes the basic use and functional criteria associated with auxiliary lanes. Auxiliary lanes consist of left-turn and right-turn movements, deceleration, acceleration, and their associated transitions and storage requirements. Left-turn movements may pose challenges at driveways and street intersections. They may increase conflicts, delays, and crashes and often complicate traffic signal timing. These problems are especially acute at major highway movements enter or leave driveways serving adjacent land development. As with left-turn movements, right-turn movements pose problems at both driveways and street intersections. Right-turn movements increase conflicts, delays, and crashes, particularly where a speed differential of 10mph or more exists between the speed of through traffic and the vehicles that are turning right.

Table 2-3 presents thresholds for auxiliary lanes. These thresholds represent examples of where left turn and right turn lanes should be considered. Refer to the TxDOT *Roadway Design Manual*, Chapter 3, for proper acceleration and deceleration lengths.

Table 2-3: Auxiliary Lane Thresholds

Median Type	Left Turn to or from Property		Right Turn to or from Property (5)	
	Acceleration	Deceleration	Acceleration	Deceleration
Non-Traversable (Raised median )	(2)	All	Right turn egress > 200vph (4)	◆ > 45mph where right turn volume is > 50vph (3) ◆ ≤ 45 where right turn volume is > 60vph (3)
Traversable (Undivided Road)	(2)	(1)	Same as above	Same as above

(1) Refer to Table 3-11, TxDOT Roadway Design Manual, for alternative left-turn-bay operational considerations. (2) A left-turn acceleration lane may be required if it would provide a benefit to the safety and operation of the roadway. A left-turn acceleration lane would interfere with the left-turn ingress movements to any other access connection. (3) Additional right-turn considerations: Conditions for providing an exclusive right-turn lane when the right-turn traffic volume projections are less than indicated in Table 2-3: • High crash experience • Heavier than normal peak flow movements on the main roadway • Large volume of truck traffic • Highways where sight distance is limited Conditions for NOT requiring a right-turn lane where right-turn volumes are more than indicated in Table 2-3: • Dense or built-out corridor where space is limited • Where queues of stopped vehicles would block the access to the right turn lane • Where sufficient length of property width is not available for the appropriate design (4) The acceleration lane should not interfere with any downstream access connection. The distance from the end of the acceleration lane taper to the next unsignalized downstream access connection should be equal to or greater than the distances found in Table 2-1. Additionally, if the next access connection is signalized, the distance from the end of the acceleration lane taper to the back of the 90th percentile queue should be greater than or equal to the distances found Table 2-1. (5) Continuous right-turn lanes can provide mobility benefits both for through movements and for the turning vehicles. <sup>1</sup>Access connections within a continuous right turn lane should meet the spacing requirements found in Table 2-2. However, when combined with crossing left in movements, a continuous right-turn lane can introduce additional operational conflicts.

<sup>1</sup> Florida Department of Transportation (FDOT), Florida's Driveway Handbook, 2002.

## PERMITS

No construction work on the driveway shall be undertaken on the right of way until a fully executed driveway permit has been received by the applicant and the applicant has given 48-hour notification to the County and Authority.

A driveway must be constructed in accordance with a fully executed driveway permit and all applicable regulations. A County inspector will review the driveway construction to determine if it is acceptable or if modifications are needed. A driveway will be considered an authorized permitted driveway installation only after construction has been completed and the construction has been determined to be satisfactory to the County after consultation with Authority.

Any impacts to drainage on the state highway system resulting from installation of access driveways must be coordinated with and approved by the County after consultation with Authority.

## DRIVEWAY DESIGN

All parts of entrances and exits on highway right of way, including the radii, shall be confined within the permittee's property frontage. Frontage is that portion of the right of way lying between two most distant possible lines drawn perpendicularly from the centerline of the highway to the permittee's abutting property line.

When the permittees of two or more adjoining properties agree to combine their property frontage for a shared access driveway, the combination would be encouraged and authorized under the applicable regulations. The County after consultation with Authority reserves the right to require an applicant to permit shared access where appropriate to minimize the number of access points. The frontage will then be the portion of the right of way lying between the two most distant possible lines of the combined frontage drawn perpendicularly from the centerline of the highway to the permittees' abutting property lines.

At any intersection of a toll road / freeway with another highway, road, or street where the existing right of way is flared or widened to allow for additional sight distance, no access driveway will be permitted within the flared or widened right of way section.

Fixed objects will not be allowed in the highway right of way.

The angle of the driveway from the highway pavement shall be 75 to 90 degrees, except that one-way 45 to 90 degree angle driveways will be permitted for connections to one-way frontage roads.

All driveway construction shall comply with the Americans with Disabilities Act Accessibility Guidelines and Texas Accessibility Standards requirements and standards. The applicant shall provide appropriate access as determined by the County after consultation with Authority regardless of the presence of adjacent sidewalks.

The width of a private residential driveway shall not exceed 24 feet measured at right angles to the centerline of the driveway, except as increased by permissible radii. The radius connecting the driveway to the highway pavement shall not be less than 15 feet.

A typical design for a private farm/ranch driveway should provide a 25-foot return radii and a 20-foot throat width. The distance from the edge of the highway pavement to a gate must be sufficient to store the longest vehicle, or combination of vehicles anticipated for use of the property. At a minimum, this distance should accommodate a pickup truck with trailer.

The width of a commercial driveway and the radius of curvature connecting the driveway to highway pavement may vary in size depending on traffic and location and should be selected in accordance with Appendix C of the TxDOT, Roadway Design Manual.

A divided commercial driveway having a one-way in and a one-way out, must provide for a raised separation (4-inch height) between the entry and exit lanes. The separation area may be landscaped or may contain a surface material having a contrasting color to the driveway pavement that will be highly visible to motorists. An excessively wide raised separator may be confusing to motorists and may appear to be two closely spaced two-way driveways. To avoid this problem, the maximum allowable width of a raised separator in a divided driveway is 15 feet. Exceptions to the raised separation requirements must be approved by the County after consultation with Authority.

### DRAINAGE

Drainage in highway side ditches shall not be altered or impeded. When drainage structures are required, the size and other design features shall be approved by the County after consultation with Authority.

Access driveways shall be constructed to match the grade of the highway pavement edge or the shoulder edge if a shoulder is present. The driveway shall be designed and constructed in such a manner as to not impede the flow of water away from the highway pavement.

If the driveway is approved to be constructed at grade through the roadside ditch or natural grade of the roadside, the driveway shall be paved with a stabilized all weather surface material acceptable to the County to conform to the cross section shape of the ditch or other natural grade of the roadside to form a stable driveway. An exception to using stabilized new surface may be approved by the County after consultation with Authority if the roadside or ditch is naturally stabilized with rock which may be driven on without eroding or rutting in all types of weather.

Safety end treatments will be used for all driveways with drainage structures constructed within the highway right of way. The side slopes of the driveways must not be greater than the slope of the required safety end treatment and shall match the slope of the safety end treatment at the junction of the two. Approved safety end treatments may be found on TxDOT's website, standard CAD drawing under Bridge Standards for Safety End Treatments. The most frequently used standard is 'Parallel Drainage for 12"-72" Diameter.' These can be found under Bridge Standards (English), Safety End Treatments. The design requirements of the safety end treatments are as follows:

- There shall be no culvert headwalls or similar vertical ends.  Ends shall be sloped at 6:1 (6 horizontal to 1 vertical) or flatter, with concrete riprap to prevent erosion and to protect the pipe end.  The access driveway embankment slope shall be 6:1 maximum, with 8:1 preferred beginning at the edge of the driveway pavement.
- For pipes greater than 30 inches in diameter or multiple pipes with individual diameters greater than 24 inches, grates shall be provided with maximum slope of 6:1 or a preferred slope of 8:1. Cross-pipes are not required on small (single pipes having a diameter of 30 inches or less) structures regardless of end location with respect to the horizontal clearance requirements; however, the ends of small structures shall be sloped and provided with concrete riprap as described above.

A ditch within the highway right of way may be filled in with dirt or other approved material, provided that prior County approval is obtained and the following conditions are met:

- The property along the right-of-way frontage has two or more permitted driveways that are in compliance with the "Number, Location and Spacing of Access Connections" requirements described herein.
- Surface drainage shall be provided so that all surface water on the filled-in area shall be carried away from the highway roadbed in a suitable manner.  The design of a drainage structure underneath the filled-in area shall be adequate to carry the flow of water in the highway ditches.
- The filled-in area shall be sufficiently delineated and, where required by the County after consultation with Authority, delineation or other satisfactory methods shall be used to prevent the use of the area for parking or travel. The area shall be kept free of obstructions.

- The filled-in area shall extend from the right-of-way line to the edge of pavement, edge of shoulder or back of curb as the case may be. Other requirements may be imposed by the County after consultation with Authority for filled-in areas in order to conform with planned future improvements to the existing highway section.
- The filled-in area and safety end treatment on the drainage structure may not extend beyond the boundary line of the permittee's property without written consent of the adjoining property owner whose property will contain the extension.

#### **MATERIALS**

The permittee shall furnish all materials necessary for the construction of the access driveways and all appurtenances authorized by the permit. All materials shall be of satisfactory quality and shall be subject to inspection and approval by the County after consultation with Authority. Access driveways shall be paved with a stabilized all weather surface material acceptable to the County after consultation with Authority to prevent tracking mud onto the highway and to prevent damage to the edge of the roadway from vehicles using the driveway.

#### **TRAFFIC CONTROL, SIGNING AND PAVEMENT MARKINGS**

The permittee shall include appropriate temporary traffic control devices (during construction) and permanent signing and pavement markings in the plans. The latest version of the Texas Manual on Uniform Traffic Control Devices shall be used for the design.