The design of driveways shall comply with the guidelines of AASHTO's A Policy on Geometric Design of Highways and Bridges, current edition. However, this chapter provides a summary of the minimum design constraints that will be checked during the plan review process. All modes of transportation should be taken into consideration, cars, pedestrians, bikes and trucks.

The geometric design of an intersection is a collection of various elements - such as radius, width, grade, angle of intersection, etc, - that in combination provide for satisfactory operation of the vehicles that will use the intersection. Since the operating characteristics vary dramatically for different types of vehicles, the designer must first establish the design vehicle on which to base the design. The designer should also check the final design to ensure the design vehicles can operate satisfactorily. In addition, if the applicant can demonstrate that his design can accommodate the appropriate design vehicle even though one or more design elements do not meet the minimum values contained in this chapter, the Department may approve the plans.

4-A DESIGN FOR TRUCKS

The design criteria given in this chapter have more stringent requirements for trucks. Even though the general use of such guidance would result in more desirable operations for all vehicles, it is neither practical nor necessary to design all facilities to accommodate trucks. The designer must use judgment in selecting the proper design vehicle.

When semi trailer combination trucks are expected to use the intersection on a regular basis and in numbers more than just an occasional vehicle, then the intersection should be designed to accommodate the truck movements. This includes most driveways designed for industrial use and many commercial driveways.

For commercial uses such as shopping centers, the preliminary site plan should indicate where heavy-duty pavement would be provided to accommodate truck access to loading docks. Any driveway associated with access/egress for the loading docks should use the truck radii. Minor movement driveways, particularly those that allow only right turns will generally only be used by passenger cars.

4B DRIVEWAY WIDTH

When traffic impact studies are required (see Section 2D), the driveway shall be designed to provide the number of lanes recommended in the study. Standard lane widths are 12'.

When the need for multiple lanes is not established from a traffic impact study, the minimum and maximum driveway widths are as set forth in Table 4-1.

DRIVEWAY USE	WIDTH, FT	
	Minimum	Maximum
CURRENT RESIDENTIAL GA STD.	14	20
CURRENT COMMERCIAL (ONE WAY) GA STD	16	20
CURRENT COMMERCIAL (TWO WAY) GA STD	24	40
MINING, LOGGING, FARMING, AGRICULTURAL	18	24

TABLE 4-1 DRIVEWAY WIDTHS

Note: When a traffic study indicates multiple lanes requiring greater widths, this table does not apply.

4C CORNER RADII

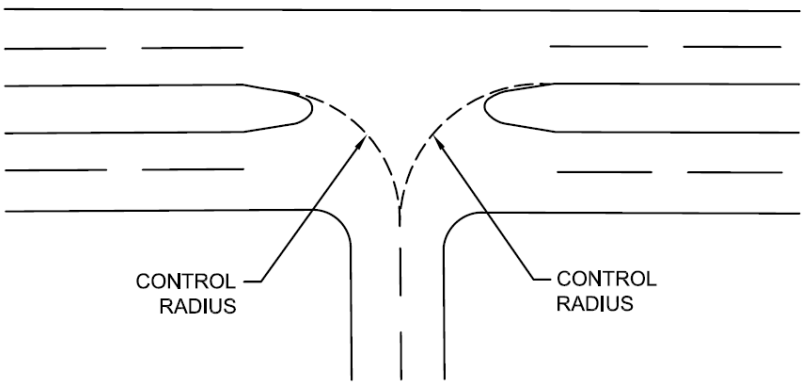
Corner radii are generally established by the minimum path of the inside wheels of the design vehicle when making a right turn. The minimum corner radii to be used for driveways are given in Table 4-2. The size of the radius is determined by the development use typical design vehicle.

DRIVEWAY USE	MINIMUM RADIUS, FT
RESIDENTIAL	15
COMMERCIAL	35
WHEN DESIGNED FOR TRUCKS	75

TABLE 4-2 MINIMUM CORNER RADII

4D LEFT TURNING CONTROL RADII

The path of the inside wheels during left turns is also important for the design of median openings and intersections with dual left turn lanes. Table 4-3 contains guidelines for minimum left turning radii.



DRIVEWAY USE	Control Radius, Ft
RESIDENTIAL	40
COMMERCIAL	50

TABLE 4-3 LEFT TURNING CONTROL RADIUS

4E MEDIAN CROSSOVER DESIGN

Driveways onto Divided State Highways where full access is to be provided shall be designed in accordance with Georgia DOT Construction Details for Median Crossovers. The detail has three types of designs (See Figure 4-1) that are applicable in different situations.

4E-1 TYPE A MEDIAN CROSSOVER

Type A median crossovers may be considered on low volume rural roadways. This type of median crossover is only allowed when the projected volume of left turning vehicles does not exceed 20 per hour per direction.

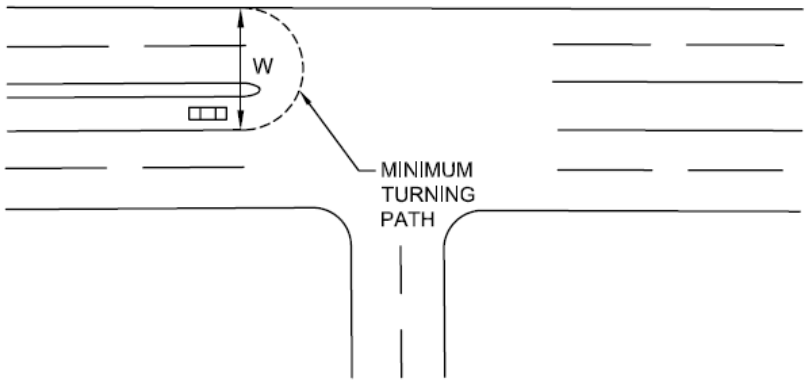
4E-2 TYPE B MEDIAN CROSSOVER

Type B median crossovers are required when the projected volume of the left turn movement exceeds 20 vehicles per hour per direction and/or when the median width is sufficient to offset the left turn lane from the adjacent through lane. This design provides better sight distance for vehicles in the left turn lane. This is important for unsignalized intersections and when unprotected turns are allowed at signalized intersections.

4E-3 TYPE C MEDIAN CROSSOVER

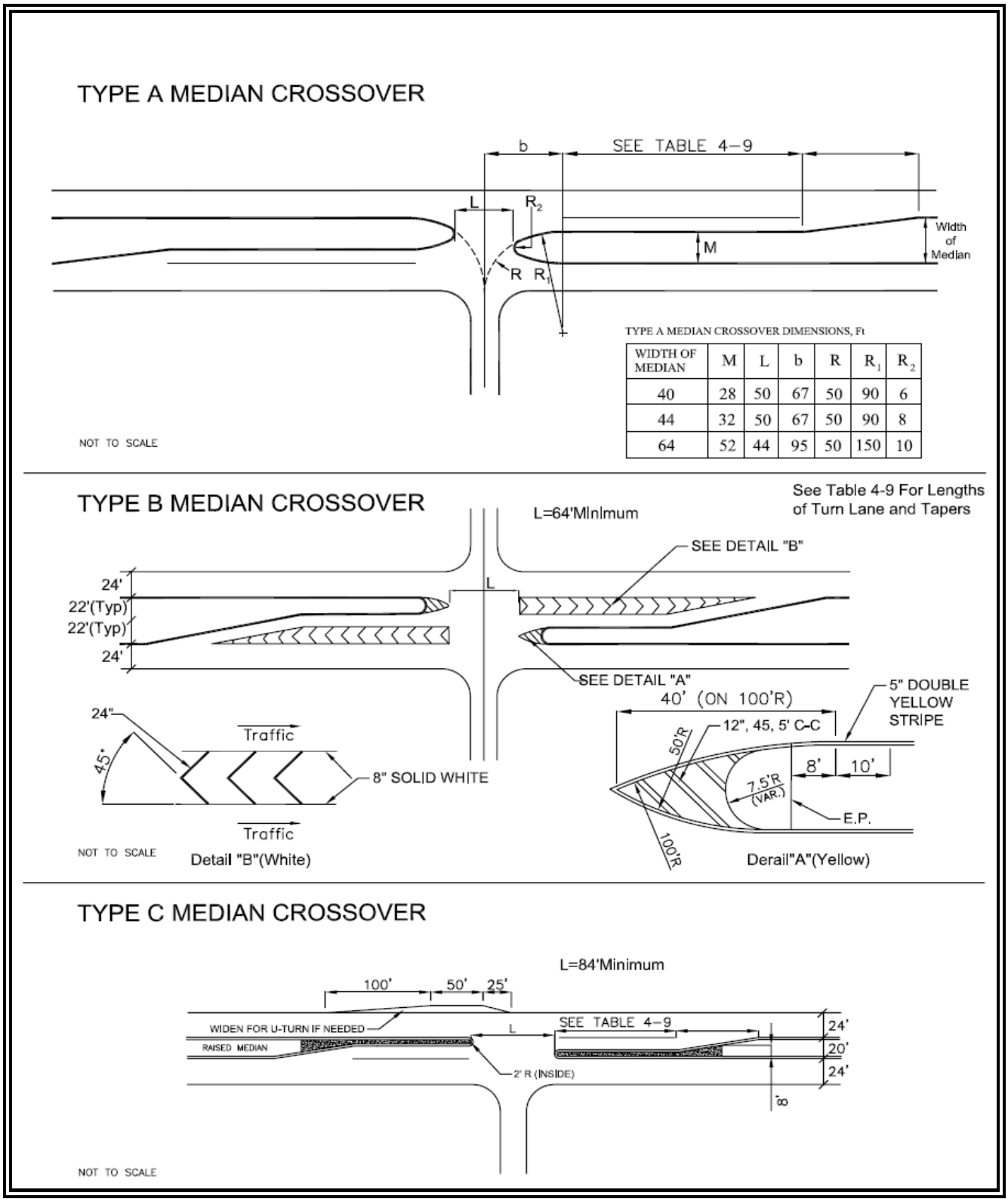
Type C median crossovers are typically used in urban areas where the median width is limited to approximately 24' or less. With this type of crossover, it may be necessary to add pavement to the opposite edge in order to accommodate U-Turns.

Table 4-4 illustrates the minimum pavement width that is required for some vehicles to make U-Turns. The required width is given for passenger cars and for WB-50 trucks.



DRIVEWAY USE	MINIMUM WIDTH (W), FT
PASSENGER CAR	48
WB - 50 TRUCK	90

TABLE 4-4 MINIMUM ROAD WIDTH FOR U-TURNS



TYPE A MEDIAN CROSSOVER DIMENSIONS, Ft

WIDTH OF MEDIAN	M	L	b	R	R_1	R_2
40	28	50	67	50	90	6
44	32	50	67	50	90	8
64	52	44	95	50	150	10

FIGURE 4- 1 GEORGIA DOT CONSTRUCTION DETAILS FOR MEDIAN CROSSOVERS

4F HORIZONTAL ALIGNMENT

In general, the horizontal alignment of driveways should be designed using a tangent section from the centerline of the State Highway and extending to the property line. Horizontal curves that are used outside the State Highway Right of Way are generally not part of the permit issued by the Department.

Horizontal curves should be sufficient to provide safe operations at speeds that would normally occur in the areas where they are constructed.

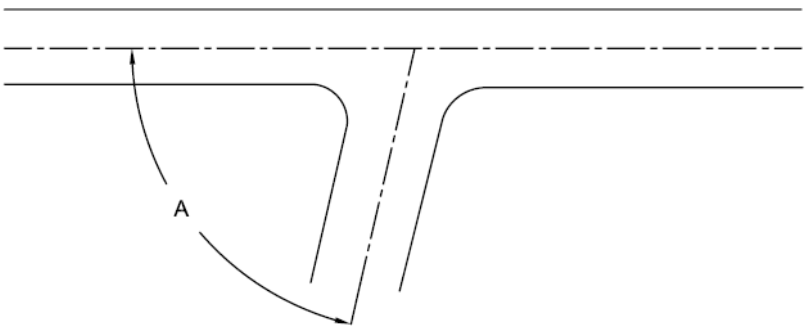
4F-1 ANGLE OF INTERSECTION

Intersecting driveways and roads should generally meet at or nearly at right angles. Driveways and roads intersecting at acute angles create sight limitations that should be avoided.

In some cases, a more suitable overall design can be achieved by allowing intersecting angles other than 90 degrees. Table 4-5 gives the minimum angle of intersection that will generally be allowed for driveways designed to accommodate two-way traffic flow. Figure 4-2 illustrates the minimum angle of intersection for one-way right turn only driveways.

4F-2 ALIGNMENT OF APPROACH AND DEPARTURE LANES

Driveways should be designed and constructed so as to align with driveways or streets on the opposite side of the highway. The alignment of through movements crossing the highway should be such that abrupt shifts in the travel pattern are not required.



DRIVEWAY USE	Minimum Angle of Intersection (A), Degrees
Residential	70
Commercial	85
When Designed for Trucks	88

TABLE 4-5 MINIMUM ANGLE OF INTERSECTION FOR TWO-WAY DRIVEWAYS

Driveways designed for one-way right turn only traffic flow may have intersecting angles as low as 70 degrees, as illustrated in Figure 4-2.

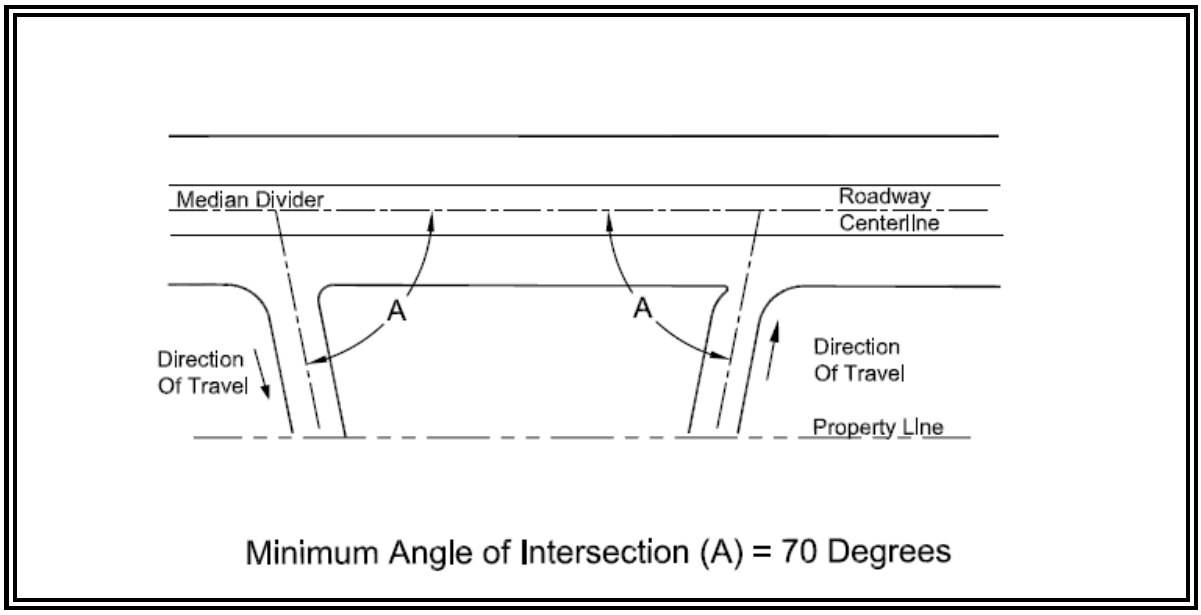


FIGURE 4- 2 MINIMUM ANGLE OF INTERSECTION FOR ONE-WAY DRIVEWAYS

4G DRIVEWAY TIE-IN CONFIGURATIONS

4G-1 DRIVEWAY CONNECTIONS TO URBAN SECTIONS

This section describes the requirements for constructing driveway connections to State Highways with curb and gutter. Georgia DOT has two Standard Detail Drawings (A1 and A2) that describe the appropriate design and construction methods for these conditions. The basic layout of the two configurations is schematically shown in Figure 4-3.

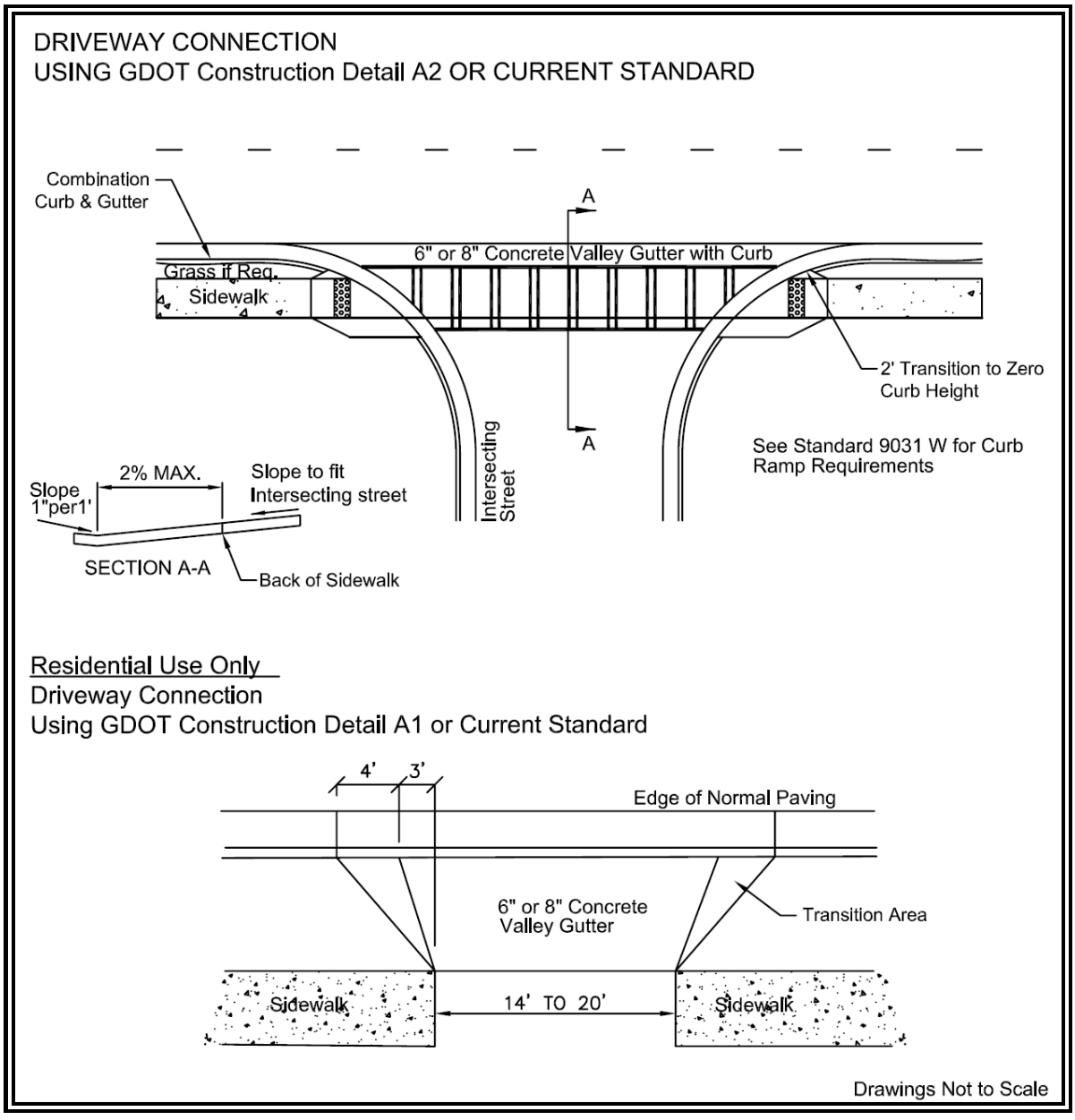


FIGURE 4-3 DRIVEWAY CONNECTIONS TO URBAN SECTIONS

Note: Please use the current ADA requirements when applying Figure 4-3. Only use GDOT Construction Detail A-1for Residential Driveways. Connections shown in ~~Standard 9031J~~ Construction Detail A2 are commonly used for commercial driveways, while the configuration given in Construction Detail A-1 is typically used for residential driveways. Figure 4-3 is a simplified diagram of the details. The designer should refer to the actual GDOT Construction Details when preparing driveway plans for the most current standards.

The actual dimensions of lane widths, radii, etc. should be as specified in relevant sections of this document. Figure 4-3 also does not show deceleration or turn lanes. See section 4I for guidelines on deceleration lane requirements and their dimensions.

4G-2 DRIVEWAY CONNECTIONS TO RURAL SECTIONS

The section describes the requirements for connecting to State Highways that do not have curb and gutter.

The basic configuration and requirements for connecting a driveway that will not have curb and gutter into a State Highway that also does not have curb and gutter are illustrated in Figure 4-4.

The ends of the driveway pipe should be extended to maintain a minimum six (6) feet shoulder. The side slope should normally be less than 6:1 but shall be no greater than 4:1.

When ditches are constructed on the State Right-of-Way, the front slope should be no greater than 4:1. When the bottom of the ditch is between 5’ and 8’ below the edge of pavement, the front slope can be increased to 3:1. When the ditch is greater than 8’ below the edge of pavement, the front slope can be increased to 2:1. In any case, when the front slope is greater than 4:1, guardrail should be used.

Figure 4-4 shows a deceleration lane, which in some conditions is not required. See section 4I to determine if a deceleration lane will be required.

For connecting a driveway that will have curb and gutter to a State Highway without curb and gutter, see Figure 4-5.

Curb and gutter should not be used adjacent to a travel lane on a road with posted speed limits above 45 MPH. A 4” mountable curb and gutter may be used along acceleration/deceleration lanes or a designated turn lane but not along the taper.

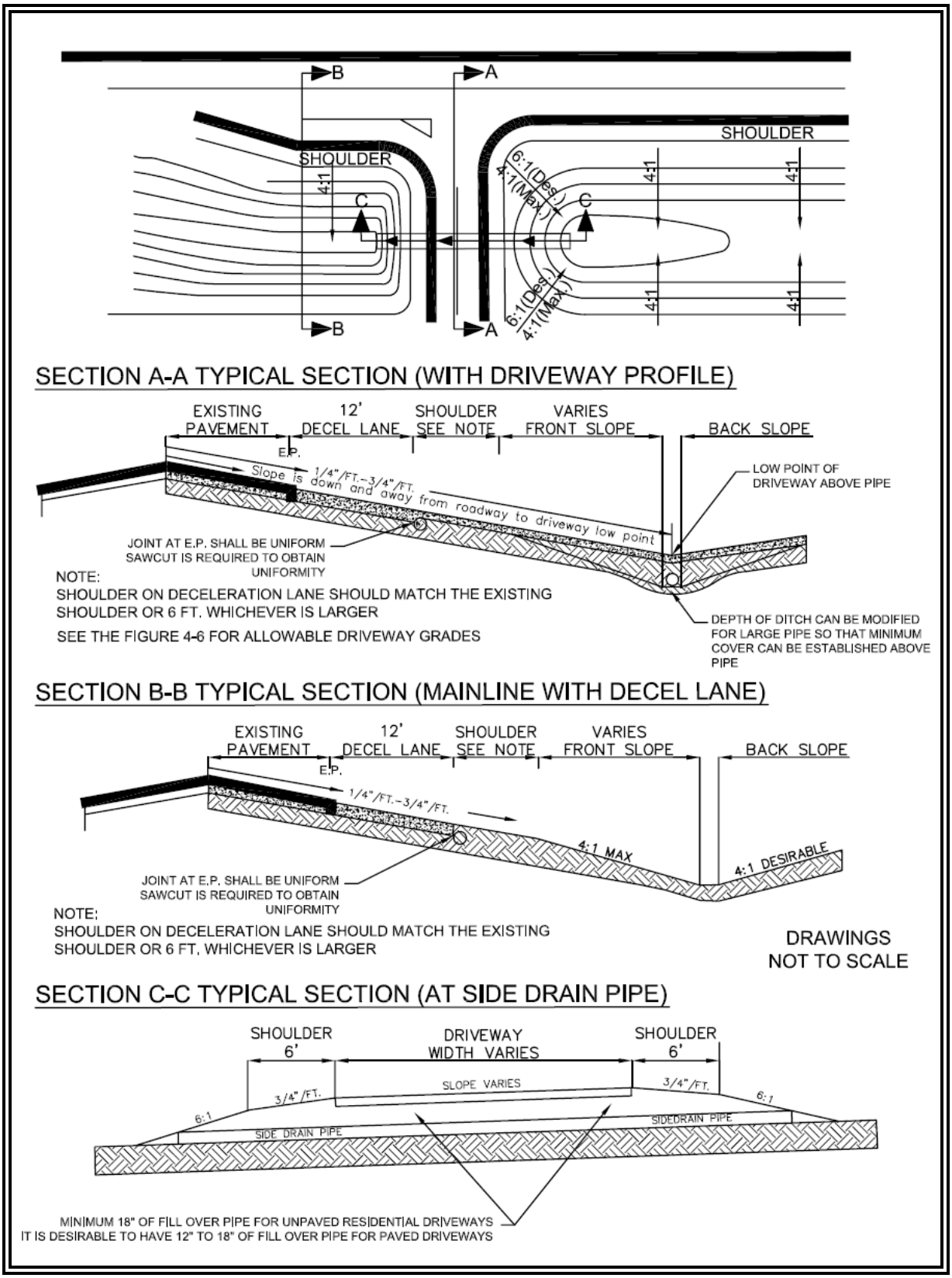


FIGURE 4-4 DRIVEWAY CONNECTION TO RURAL ROADWAYS

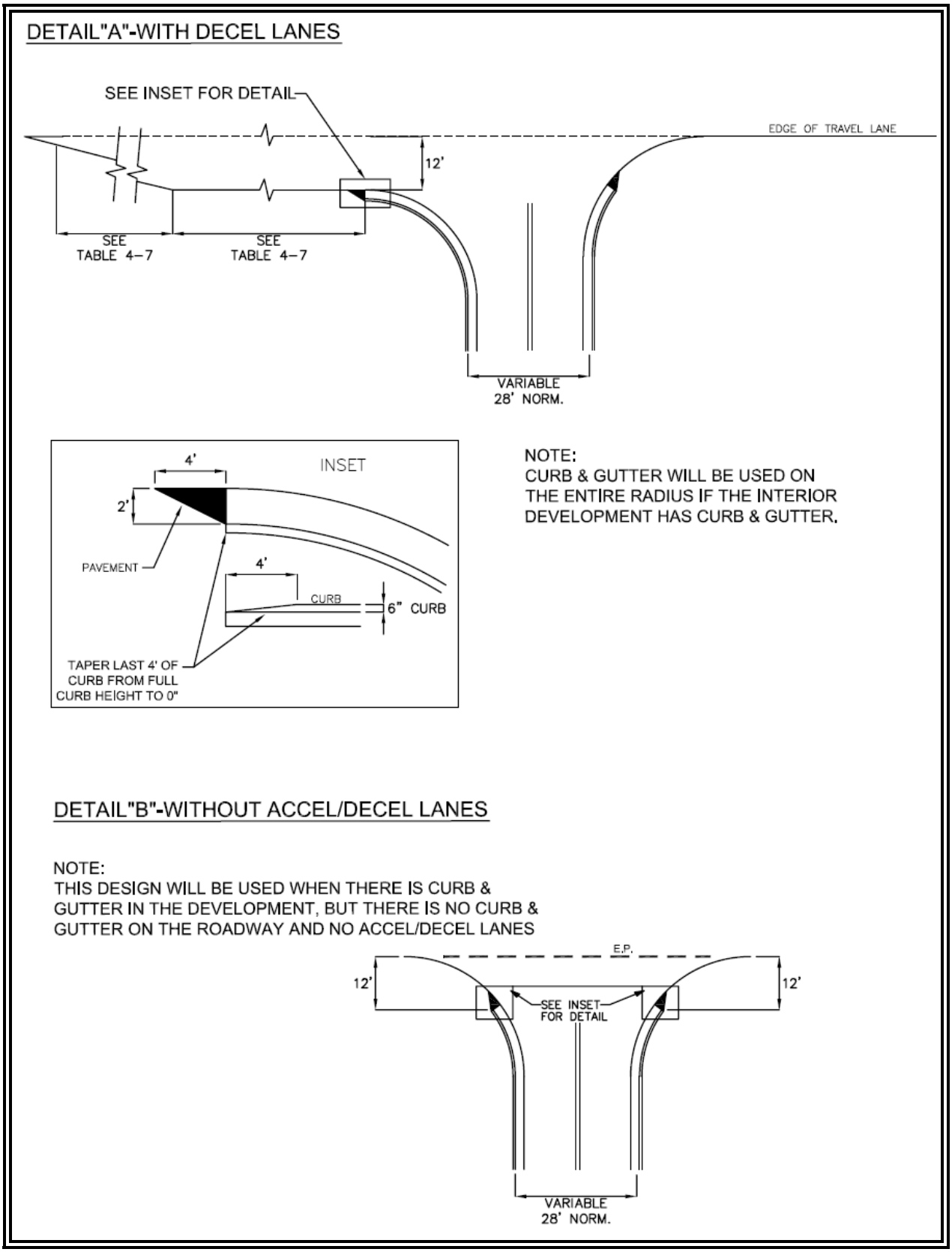


FIGURE 4-5 CONNECTING DRIVEWAYS WITH CURB & GUTTER TO RURAL SECTIONS

4H DRIVEWAY GRADES

In general, the grade of the driveway should be a continuation of the cross slope of the roadway that it connects to. Figure 4-6 illustrates allowable grades for driveways connecting to State Highways.

Figure 4-6 (A) shows the profile of a driveway connecting to the normal cross section of a highway. The cross slope of the highway should be maintained for a minimum distance of 12’ beyond the edge of pavement.

Where the roadway pavement is super elevated, it is desirable to reduce the grade of the driveway below that of the super elevated pavement in order to reduce the amount of water draining across the highway. The grade of the driveway will be allowed to break at the edge of pavement. However, the difference in grade change must not exceed 0.08ft/ft., and be in accordance with Georgia Standard 9028C or current standard. See Figure 4-6 for a brief overview of this standard.

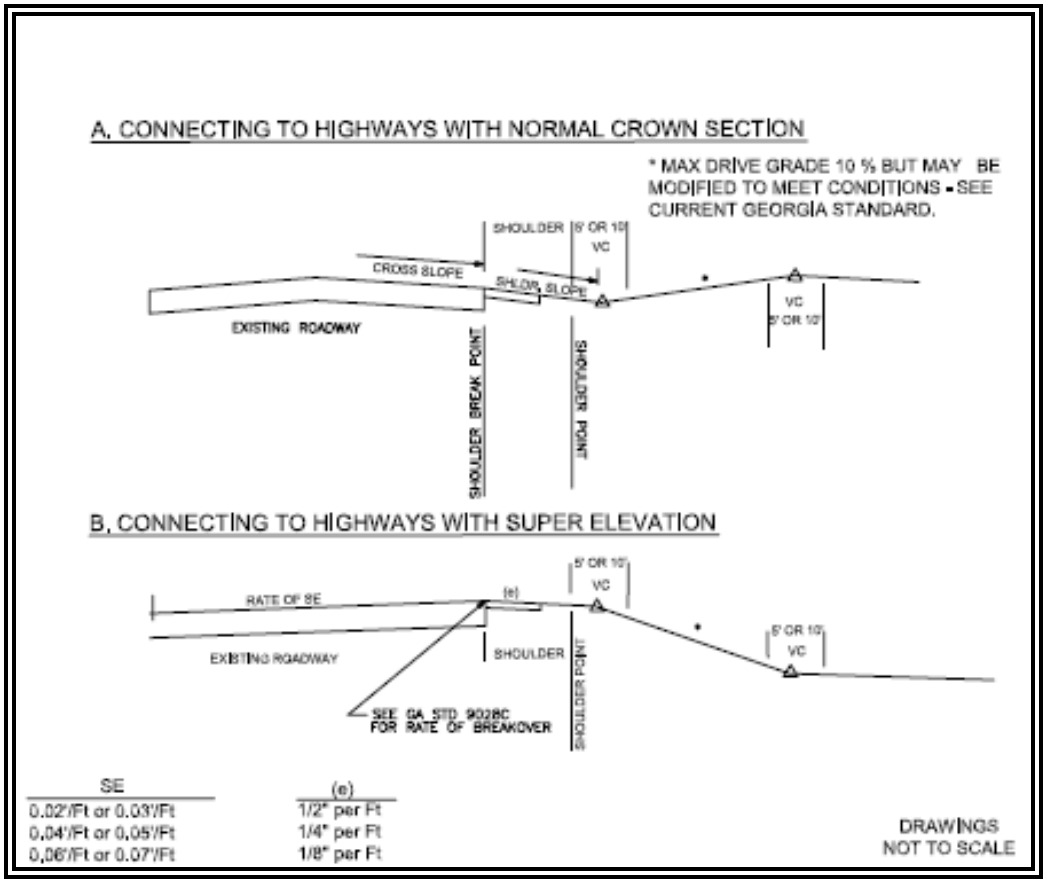


FIGURE 4-6 ALLOWABLE DRIVEWAY GRADES

4I AUXILIARY TURN LANES

4I-1 WHEN DECELERATION LANES ARE REQUIRED

The provisions of this section shall generally apply to auxiliary lanes installed on the approach to an intersection that provide for deceleration and storage of vehicles waiting to turn right or left. Such lanes are always beneficial and will be required in conjunction with commercial driveway permits when projected traffic volumes exceed minimum levels as provided in the sections below.

All existing utilities which would be under new pavement or in acceleration/deceleration lanes shall be relocated before final grading and paving, and at no cost to DOT. Existing utilities which are found to be not in conflict with construction, may be allowed if a Retention Request is processed by the utility owner and approved by the Department.

4I-1-1 Minimum Requirements for Right Turn Deceleration Lanes

Right turn deceleration lanes must be constructed at no cost to the Department if the daily site generated Right Turn Volumes (RTV) based on ITE Trip Generation (assuming a reasonable distribution of entry volumes) meet or exceed the values shown in Table 4-6. Passing lane sections fall under the criteria for two or more lanes.

POSTED SPEED	2 LANE ROUTES		MORE THAN 2 LANES ON MAIN ROAD	
	AADT		AADT	
	< 6000	>=6000	<10000	>=10000
35 MPH OR LESS	200 RTV a day	100 RTV a day	200 RTV a day	100 RTV a day
40 TO 50 MPH	150 RTV a day	75 RTV a day	150 RTV a day	75 RTV a day
55 TO 60 MPH	100 RTV a day	50 RTV a day	100 RTV a day	50 RTV a day
>= 65 MPH	Always	Always	Always	Always

TABLE 4-6 MINIMUM VOLUMES REQUIRING RIGHT TURN LANES

In the event the District Access Management Engineer determines that field conditions or other factors indicate that it would be in the best interest of the Department to waive the decel lane requirement, the District Access Management Engineer must document the recommendations using the form in **Appendix E**. The recommendations shall be approved by the District Engineer and be attached to the Permit. The District Access Management Engineer may also require the addition of a Right Turn lane, even when the conditions in Table 4-6 are not met, if roadway geometry or field conditions indicate that the safety of the traveling public would be improved. The recommendation must be documented and approved by the District Engineer for inclusion with the Permit.

The R/W for accel/decel lanes may be dedicated in fee simple to the Department for the Department to maintain or the applicant must sign an agreement with the Department to maintain the lane to the Department's standards and to hold harmless the Department in the event that section of roadway is identified in any liability action. A Limited Warranty Deed is not acceptable when R/W is donated to the Department.

The pavement specifications for accel/decel lanes must be Georgia DOT Standard Specifications for Construction of Roads and Bridges, or be as described and approved by the Chief Engineer in cases where a lesser design may be acceptable, or where a proposed project is expected to tie in.

4I-1-2 Minimum Requirements for Left Turn Lanes

Left turn lanes must be constructed at no cost to the Department if the daily site generated Left Turn Volumes (LTV) based on ITE Trip Generation (assuming a reasonable distribution of entry volumes) meet or exceed the values shown in Table 4-7a **Condition 1**. If the LTVs are below the requirements for **Condition 1**, the applicant may be required to construct a Right Hand Passing Lane (see **Figure 4-7** if they meet the criteria in Table 4-7b **Condition 2**. The District Access Management Engineer will use engineering judgment to determine if the field conditions would allow construction of the Right Hand Passing Lane. Passing lane sections fall under the criteria for two or more lanes.

Condition 1

LEFT TURN REQUIREMENTS-FULL CONSTRUCTION				
POSTED SPEED	2 Lane Routes		More than 2 Lanes on Main Road	
	ADT		ADT	
	<6000	>=6000	<10000	>=10000
35 MPH OR LESS	300 LTV a day	200 LTV a day	400 LTV a day	300 LTV a day
40 TO 50 MPH	250 LTV a day	175 LTV a day	325 LTV a day	250 LTV a day
>= 55 MPH	200 LTV a day	150 LTV a day	250 LTV a day	200 LTV a day

TABLE 4-7A MINIMUM VOLUMES REQUIRING LEFT TURN LANES

Condition 2

LEFT TURN REQUIREMENTS W/RIGHT HAND PASSING LANE OPTION		
POSTED SPEED	2 Lane Routes only	
	ADT	
	<4000	>=4000
35 MPH OR LESS	200 LTV a day	125 LTV a day
40 TO 45 MPH	100 LTV a day	75 LTV a day
50 TO 55 MPH	75 LTV a day	50 LTV a day

TABLE 4-7B MINIMUM VOLUMES REQUIRING RIGHT HAND PASSING LANES

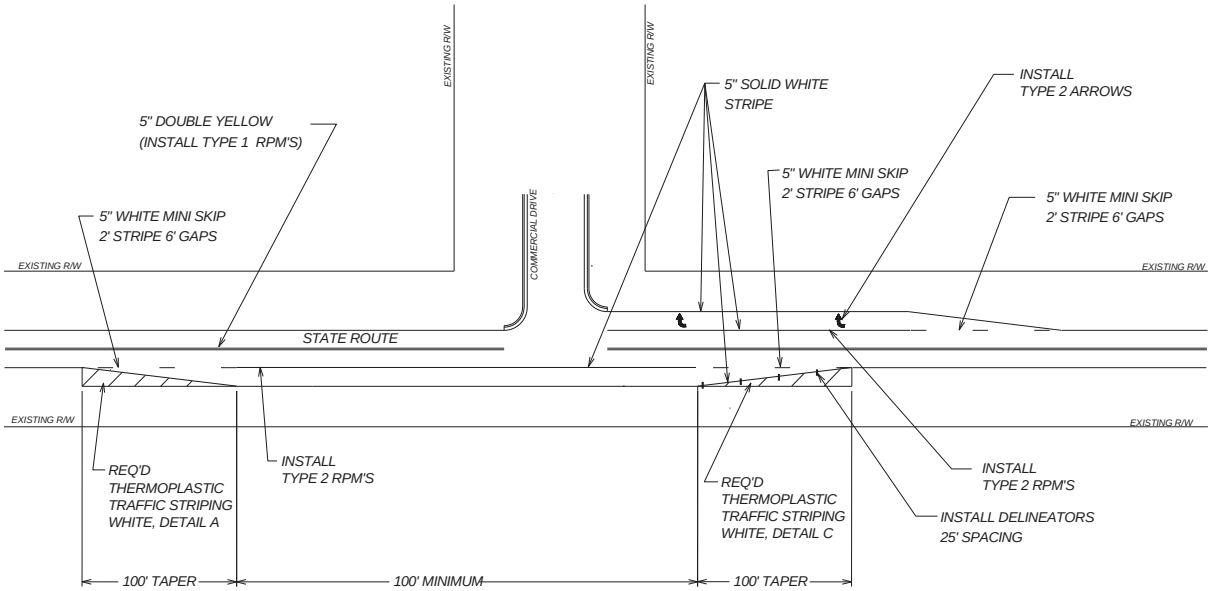


FIGURE 4-7 RIGHT HAND PASSING LANE

In the event the District Access Management Engineer determines that field conditions or other factors indicate that it would be in the best interest of the Department to waive the left turn lane requirement, the District Access Management Engineer must document the recommendations using the form in **Appendix E**. The recommendations shall be approved by the District Engineer and be attached to the Permit. The District Access Management Engineer may also require the addition of a Left Turn lane, even when the conditions in Table 4-7 are not met, if roadway geometry or field conditions indicate that the safety of the traveling public would be improved. The recommendation must be documented and approved by the District Engineer for inclusion with the Permit.

4I-2 RIGHT TURN LANE LENGTHS

This section provides the design guidelines that should be used to establish the lengths of turn lanes if they are required under the provisions of the previous section.

Under ideal conditions, turn lanes should provide a full-width lane that is long enough to allow for vehicles to decelerate from the operating speed to a full stop in addition to the length of full-width lane that is needed to store vehicles waiting to turn.

Table 4-8 contains guidelines for lengths of tapers and full-width turn lanes. The taper length in Table 4-8 applies to deceleration right turn lanes only. Guidelines for left turn tapers and lengths are given in Section 4I-4.

SPEED, MPH	FULL WIDTH STORAGE, FT	TAPER, FT
25		50
30	75	50
35	100	50
40	150	50
45	175	100
50	225	100
55	250	100
60	300	100
65	350	100

TABLE 4-8 MINIMUM RIGHT TURN DECELERATION LENGTHS

When traffic studies are conducted, the length of full-width lane needed for storage should be determined. If the length of full-width storage is greater than the length of full-width storage shown in Table 4-8, the longer length should be provided.

At signalized intersections, the amount of storage for both right and left turns can be based on the number of vehicles arriving during 1.5 signal cycles.

For unsignalized intersections, a commonly used rule of thumb is that left turn storage should accommodate vehicles arriving during a two-minute period. Minimal storage is required for right turn lanes at unsignalized intersections.

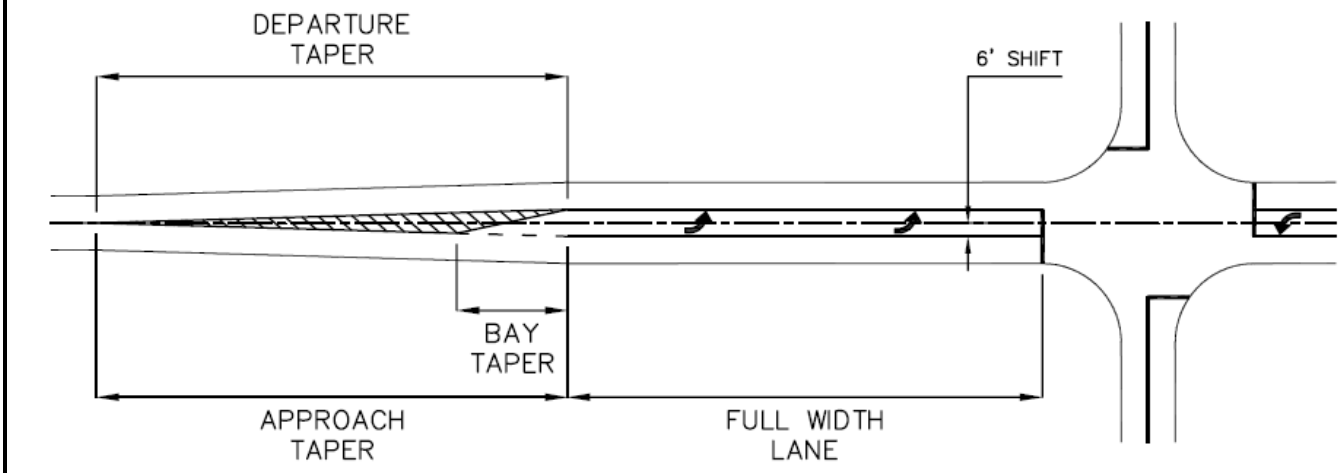
4I-3 ACCELERATION LANES

Acceleration lanes are generally not provided on low speed highways. Acceleration lanes may be required at locations where grade, sight distance or traffic is such that the Department determines they are needed. When operating speeds on the highway are 55 MPH and above, full-width acceleration lanes designed to meet the AASHTO minimum length should be considered.

4I-4 LEFT TURN LANE DESIGN

The design of left turn lanes should consider the intended function and the characteristics of the highway. In many cases, it is necessary to widen the existing roadway to introduce the left turn lane. All vehicles approaching the turn lane are shifted to the right. The left turning traffic is then shifted back into the lane. Through traffic is returned to its original lane beyond the intersection. When the highway has a median that is at least 20 feet wide, the left turn lane can be developed out of the median, avoiding the need for transitions.

The basic design elements of left turn lanes are illustrated in Table 4-9. This example shows symmetrical widening, which basically requires the through traffic on each side to shift by one half of the lane width. Some circumstances may dictate that all widening be achieved on one side, which requires a full lane shift for through traffic on the side where the additional width is developed. Table 4-9 provides guidelines for selecting the proper length of approach taper.



POSTED SPEED LIMIT, MPH	APPROACH AND DEPARTURE TAPER, FT		BAY TAPER, FT	FULL WIDTH STORAGE
	6' Shift	12' Shift		
30	90	180	50	135
35	125	250	50	160
40	160	320	50	210
45	270	540	100	235
50	300	600	100	285
55	330	660	100	310
60	360	720	100	360
65	390	780	100	410

TABLE 4-9 MINIMUM DESIGN ELEMENTS OF LEFT TURN LANES

The example shown in Table 4-9 has straight-line tapers. These are acceptable but other designs may also be used, including the following: partial tangent tapers, symmetrical reverse curve, and asymmetrical reverse curve. See latest edition of AASHTO green book for details.

The required length of full-width storage is based on the peak hour traffic volumes. This should be determined in the traffic study. The amount of storage is dependent on the type of traffic control in effect. For signalized intersections, the storage should be sufficient to accommodate the number of vehicles arriving during 1.5 signal cycles, using peak hour volumes. At stop-controlled intersections, the storage is typically based on the number of vehicles arriving during a two-minute period within the peak hour.

4I-5 DUAL LEFT TURN LANES

Dual left turn lanes are often needed to satisfy high volume demands. Capacity analysis should be used to identify the need for dual left turn lanes. Dual left turn lanes are typically considered when the peak hour left turn volume is 300 vehicles or greater.

The decision to use dual left turn lanes should consider the off-peak periods as well as the peak periods. The off-peak periods may be adversely affected, since the use of dual left turn lanes typically precludes permissive left turns.

If dual left turn lanes are included in the design, the following design guidelines should be considered:

- Because of off tracking and the added difficulty involving two-abreast turns, a minimum 30’ throat-width should be provided through the intersection.
- Pavement markings should be provided to guide the path of the turning vehicles.
- The design should be checked to ensure that conflicts are minimized between opposing left turn maneuvers. Figure 4-8, Example “A” shows the layout of marking for opposing dual left turn lanes. This layout provides an additional 10’ of width for the inside left turns to pass.
- When dual left turn lanes are located opposite from an approach that does not have a dual left turn lane, the design should minimize the lateral offset for vehicles traveling straight through the intersection. This can be accomplished by providing a median or striped-out area opposite the dual left turn lane. See Figure 4-8, Example “B”.

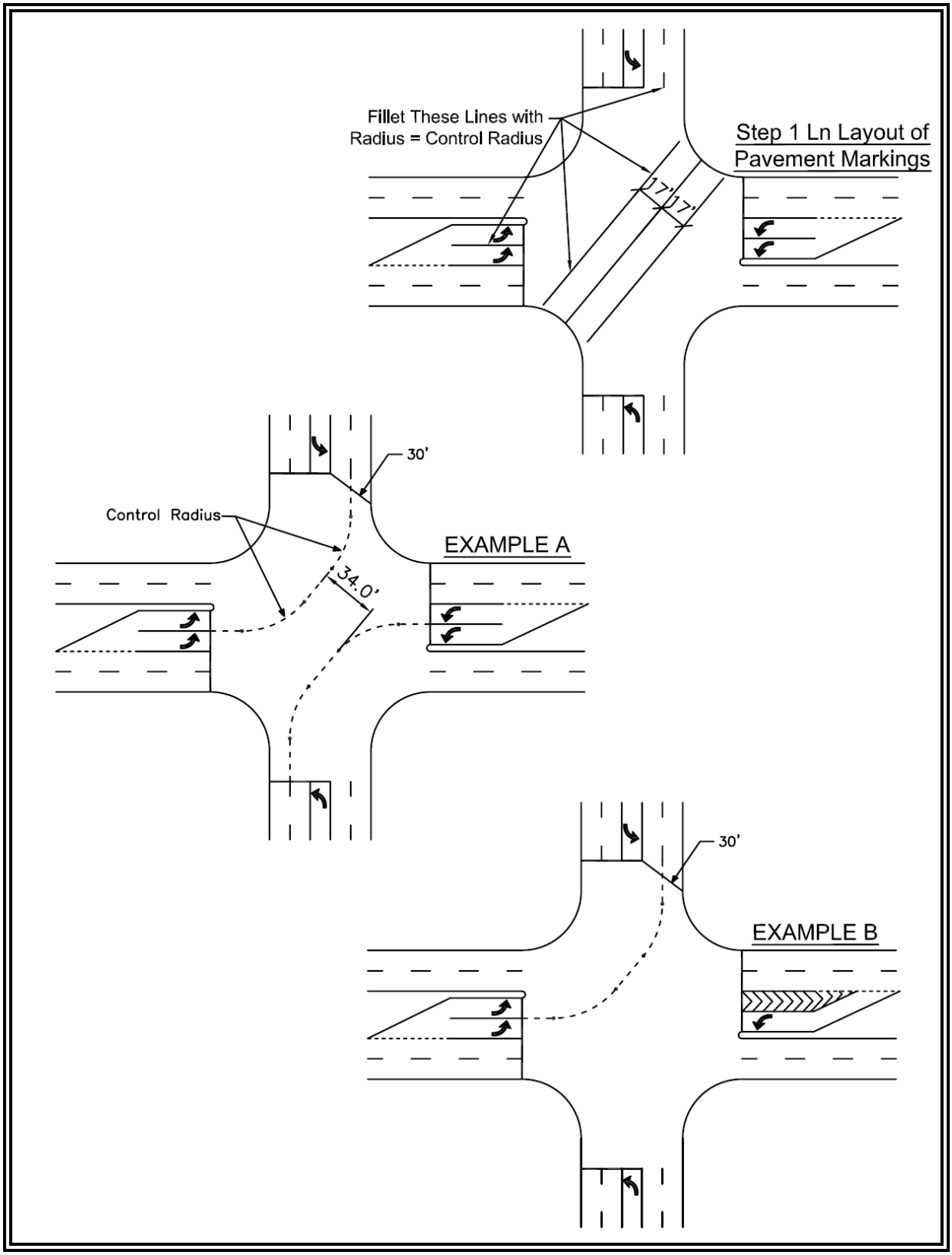


FIGURE 4-8 DESIGN OF DUAL LEFT TURN LANES

4J RAISED ISLANDS

Islands are an important form of intersection channelization that is often needed to accomplish the following objectives:

- Prohibit undesirable movements,
- Define the paths of allowed movements, and
- Provide a refuge area for pedestrians.

Painted lines are an effective means to direct the paths of vehicular movement. However, raised islands are more effective during times when visibility is reduced. When islands are to serve as pedestrian refuge areas, they should be constructed as raised islands.

Raised islands should be large enough to command attention and accommodate wheelchairs. The smallest raised island should have an area of 75 square feet. However, 100 square feet or more is desirable. (Refer to revised ADA standards)

When multiple crosswalks are required to pass through islands, the required size may exceed the 100 square feet mentioned above. The additional area may be required to install wheelchair ramps. As an alternate to ramps, the pedestrian travel way can be "slotted" through the island, remaining on the grade of the roadway.

Figure 4-9 shows a typical design for a raised corner island at a two-lane driveway. This design uses a radius of 65' and provides an island of sufficient size for wheelchair ramps and level landings.

Figure 4-9 also contains a median island along the driveway. This drawing should not imply that median islands or corner islands are required for all driveways. However, large painted islands may not serve the intended channelization purpose and the type island to be used should be based on the actual circumstances of the site.

Raised islands should be offset from the edge of the adjacent travel lane on all sides. The amount of offset shall be 4' desirable, 2' minimum. When raised islands are adjacent to highways with posted speed limits above 45 MPH, the island shall be offset from the edge of the highway by a minimum distance of 10'.

4J-1 RIGHT-IN / RIGHT-OUT DRIVEWAYS

Raised islands are also typically used to channelize the movements at a driveway where only right turns are allowed. The raised island is an effective means of preventing left turns. Figure 4-10 provides a typical design for right turn only islands. All sign posts to be placed within concrete area must have hole through pavement structure. The hole may be either formed, drilled or sawed.

A center raised concrete median shall be placed on the State Route in conjunction with the construction of a right in/right out driveway in the event the District Access Management Engineer determines that field conditions or other factors indicate the need for such median to help prevent left turn movements at the driveway.

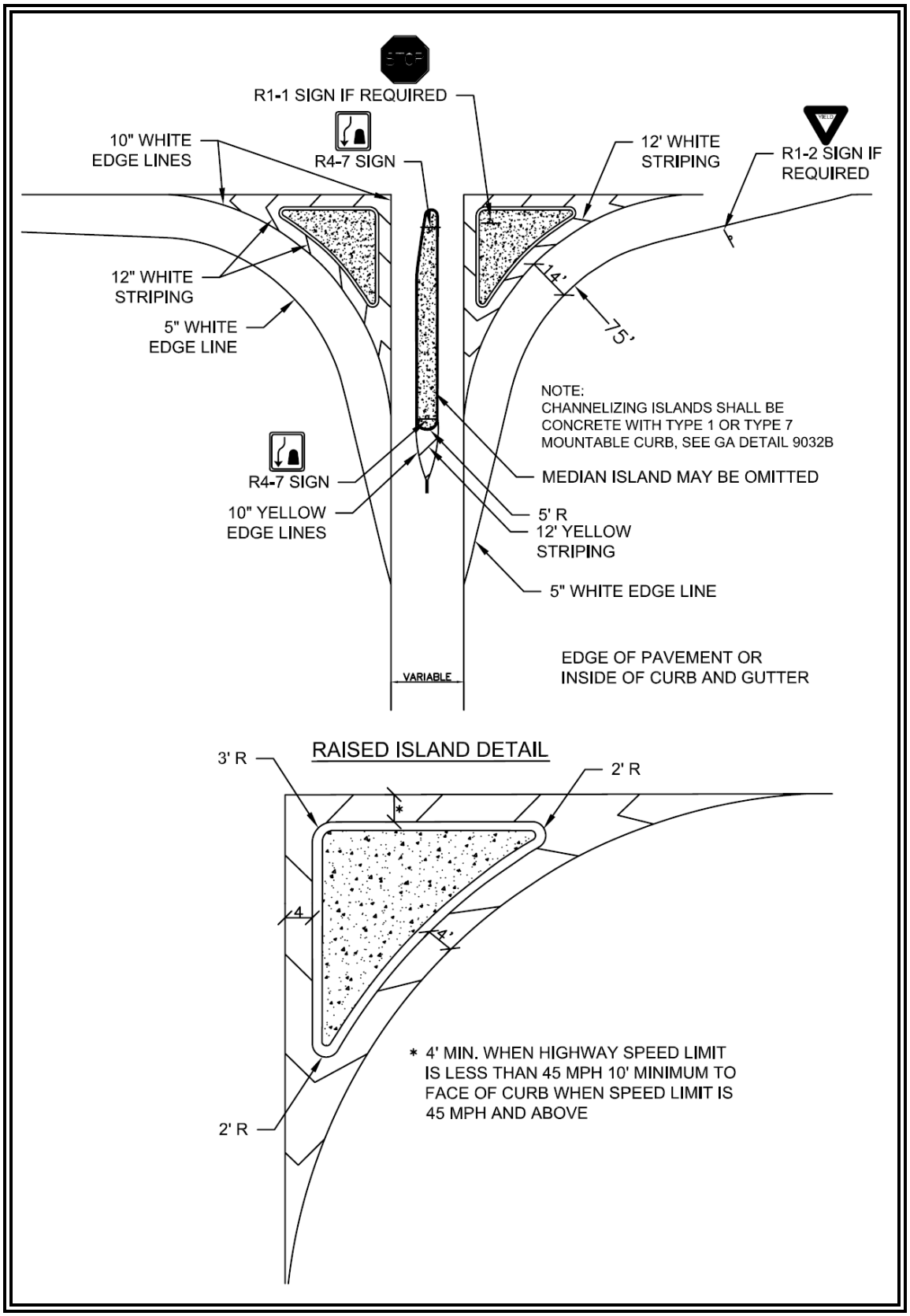


FIGURE 4-9 DESIGN OF RAISED ISLANDS

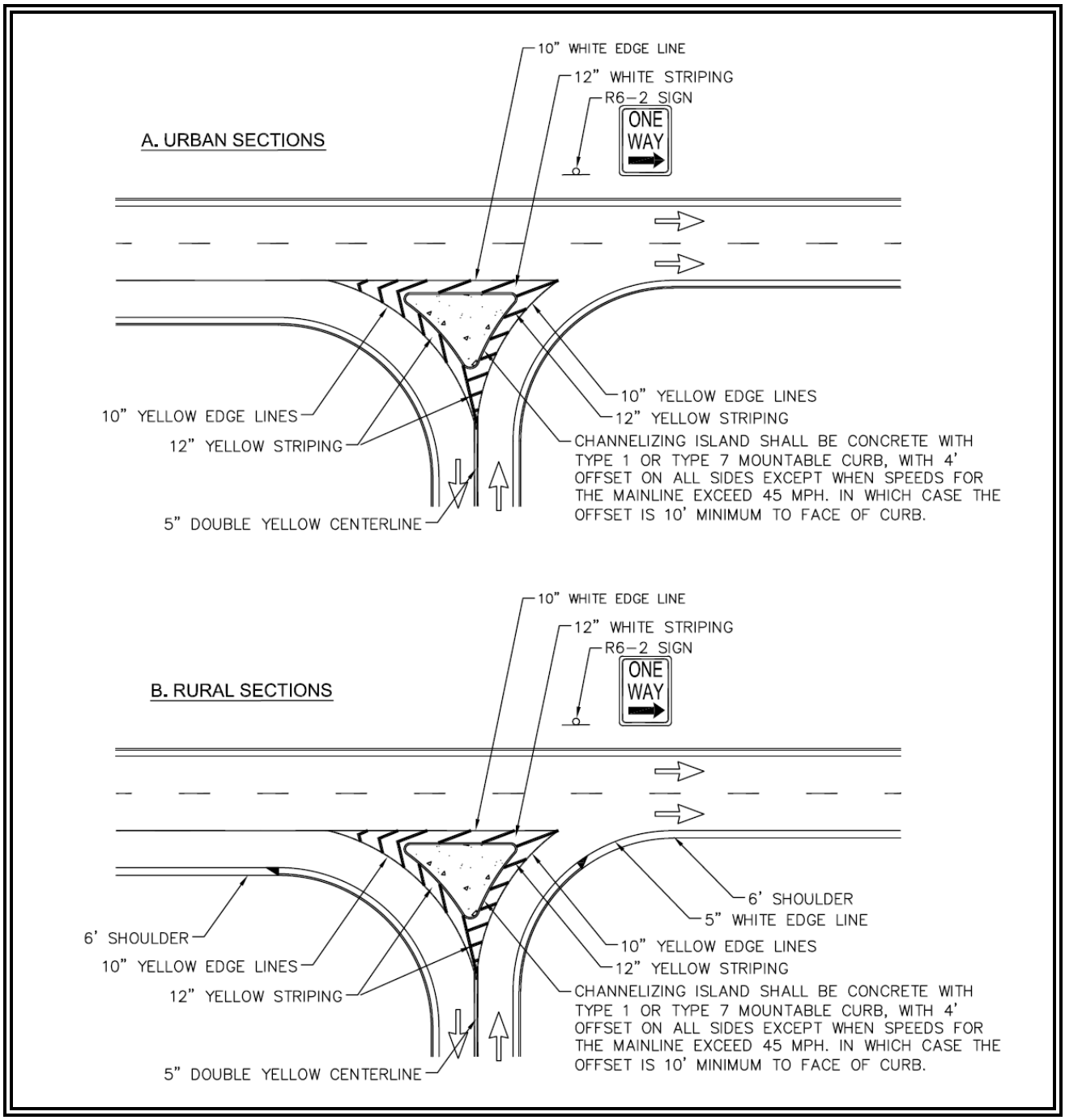


FIGURE 4-10 TYPICAL RIGHT-IN / RIGHT-OUT DRIVEWAY ISLANDS

4K PEDESTRIAN CONSIDERATIONS

When driveways are constructed in areas where pedestrian activity is not prohibited, the design should adequately provide for pedestrian movement and interaction with vehicular traffic. Pedestrian features that should be considered include sidewalks, crosswalks, traffic control features, and curb ramps are required. The Americans With Disabilities Act Accessibility Guidelines must be utilized where pedestrian traffic is expected.

Figure 4-11 contains typical locations for curb cut ramps. Ramps are required at all pedestrian crosswalks where curb is constructed or replaced.

The required crosswalk detail is also shown in Figure 4-11. See current Department Construction Details for the appropriate treatment. Refer to Pedestrian & Streetscape Guide.

Figure 4-12 contains typical locations for ramps in raised concrete traffic islands.

4L PAVEMENT DESIGN

All construction, within the right of way, of surfaces intended for travel by motorized vehicles shall be paved.

The pavement specification of auxiliary lanes on State Highways shall be the Georgia DOT Pavement Design, or the typical of the existing roadway, whichever is less.

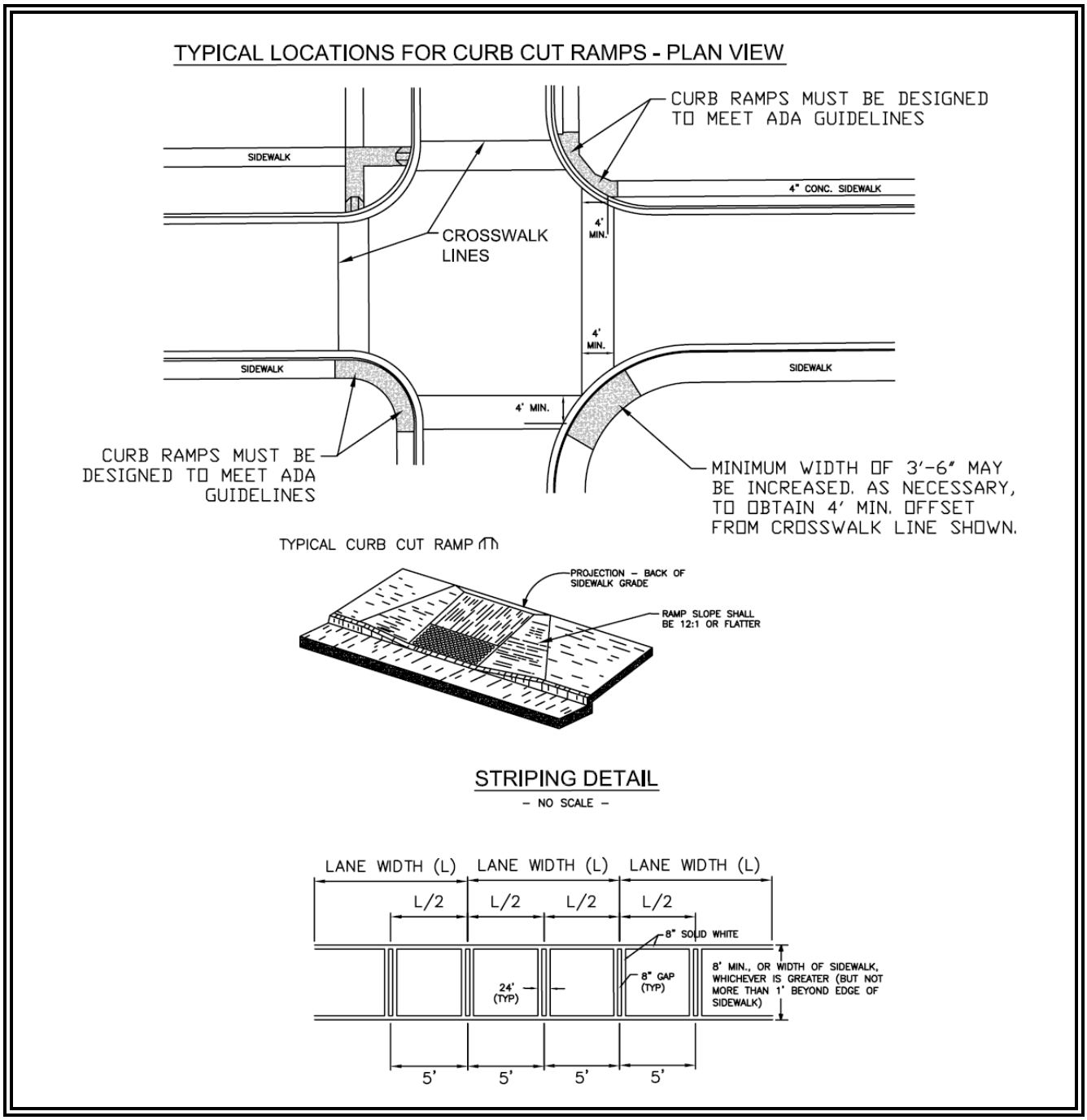


FIGURE 4-11 TYPICAL CROSSWALK DETAILS

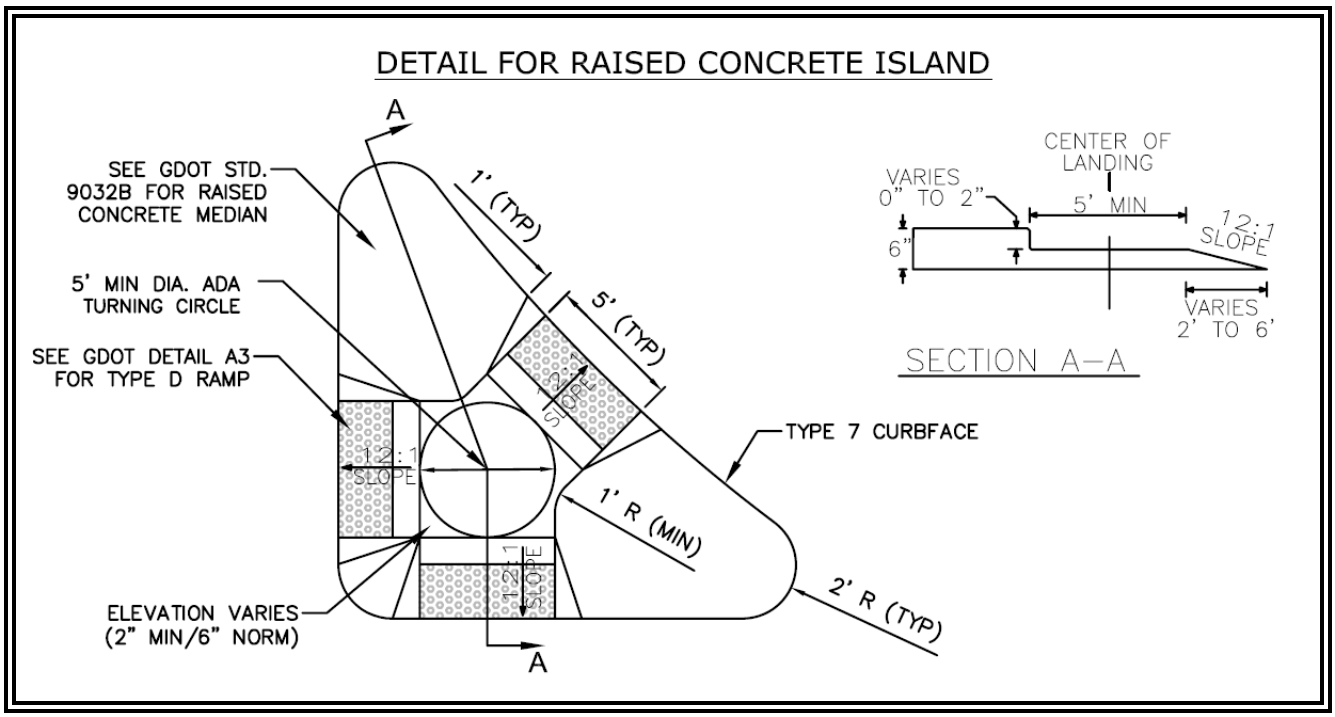


FIGURE 4-12 RAISED CONCRETE ISLAND WITH RAMPS
(SEMI-DEPRESSED)

4M CLEAR ZONE REQUIREMENTS

Experience has shown that motorists occasionally run off the roadway and providing a traversable recovery area can lesson serious injury. AASHTO publishes a Roadside Design Guide that should be used as a reference when designing driveways.

Table 4-10 provides the clear zone distances as contained in the Roadside Design Guide. Driveways must be designed so that all areas within the Highway Right of Way have clear zones as defined in Table 4-10

(from AASHTO 2002 Roadside Design Guide)

DESIGN SPEED	DESIGN ADT	FILL SLOPES			CUT SLOPES		
		6:1 or Flatter	5:1 to 4:1	3:1	3:1	5:1 to 4:1	6:1 or Flatter
40 OR LESS	Under 750	7-10	7-10	**	7-10	7-10	7-10
	750 – 1500	10-12	12-14	**	10-12	10-12	10-12
	1500 – 6000	12-14	14-16	**	12-14	12-14	12-14
	Over 6000	14-16	16-18	**	14-16	14-16	14-16
45 – 50	Under 750	10-12	12-14	**	8-10	8-10	10-12
	750 – 1500	12-14	16-20	**	10-12	12-14	14-16
	1500 – 6000	16-18	20-26	**	12-14	14-16	16-18
	Over 6000	18-20	24-28	**	14-16	18-20	20-22
55	Under 750	12-14	14-18	**	8-10	10-12	10-12
	750 – 1500	16-18	20-24	**	10-12	14-16	16-18
	1500 – 6000	20-22	24-30	**	14-16	16-18	20-22
	Over 6000	22-24	26-32*	**	16-18	20-22	22-24
60	Under 750	16-18	20-24	**	10-12	12-14	14-16
	750 – 1500	20-24	26-32*	**	12-14	16-18	20-22
	1500 – 6000	26-30	32-40*	**	14-18	18-22	24-26
	Over 6000	30-32*	36-44*	**	20-22	24-26	26-28
65 - 70	Under 750	18-20	20-26	**	10-12	14-16	14-16
	750 – 1500	24-26	28-36*	**	12-16	18-20	20-22
	1500 – 6000	28-32*	34-42*	**	16-20	22-24	26-28
	Over 6000	30-34*	38-46*	**	22-24	26-30	28-30

TABLE 4-10 CLEAR ZONE DISTANCES (IN FEET FROM EDGE OF TRAVELED WAY)

Notes: * Clear zones may be limited to 30’

** Fixed objects should not be present in the vicinity of the toe of these slopes. The width of the recovery zones should consider a number of factors including right of way availability, economic factors, safety needs, and accident history.

All areas located within the clear zones should remain clear of obstructions such as bridge abutments, poles, trees, etc. If obstructions are unavoidable, the design should include appropriate protection such as break-away design, guardrail installation, safety end treatments on culverts, etc. The Roadside Design Guide includes a table for horizontal curve adjustments, where the clear zone correction factor is applied to the outside of curves only. Curves flatter than a 2860 foot radius do not require an adjusted clear zone.

4N RIGHT OF WAY REQUIREMENTS

In order to construct driveways, it is often necessary to construct improvements to the State Highway. These improvements typically include the addition of lanes along the State Highway such as a deceleration lane, or traffic signal equipment.

If sufficient right of way exists, improvements to the State Highway will be permitted without the requirement of additional right of way. In urban sections, the face of curb along the State Highway should be no closer than 14' from the right of way. In rural sections, the point located one-half way up the back slope should be on or within the right of way line. Sufficient right of way should be donated to the Department for the deceleration lane/ commercial driveway, or right of way miters for traffic signal strain poles and equipment. Paving specifications to match existing pavement or better should be full-depth to the right of way line. NOTE: Depths may be reduced, if field conditions warrant.

If additional right of way is required in order to construct the required improvements, the applicant must dedicate the right of way. The applicant must record the deed at the County Courthouse and provide the original copy to the Access Management Engineer.

If existing utility easements are within the required right of way, the applicant must arrange for a replacement easement with written acceptance from the utility. At the discretion of the District Utilities Engineer or State Utilities Engineer, an Easement Limited Agreement may need to be executed by the Department on a form acceptable to the Department and utility. All right of way and utility issues shall be completed prior to the issuance of the permit.