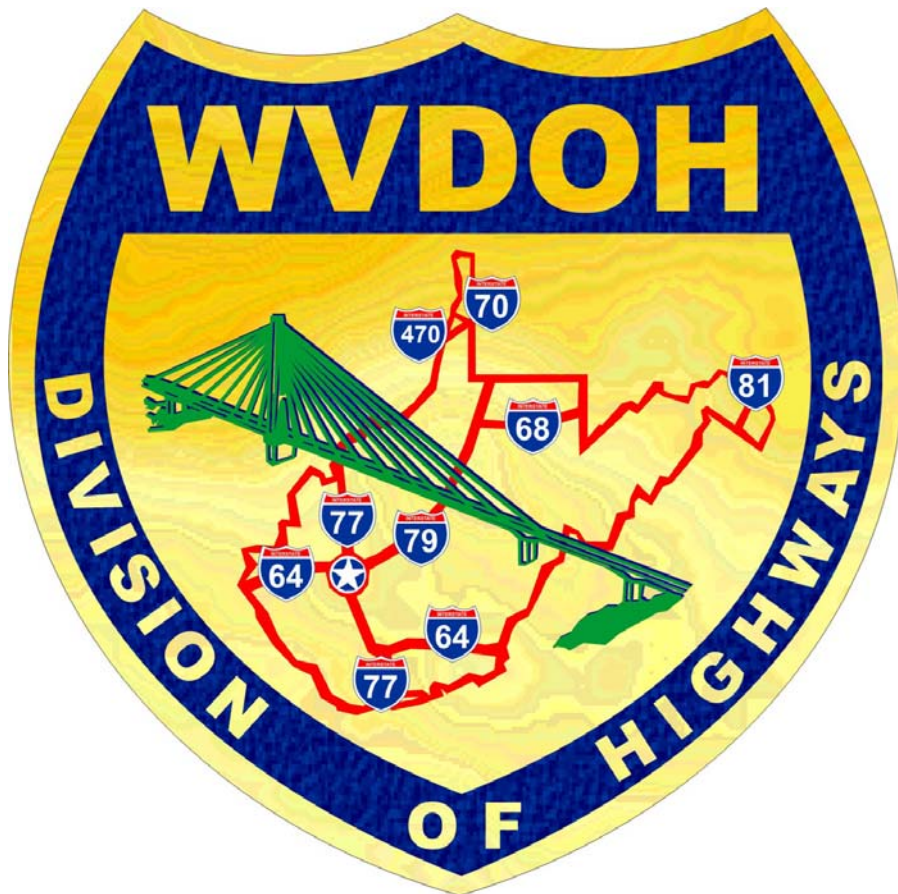


**MANUAL ON  
RULES AND REGULATIONS  
FOR  
CONSTRUCTING DRIVEWAYS  
ON STATE HIGHWAY  
RIGHTS-OF-WAY**



**West Virginia Department of Transportation  
DIVISION OF HIGHWAYS**

**May 2004**



THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
CHARLESTON, WEST VIRGINIA

ABSTRACT FROM THE RECORDS  
OF THE COMMISSIONER'S ORDERS  
DATED

May 21, 2004

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The Commissioner, upon recommendation of the Director, Traffic Engineering Division, and the concurrence of the Deputy State Highway Engineer – Development, hereby ORDERS the ADOPTION of the MANUAL ON RULES AND REGULATIONS FOR CONSTRUCTING DRIVEWAYS ON STATE HIGHWAY RIGHTS-OF-WAY dated May 2004, as the official Manual of the West Virginia Department of Transportation, Division of Highways. This is in compliance with the code of West Virginia, 1931, as amended, Chapter 17, Article 2A, Section 8; Article 2A, Section 12; and Article 4, Sections 47 through 53

Entered this 21st day of May, 2004

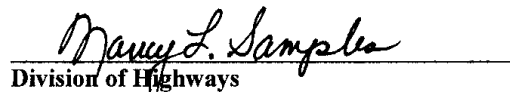


Fred VanKirk, P.E.  
Secretary/Highways Commissioner

STATE OF WEST VIRGINIA  
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS, to wit:

I, Naney L. Samples of the Division of Highways, do hereby certify that the foregoing is a true abstract from the Orders of the West Virginia Commissioner of Highways entered of record on the 21<sup>st</sup> day of May, 2004.

Given under my hand and seal of the Division of Highways the 21<sup>st</sup> day of May, 2004.



Division of Highways



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## **1. INTRODUCTION**

The guidelines contained in this manual are designed to:

1. Afford maximum protection to the traveling public.
2. Ensure a uniform system of construction on state highway rights-of-way.
3. Afford easy, safe ingress and egress to roadside establishments adjacent to the state's highways.

These guidelines are based on the experience of the West Virginia Division of Highways (DOH) and recommendations of the American Association of State Highway and Transportation Officials (AASHTO) and the Institute of Transportation Engineers (ITE).

## 2. OBJECTIVES

The safety and efficiency of a highway that does not have full control of access depends to a large extent on the amount and type of roadside interference with the movement of traffic. Vehicles entering, leaving, crossing, or standing near the roadway cause most of the roadside interference. Uncontrolled and/or indiscriminate access to the highway from roadside establishments seriously reduces the capacity of the highway and creates unsafe conditions.

These rules and regulations for constructing entrances to highways have been developed to provide for the orderly and safe movement of traffic into and out of private properties adjacent to the highway, including residential, commercial, and industrial properties. They set forth, in broad terms, reasonable restrictions on the owners of private property.

The specifications and figures contained herein are guides to the proper design of driveways. Critical minimum and maximum dimensions and general design features are shown; however, the multiplicity of possible situations will require an individual design for each situation. All designs must have the final approval of the DOH.

Instances arise wherein it is necessary to redesign and/or reconstruct a driveway to an existing roadside establishment or residence. Examples are:

1. The owner desires to renovate the property.
2. The DOH or other governmental agency requires changes to be made in the approaches due to highway construction, maintenance, or other similar work.

In such cases, strict adherence to these guidelines may not be practical. If necessary, a plan deviating from these guidelines may be approved. Such situations are discussed in Section 9.



### 3. LEGAL PROVISIONS

The Commissioner of Highways is charged by law with exercising “general supervision over the state road program and the construction, reconstruction, repair, and maintenance of state roads and highways.”

Specific laws contained in the Road and Motor Vehicle Laws of West Virginia (hereinafter referred to as “the Code”) provide authority for granting permission to enter upon or use the state highway for the purpose of constructing or reconstructing driveway approaches as follows:

1. **Chapter 17, Article 2A, Section 12**, pertains to promulgating and enforcing reasonable rules and regulations relating to setback lines, islands, curb separations, entrance approaches, walks, and parking.
2. **Chapter 17, Article 4, Section 47-52** (inclusive), pertains to the location, design, and construction of access facilities to state highways from and to real property used or to be used for commercial, industrial, or mercantile purposes or from and to real property that is subdivided into lots.
3. **Chapter 17, Article 16, Section 6**, requires that a permit be obtained from the DOH for any work performed on state highway rights-of-way, including construction or reconstruction of any other driveway approaches not covered in Chapter 17, Article 4, Sections 47-52, cited above.

These sections of the Code are contained in Appendix A. Applicants should examine and consent to these laws.

#### **4. APPLICABLE RULES AND REGULATIONS ADOPTED BY THE WEST VIRGINIA DIVISION OF HIGHWAYS**

It is the policy of the DOH to permit, except on controlled access highways, access to state highways from all property abutting the highway right-of-way. The following conditions must be met for approval:

1. Provide reasonably efficient, rapid and safe movement of traffic.
2. Ensure appropriate public use of the highway.
3. Ensure proper drainage, maintenance, and repair.
4. Hold the state harmless and absorb all costs, liabilities, and damages that may occur as a result of work performed under an approved permit.
5. Abide by all laws, rules, regulations, and construction specifications pertaining to such work.

Administrative regulations promulgated by the Commissioner of Highways pertinent to the development of driveway approaches to property are contained in Appendix B. Sections of the West Virginia Code relating to subdivisions are contained in Appendix A. These should be reviewed and understood by the applicant.

## **5. INSTRUCTIONS FOR SECURING A DRIVEWAY PERMIT**

Any applicant desiring to construct or reconstruct one or more driveways connecting with any state highway shall apply for a permit for such driveway(s) to the Office of the District Engineer with jurisdiction over the county where the property is located.

Application forms can be secured from DOH District Headquarters offices (listed in Appendix D), District Area Offices, County Maintenance Headquarters, or from the Director of the Maintenance Division in Charleston.

Five copies of the application form, with required drawings and/or plans attached, shall be submitted to the appropriate District Engineer. The proposed design will be reviewed for compliance and, if satisfactory, the application will be approved. One executed copy of the permit will be returned to the applicant.

If the design or location is not satisfactory, the applicant will be notified in writing of the objection(s). If agreement cannot be reached, the applicant has the right to a hearing.

Construction of a driveway which involves establishing a new railroad grade crossing or upgrading of an existing crossing will require that the applicant have an appropriate agreement with the railroad company involved. It will be necessary for the applicant to supply documentation of the legal status of the crossing, with the entrance permit application.

Applicants for commercial and industrial driveway permits shall submit, when requested, a performance bond in a form acceptable to the DOH. The amount of the bond shall be the next highest thousand dollars above 150% of the cost estimate for all construction within the highway right-of-way. If a bond is submitted, the DOH will be designated as the obligee and the permittee as principal. In instances where a certified check is submitted, the check shall be made payable to the Division of Highways.

## 6. DEFINITION OF TERMS

The definitions which follow are illustrated in Figures 1 - 3, inclusive. See Appendix C on page 53. The illustrations are included **only** for this purpose.

### 1. **Frontage**

The length along the highway right-of-way line of a single property tract or roadside development area between the edges of the property; distance between (1) and (2) in Figures 1 and 2. Corner property at a highway intersection has a separate frontage along each highway.

### 2. **Frontage Boundary Line (FB line)**

A line, perpendicular to the highway centerline, at each end of the frontage, extending from the right-of-way line to the edge of the through-traffic lane; line (1) - (4) or (2) - (3) in Figures 1 and 2.

### 3. **Traveled Way**

Normally considered as the paved portion of the highway, exclusive of paved shoulders.

### 4. **Buffer Area**

The area along the frontage between the back edge of the shoulder or curb and the right-of-way line and within the frontage boundary line; area (1) - (2) - (3) - (4) in Figures 1 and 2.

### 5. **Driveway Width (W)**

Narrowest width of driveway measured parallel with the edge of traveled way; W in Figures 1 and 2.

### 6. **Driveway Angle (Y)**

The angle of 90° or less between the driveway centerline and the edge of the traveled way; Y in Figures 2 and 3.

**7. Edge Clearance (E)**

The distance measured along the edge of the traveled way, between the frontage boundary line and the tangent projection of the nearest edge of driveway; E in Figures 1 and 2.

**8. Corner Clearance (C)**

At an intersecting street or highway, the dimension measured along the edge of the traveled way between the frontage boundary line opposite the intersection of the two right-of-way lines and the tangent projection of the nearest edge of driveway; C in Figure 3.

**9. Setback (G)**

The lateral distance between the right-of-way line and the roadside business building, gasoline pump curb base, display stand, or other object. The use of this will result in space for vehicles to stop or park between such facilities and the right-of-way line; G in Figure 2.

**10. Outside Radius (R)**

The outside or larger curve radius on the edge of the driveway; R in Figures 1, 2, and 3.

**11. Inside Radius (U)**

The inside or smaller curve radius on the edge of the driveway, used when Y is substantially less than 90°; U in Figures 2 and 3.

**12. Distance Between Double Driveways (D)**

The distance measured along the right-of-way line between the tangent projections of the inside edges of two adjacent driveways to the same frontage; D in Figure 2.

**13. Urban Cross Section**

Generally construed to mean areas within a municipality where the roadway is curbed. May also be applied to curbed locations outside municipalities.

**14. Rural Cross Section**

Areas where the traveled way is not curbed.

## 15. Sight Distance

Sight distance is defined as the distance measured between the height of a driver's eye and the height of an object without horizontal or vertical obstruction to the line of sight. For the purpose of measuring sight distance, the driver's eye height shall be 3.50 feet above the proposed driveway surface and highway pavement surface and the vehicle's height shall be 4.25 feet above the proposed driveway surface and highway pavement surface. The lateral placement of vehicles at the driveway and on the roadway shall be consistent with the operation of the driveway and roadway.

**Stopping Sight Distance:** This is the distance required by a driver traveling at a given speed to stop the vehicle after an object on the roadway becomes visible to the driver. For each direction along the highway, the shortest of the following lengths shall be measured sight distance for that direction along the highway as shown in Figures 4A, 4B, and 4C.

- (a) The maximum length of roadway along which a driver at a driveway location can continuously see another vehicle approaching on the roadway. The driver's eyes at a driveway location shall be 10 feet back from the pavement edge (curb or edge of shoulder).
- (b) The maximum length of the roadway along which a driver on the roadway can continuously see a vehicle which is located in the driver's travel lane and which is intending to make a left turn into a driveway.
- (c) The maximum length of roadway along which a driver of a vehicle intending to make a left turn into a driveway can continuously see vehicles approaching from the opposite direction. This distance is measured from the location of the approaching vehicle to a point on the roadway where the left turning vehicle crosses the path of the approaching vehicle.

## 16. Median

That portion of a highway separating opposing traffic flows and being the distance between the edges of opposing traveled ways.

## 17. Acceleration Lane

A speed-change lane, including full-width auxiliary lane and tapered area, for the purpose of enabling a vehicle entering a roadway to increase its speed to a rate at which it can safely merge with through traffic.

**18. Deceleration Lane**

A speed-change lane, including full-width auxiliary lane and tapered area, for the purpose of enabling a vehicle leaving a roadway to decrease its speed to a rate at which it can safely diverge from through traffic.

**19. Right-of-Way**

A general term denoting land, property, or an interest therein, usually in a strip, acquired for or devoted to construction, drainage, operation, and maintenance of the roadway.

**20. Residential Driveway**

One providing access to a single-family residence, a duplex, or an apartment building having four or fewer units.

**21. Commercial Driveway**

One providing access to an office, retail, or institutional building, or an apartment building having five or more units.

**22. Industrial Driveway**

One directly serving a substantial number of truck movements to and from loading docks of an industrial or institutional facility, warehouse, or truck terminal. A centralized retail development, such as a community or regional shopping center, may have one or more driveways specially designed, signed, and located to provide access for trucks. These are classified as industrial driveways. Administrative or employee parking lots at industrial or institutional sites are considered as commercial driveways.

**23. Farm-Field Entrance**

One providing access to a field used for agricultural purposes.

**24. Temporary Driveway**

One used for a specific purpose for a limited period of time. Such driveways must conform to the standards and meet the practices contained in this manual. Temporary driveways must be removed after a specified time and the land restored to its original condition.

**25. Island**

An island is a defined area between traffic lanes for control of vehicle movements. Islands also provide an area for pedestrian refuge and traffic control devices. It may range from an area delineated by a curb to a pavement area marked by paint.

**26. Channelization**

The separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement marking to facilitate the safe and orderly movements of vehicles and pedestrians.

**27. Roadway**

The portion of a highway, including shoulders, for vehicular use.



## 7. GENERAL REGULATIONS

Any person or corporation desiring to construct a driveway or other access within the state highway right-of-way shall, before beginning any construction, have an approved permit from the DOH, authorizing construction on the right-of-way.

Failure to secure a permit prior to construction shall result in the removal of the driveway and/or denial of access at that location.

All driveways connecting to a state highway shall have a permit. The driveway permit belongs to the owner or lessee of the land and his/her successors and assignees. Any change to the driveway or change in the use of the property served by the driveway shall require a new permit.

The applicant should note that the permit issued by the DOH in no way supersedes local zoning, building, or other permits or ordinances.

Approval of the application shall be subject to the following restrictions:

1. The applicant must represent all parties in interest. The permit shall be signed and issued **only** in the name of the owner(s).
2. Any driveway constructed by the applicant must be for the purpose of securing access to the property and not for the purpose of servicing, parking, or storing vehicles on the highway right-of-way.
3. No revisions or additions shall be made to the driveway(s) or its appurtenances on the right-of-way without the written permission of the DOH. These changes will be made at the applicant's expense.
4. Any changes, additions, repairs, and/or relocation of the driveway(s) or its appurtenances considered necessary because of, or to permit, the relocation, reconstruction, widening, or maintaining of the roadway shall be made by the DOH at its own expense.
5. The person, firm or corporation to whom a permit is issued agrees to hold the state harmless on account of any damages to person or property which may arise during the progress of the work authorized by this permit.
6. The location, design, and construction of the driveway(s) described above shall be in accordance with the guidelines contained herein.

## **8. GENERAL PRINCIPLES OF ACCESS MANAGEMENT**

### **8.1 Introduction**

“Access management” is a means of maintaining safe and efficient movement of traffic along roadways and streets by controlling the number and location of intersecting roads and driveways. It offers a way to strike a balance between the needs of landowners and the traveling public. The overall goal of access management is to provide adequate access to roadside property for use and development while simultaneously preserving the flow of traffic on adjacent roadways in terms of safety, capacity, and speed.

As urbanization expands, increased development along arterial and collector highways generates more local traffic as well as greater demand for driveways and intersecting local roads to serve abutting and nearby businesses, industries, and neighborhoods. It has become increasingly apparent that the planning and design of both roadways and neighboring land uses must be coordinated. This will preserve the functional integrity of the highway system while allowing efficient access to and from abutting properties, and meet the desired land use objectives of local communities.

The purpose of these access management principles is to set forth guidelines that will maintain a high level of service for through traffic while providing reasonable access to abutting properties. Implementation of these principles will create a balance between public investments in highway improvement, operation, and maintenance and the need for land development.

### **8.2 Right-of-Way Use and Occupancy**

#### **8.2.1 General**

No part of the highway right-of-way is to be used for servicing, storing, or parking of vehicles; erecting displays of any kind; or conducting business. Parking may be permitted on the roadway, as at the curb on city streets, when permitted by police controls. The buffer area is to be kept clear of buildings, sales exhibits, business signs, parking areas, service equipment, and all appurtenances thereto. It may be graded and landscaped as approved by the DOH.

#### **8.2.2 Buffer Area and Setback**

1. A buffer strip should be provided along each lot’s boundary with the traveled portion of the roadway having a width in proportion to building setback. The recommended dimensions are shown in Table 1.

Table 1. Buffer Area and Setback.

<b>Buffer Strip Width In Feet</b>	<b>Building Setback In Feet</b>
10	75
15	76 - 115
20	116 - 150
25	151

2. In the development of the adjacent private property and the driveways thereto, the buffer area may require grading by filling or cutting. Such work shall be done in a manner that ensures safe stopping sight distance for traffic operation, proper drainage, suitable slopes for maintenance and mowing operations, and good appearance.
3. Existing trees, shrubs, ground cover or other landscape features may need to be removed or adjusted.
4. No portion of the parking lot should be located within the buffer strip (refer to Table 1). A “sight triangle” shall be formed by the intersection of the side of the driveway and the street curb or back of shoulder, extending 25 feet in length along the side of the driveway and 25 feet in length along the curb or shoulder, with the third side connecting the other two sides. Within each sight triangle, no landscape materials shall be planted, except those that will reach at maturity 30 inches or less in height above the exit driveway elevations.
5. The buffer area outside the driveways shall be constructed as necessary to deter ingress and egress by vehicles except at designated points. This may be accomplished by appropriate grading or by use of curbs, rails, guide posts, low shrubs, hedgerows, etc. in a manner that does not impair clear sight across the area and conforms with the current edition of the Roadside Design Guide published by AASHTO.
6. Improvements on private property adjacent to the right-of-way shall be so located that parking, stopping, and maneuvering of vehicles on the right-of-way will not be necessary in order for the patrons to be properly served.

### **8.2.3 Parking**

1. Each roadside business establishment shall provide sufficient parking or storage space off of the right-of-way to prevent the storage of vehicles on the driveway or the backing up of traffic on the traveled way. This is particularly applicable to businesses such as food service

establishments, gas stations, drive-through banks, truck terminals, shopping centers, malls, and car washes, where a number of vehicles will be entering and/or leaving the area at one time.

2. A driveway shall not be approved for parking areas that require backing maneuvers within the state highway right-of-way. Such parking areas must include on-site maneuvering areas and aisles to permit vehicles to enter and exit the site in forward drive without hesitation.

#### **8.2.4 Signing**

1. All advertising signs in conjunction with roadside establishments shall be placed outside the highway right-of-way, and shall comply with state and local laws and ordinances regulating outdoor advertising. Refer to “Laws and Regulations Relating to Outdoor Advertising Control in West Virginia,” provided by the West Virginia Division of Highways.
2. Signs shall be so positioned and mounted to not obstruct the driveway user’s view along the highway.
3. Driveway signs, if installed, shall be maintained by the owner of the property.
4. The current edition of the Manual on Uniform Traffic Control Devices (MUTCD) shall be followed when designing and installing signs along the driveway.

#### **8.2.5 Median Openings**

1. No additional median openings will be permitted and existing openings shall not be lengthened on divided highways to accommodate driveway openings unless they are (a) proven necessary by a traffic impact study and (b) proven to not be detrimental to the highway level of service.
2. Medians may be reconstructed to accommodate left-turn storage lanes if such is practical.

#### **8.3 Sight Distance**

1. Driveways shall be located to the extent feasible within frontage limits at the point of optimum sight distance along the highway.
2. Where a driveway is provided to a commercial establishment, the buffer area and adjacent setback shall be reasonably cleared so that either the establishment itself or an appropriate sign located outside the right-of-way can be seen at sufficient distance. This will enable drivers desiring to enter the establishment to make proper and safe maneuvers.
3. Sight distance for vehicles entering the highway from any driveway shall meet the minimum stopping sight distance for the operating speed on the adjacent highway as shown in Tables 2a and 2b and should be as long as can be justified economically.

The operating speed is normally assumed to be the posted speed limit. If a traffic study establishes that the operating speed is lower than the posted speed limit, then the lower speed may be used to determine the safe stopping sight distance.

4. The applicant is expected to perform whatever work is necessary within the property and frontage boundary lines to meet the minimum requirements specified in Tables 2a and 2b. If the minimum distances cannot be met by such work, a lesser distance may be acceptable as described in Section 9.

**Note:** The sight distance values in Tables 2a and 2b are for passenger vehicles and single-unit trucks only. If the driveway is classified as an industrial driveway, then additional sight distance shall be provided as recommended in the current edition of AASHTO "A Policy on Geometric Design of Highways and Street."

Table 2a. Safe Stopping Sight Distances Required at Different Operating Speeds on Upgrades.

Design Speed (mph)	Stopping Sight Distance (ft)			
	Upgrades			
	0%	3%	6%	9%
15	80	75	74	73
20	115	109	107	104
25	155	147	143	140
30	200	200	184	179
35	250	237	229	222
40	305	289	278	269
45	360	344	331	320
50	425	405	388	375
55	495	469	450	433
60	570	538	515	495
65	645	612	584	561
70	730	690	658	631
75	820	772	736	704
80	910	859	817	782

Table 2b. Safe Stopping Sight Distances Required at Different Operating Speeds on Downgrades.

Design Speed (mph)	Stopping Sight Distance (ft)			
	Downgrades			
	0%	3%	6%	9%
15	80	80	82	85
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891
75	820	866	927	1003
80	910	965	1035	1121

## **8.4 Driveways**

### **8.4.1 Location**

Driveways shall be located so that vehicles entering or leaving the establishment will not interfere with or create a hazard to the movement of traffic on the roadway. Where feasible, they shall be located where there are no sharp curves or steep grades and where sight distance is adequate for safe traffic operations. Driveways shall not be located within intersections, or adjacent turning radii. They shall be located so that they will not interfere with the placement of signs, traffic signals, or other devices that regulate traffic operations.

### **8.4.2 Number and Arrangement (See Appendix A)**

1. The permissible number, arrangement, and widths of driveways shall be governed by the amount of roadway frontage abutting the private property and by the positions of the installations thereon.
2. Where driveways are provided to vacant land, they shall be located to give the best advantage to the roadway alignment, profile, sight distance conditions, and other related factors.
3. The number of driveways provided shall be the minimum number required to adequately serve the needs of the property. Frontages of 50 feet or less should be limited to one driveway. Normally, not more than two driveways will be permitted to any single property tract or business establishment. Exception may be made when a traffic impact study indicates traffic operations would be enhanced by more than two driveways.
4. Where there are several adjacent roadside establishments, each with relatively limited frontage, or where there is probability of such development, consideration should be given to use of a "frontage road" paralleling the roadway to reduce the number of separate connections. Where border width permits, the several driveways should be connected directly to such a frontage road. Connections to the through roadway should only be at the extremities or along it at well-spaced intervals. Figures 5A, 5B, and 5C in Appendix C show techniques for reducing the number of driveways. Applicants whose development falls into this category should review Sections 10, 13, and 15.
5. Driveways shall be positioned to clear the frontage boundary lines by a specified minimum dimension (see Section 10.6). Where two or more driveways are provided for one frontage, the clear distance between driveways measured along the right-of-way line should not be less than the specified minimums as shown in Figures 6, 7, and 8 in Appendix C.
6. At an intersection of two roadways, driveways connecting each roadway with a corner property may be permitted when it is essential to the conduct of business on the corner tract. Such driveways must comply with location regulations (see Section 8.4.1) and not be closer than the



minimum corner clearance from the intersection.

Under urban conditions and elsewhere, particularly where traffic in relation to capacity is high, the corner clearance on the approach to the intersection should be greater than that on the far side of the intersection. This provides more space for storage of vehicles that are waiting for openings in cross traffic or for a green traffic signal and reduces instances of blocking the driveway.

7. The location and design of signalized access points will be determined by a traffic impact study (refer to Section 15).

#### **8.4.3 Width and Edge Radius**

1. The driveway width shall be adequate to properly handle the anticipated volume and type of traffic. It shall be within the limits specified for the particular conditions and types of roadside establishments.
2. The maximum widths permitted by the guidelines are considered ample for all conditions. Where driveway widths narrower than the maximum permitted will adequately handle anticipated traffic, such narrower widths should be provided.
3. Where space permits, the radius of the curve connecting the edge of the through-traffic lane and the edge of the driveway should be the minimum radius necessary to permit turns by the largest vehicle frequently expected based on AASHTO A Policy on Geometric Design of Highways and Streets.
4. The combination of driveway width and edge radius of smaller dimension should be adequate for narrow frontage conditions.
5. The radii for driveways on streets on which there are outer parallel parking lanes should be based on turns to and from the edge of the through lane based on AASHTO A Policy on Geometric Design of Highways and Streets.

#### **8.4.4 Channelization**

1. Channelizing or divisional islands for high-volume driveways may be used to prevent egress traffic from encroaching upon the side of the drive used by ingress traffic. This ensures that the ingress traffic has the necessary maneuvering space. It also reduces the number of conflict points and increases the turning velocity.
2. Where appropriate, the channelizing island or divisional island may be aesthetically landscaped. Required sight distances must be maintained.
3. Channelizing islands shall be designed and constructed as specified in Section 10.2.

### 8.4.5 Alignment and Profile

1. Driveways should be positioned at right angles to the roadway. See page 25, Driveway Angle.
2. When a connection is made with a divided roadway and one-way entry or exit driveways are used, the entry and exit driveways shall have an angle of not less than 45° with the edge of the roadway.
3. On an uncurbed section of roadway, the finished driveway slope shall conform to the slope of the existing adjacent shoulder slope and shall be carried for the full width of the shoulder. This is provided for safety considerations so as not to cause a hump or depression in the shoulder area commonly used by roadway traffic. As a rule, the following driveway slopes are standard:
  - (a) 6% away from the through traffic lanes - for shoulders of compacted aggregate material.
  - (b) 4% away from the through traffic lanes - for paved shoulders.

Figure 9 in Appendix C provides guidance relative to driveway profile controls.

4. Where curbs are used along the roadway and sidewalks are provided or contemplated, the gradient of the driveway should fit the plane of the sidewalk. If the difference in elevation of the gutter and the sidewalk is such that this is not practical, the sidewalk should be lowered to provide a suitable gradient for the driveway. In such cases, the surface of the sidewalk should be sloped no greater than 8% (12:1) from either side of the driveway, as shown in Figure 10A in Appendix C.
5. Vertical curves on driveways should be flat enough to prevent dragging on central or overhang portions of passenger vehicles. Specific requirements are contained in Section 10.4.

### 8.4.6 Surfacing

Driveways should be paved as follows:

- (a) **Commercial and Industrial**

When the traveled way is paved, all driveway approaches classed as commercial must be paved. Paving must extend back from the pavement edge a minimum distance equal to the largest radius. For example, a 25 feet radius requires the approach to be paved at least 25 feet from pavement edge. In any case, it must be at least 10 feet. Pavement for driveway approaches shall be equal to or greater than either of the following:

  - (i) 6 inches of bituminous concrete on 12 inches of compacted gravel or stone.
  - (ii) 8 inches of concrete on 6 inches of compacted stone.

(b) **Residential and Farm**

Driveways to residences or farms need not be paved, although pavement or gravel stabilization is highly desirable.

(c) **Heavy Equipment**

Where trucks will be hauling logs, heavy mining or drilling equipment, etc., the approach shall be stabilized with at least 8 inches of gravel for a minimum distance of 100 feet from the roadway pavement.

**8.5 Internal Circulation**

1. Proper design and operation of property development should include preventing spillover of traffic conflicts that occur inside the property onto the abutting roadway.
2. Internal design should facilitate the distribution of vehicles by providing clearly defined circulation facilities.
3. Internal circulation shall be designed to minimize the interference between entering and crossing vehicles. It must also provide sufficient storage space so that queuing of entering vehicles will not back-up into the roadway.
4. A well-designed internal circulation system will not cause traffic to re-enter the roadway to reach another part of the development.
5. Consideration should be given for provision of ring roads and perimeter roads to provide the primary on-site circulation for medium- or large-size commercial offices, industries, regional shopping centers, and mixed-use developments.

**8.6 Curbs and Posts**

1. If, in the opinion of the DOH, there is a high probability that vehicles would utilize a portion of the property frontage other than the approved driveway to gain access to the property, the permit may require that curbing or other physical barriers be constructed.
2. Curbs of the type specified by the DOH in its Standard Details Book may be used to outline driveways and islands within the buffer area. All such curbs shall be outside the limits of the shoulders where the traveled way is not curbed.
3. On uncurbed roadway sections, such curbs shall not be placed in the buffer areas within 10 feet of the traveled way.

4. Where the traveled way is curbed, the radius returns of the driveway line and grade shall match the curb of the traveled way. Curbs shall not exceed 8 inches in height for 40 mph or less. For higher speeds, use lower curbs.
5. Wood posts are sometimes advantageous as a means of ensuring that vehicles remain on the roadway and do not traverse or park on the buffer area. In some cases, guardrail may be appropriate. Natural barriers, such as trees, may also be sufficient. Barriers used for this purpose must conform to the current edition of AASHTO's Roadside Design Guide.

## **8.7 Lighting**

1. The lighting of roadside establishments shall be concentrated on the service area itself. Light beams shall not be directed toward the eyes of approaching drivers on the roadway.
2. All lighting equipment for roadside establishments shall be located off the roadway right-of-way. This includes any overhanging type of appurtenances.

## **8.8 Fencing**

Fencing controls indiscriminate entry or crossing of the roadways by either vehicles or pedestrians. Fencing along right-of-way limits may be required to control access. It shall be located a minimum of 1 foot outside of the right-of-way line or in the outer separation when frontage roads are present.

## **8.9 Mailboxes**

Mailboxes installed within public right-of-way shall be constructed in conformance with the rules and regulations of the U.S. Postal Service and the guidelines established by the DOH. In the absence of any particular guideline, the mailbox installation should conform to the General Principles and Guidelines set forth in the current edition of AASHTO's A Guide for Erecting Mailboxes on Highways. If any conflicts exist between the DOH guidelines and the other-mentioned document, the DOH guidelines will govern.

## **9. MINIMUM GUIDELINES FOR EXISTING DRIVEWAYS**

Situations occur involving a need or a desire to reconstruct existing driveways. Some examples are:

1. Reconstruction of the adjoining roadway.
2. A need or desire by the property owner to improve the driveway approach.
3. The type and amount of traffic using the driveway substantially changes.
4. A DOH project to correct non-standard and unsafe driveway approaches.

When such situations arise, strict application of the regulations prescribed in this manual may work a severe hardship on the property owner. The Commissioner may, in some cases and under appropriate conditions, authorize variances from the above rules and regulations. Such variances will be consistent with the intent of Chapter 17, Article 4, Section 47(2) of the Code. These situations may vary considerably from case to case; therefore, it is not considered feasible to prescribe explicit minimum guidelines in the form of dimensions, angles, etc. In such cases, driveways may encroach on the corner island (see Figure 11 in Appendix C) only when corner radius equals or exceeds 25 feet.

## 10. CONTROL DIMENSIONS

### 10.1 Driveway Width (W)

1. The width of a one-way driveway shall be measured perpendicular to the centerline of the driveway or entrance. The width of a two-way driveway shall be measured parallel to the roadway.
  
2. When a center channelizing island is used in a two-way driveway to restrict entries to right turns in and right turns out, it is appropriate to measure driveway width separately and at right angles between the curbing of the channelizing island and the driveway curb return. In this type of design, radii and total width of the driveway at the throat shall be greater than those for a two-way driveway without a channelizing island. This is due to the need for lateral clearances between the faces of the barrier curbs.
  
3. Dimensions for driveway width are shown in Table 3.

Table 3. Driveway Width.

<b>DRIVEWAY WIDTH (W)</b>					
In Feet					
	<b>One-Way</b>		<b>Two-Way</b>		
<b>Driveway Type</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Minimum</b>	<b>Desirable</b>	<b>Maximum</b>
<b>Residential</b>	12	20	12	20	25
<b>Commercial</b>	15	25	25	30	50
<b>Industrial</b>	15	25	30	35	50

- Note:**
- (a) The desirable values shown in the above table should be used whenever possible. If variation from these values is required because of site conditions, the width and radii selected should be as close as possible to the desired values.
  - (b) The use of both a small width and a small curb return radius should be avoided. If the width must be reduced, then the curb return radius should be increased and vice versa.

## 10.2 Channelizing Islands

1. A center island, if curbed, usually varies in width from 4 feet to 12 feet.
2. Whenever a channelizing island is used at the terminus of a right-turn bay or lane, the inside curb return radius shall be a minimum of 75 feet.
3. The smallest curbed island normally considered is one that has an area of approximately 50 square feet for urban intersections and 75 square feet for rural intersections. However, 100 square feet is preferable for both.
4. Triangular islands shall be a minimum of 12 feet, and preferably 15 feet, on a side after rounding of corners.
5. Elongated or divisional islands shall be a minimum of 4 feet wide and 20 feet long.
6. The curbs of all islands located in the line of traffic flow should be marked in accordance with the current editions of the MUTCD and the DOH “Design Guide for Signing.”
7. The current edition of AASHTO A Policy on Geometric Design of Highways and Streets presents details for frequently used channelizing islands.

## 10.3 Driveway Angle (Y)

1. One-way and two-way driveways with unrestricted turning movements should intersect the roadway at a 90° angle. If the site conditions (e.g., terrain, lot size and shape) will not permit a 90° approach angle, the angle may be reduced, but not below 70° for commercial and industrial driveways and 60° for residential driveways. The corner radius at acute angles needs to be maximized.
2. At one-way driveways where only right turns are permitted (e.g., one-way driveway pair on a divided or one-way street), it may be desirable to flatten the approach angle below 90° to increase entry and exit speeds. Under these conditions, the angle of the approach may be reduced but not less than 45°.

## **10.4 Driveway Profile (refer to Figure 9 in Appendix C)**

### **1. No Highway Edge Curb**

#### **(a) Cut Section**

- (i) Gradient from the edge of traveled way to the outer edge of shoulder shall be the same as the shoulder pitch.
- (ii) The maximum downward gradient from the outer edge of shoulder to the low point at the ditch line or over the culvert should be 8%.
- (iii) The maximum gradient beyond the ditch line should be 8% for commercial driveways and 16% for all others.
- (iv) A minimum 25-foot landing should be provided.

#### **(b) Fill Section**

- (i) The slope across the shoulder shall be the same as (a) (i) above.
- (ii) The maximum gradient beyond the outer edge of the shoulder should be 8% for commercial driveways and 16% for others.
- (iii) A minimum 25-foot landing should be provided.

### **2. With Highway Edge Curbs and Sidewalks**

- (a) The driveway profile should slope upward from the gutter line to the sidewalk as shown in Figure 9. The maximum difference between the cross slope of the traveled way and the slope of driveway should be 8%. The maximum gradient should be 8% for commercial and industrial driveways and 16% for residential driveways.
- (b) Cross slopes on sidewalks shall not exceed 2% (50:1). If it is necessary to “ramp” the sidewalk to meet the driveway elevation, the slope of the ramped portion shall not exceed 8% (12:1).
- (d) Gutters, curbs, or sidewalks, wherever provided, shall be constructed based on Figures 9 and 10. When required, their slopes shall be suitably adjusted to meet the requirements of items (a) and (b) above.



### **3. Vertical Curves**

- (a) The vertical curve from the traveled way into the driveway using a curb cut shall be the flattest curve that can be obtained.
- (b) The minimum length of vertical curves shall be 20 feet. In cases when this minimum length is too long for driveway design or the available right-of-way is less than 20 feet, the designer should utilize multiple grades.
- (c) Vertical curves should be constructed to avoid a hump or dip greater than 4 inches within a wheel base length of 10 feet. Crest vertical curves should not exceed a 4 inches hump in a 10 feet chord. Sag vertical curves should not exceed a 4 inches depression in a 10 feet chord. This will prevent center or overhang drag and allow for load and bounce.

### **4. Side Slopes**

The side slopes for driveway embankments within the right-of-way should ideally be 10:1, but should not be steeper than 3:1 without guardrail. See Figure 12 in Appendix C.

### **5. Pipe Installation and Maintenance**

When a drainage ditch or swale exists, an adequate pipe shall be installed under the driveway based on the requirements of the DOH. All design guidelines shall be followed with regard to the grade of the driveway after pipe installation.

**Note:** Slopes not exceeding the maximums specified above shall be maintained to a point at least 25 feet from the outer edge of the traveled way.

### 10.5 Radius of Curvature at Junction of Driveway and Roadway Pavement

The following are maximum and minimum requirements for the driveway radius.

Table 4. Radius of Curvature.

<b>RADIUS OF CURVATURE</b> In Feet				
	<b>Rural</b>		<b>Urban</b>	
<b>Driveway Type</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Residential</b>	5	20	5	15
<b>Commercial / Industrial</b>	10	50 *	10	30

\* Requires special approval from the District Traffic Engineer.

Note: A special design can be developed in accordance with AASHTO design policies if approved by the DOH District Engineer.

### 10.6 Edge Clearance (E)

1. All portions of the driveway shall be within the frontage boundary line unless adjoining property owners agree in writing. See Figures 1 and 2 in Appendix C.
2. The edge clearance shall not be less than the radius of curvature (R) for the junction of the driveway and roadway pavement or shoulder edges.
3. The following are the minimum dimensions for edge clearance.

Table 5. Edge Clearance.

<b>EDGE CLEARANCE (E)</b> In Feet		
<b>Driveway Type</b>	<b>Urban</b>	<b>Rural</b>
<b>Residential</b>	5	5
<b>Commercial / Industrial</b>	5	10

**10.7 Corner Clearance (C) – See Figure 3 in Appendix C.**

1. In rural areas, a minimum of 30 feet shall be provided at the near side of intersection in the direction of travel and a minimum of 20 feet at the far side of intersection in the direction of travel.
2. In urban areas, a minimum of 15 feet shall be provided at the near and far sides of intersection.
3. If the intersection of a driveway and highway or an arterial street is signalized, the near-side clearance should be two or more times the far-side distance.

**10.8 Island Clearance from Edge of Traveled Way**

1. In uncurbed highway sections, the side of the island next to and parallel to the roadway shall be located at the edge of the shoulder. In no case shall the side be less than 10 feet nor more than 15 feet from the edge of the traveled way.
2. Curbs, when used to outline the edge of an island, shall not be placed in the buffer area or within 10 feet of the traveled way.

### 10.9 Setback (G)

The minimum required setback from the right-of-way line for gasoline pumps and other fixed equipment of a roadside establishment is 12 feet. Where space is available, up to 15 feet is required.

### 10.10 Driveway Spacing (D)

The following are the minimum driveway spacing guidelines along roadways.

Table 6. Driveway Spacing.

Speed Limit mph	Driveway Spacing feet
25	105
30	125
35)	150
40	185
45	230
50	275
55	330

These spacings are based on average vehicle acceleration and deceleration rates and are considered necessary to maintain safe traffic operation. Spacing will be measured from the midpoint of each driveway. In the event a particular parcel(s) lacks sufficient roadway frontage to maintain adequate spacing, the land owner(s) shall have the following options:

- (a) They shall seek a variance from the DOH for minimum spacing. In no case shall the variance be greater than the next lowest classification. For example, the distance for a 40 mph roadway requiring a 185 feet spacing, may not be reduced to less than 150 feet, which is the standard for a 35 mph facility.

- (b) Adjacent landowners may agree to establish a common driveway. In such a case:
- (i) The driveway midpoint should be the property line between the two; parcels;
  - (ii) The driveway must meet standard specifications;
  - (iii) The estimated driveway volume will be the sum of the trip generation rates of both land uses in question; and
  - (iv) A copy of the easement or agreement shall be submitted with the permit. The permit will be issued in the names of both parties.

**Note:** Figures 13 through 16 in Appendix C show typical driveways.

## 11. DRAINAGE

Drainage has long been recognized as an essential part of proper roadway design, construction, and maintenance. Adequate drainage is based on determining where surface runoff will accumulate and/or making provisions for the removal of water as rapidly as necessary. This should preclude damage to private property, undue interference with the operation of vehicles, and excessive maintenance for the DOH.

### 11.1 DOH Drainage Policy

The policy of the DOH is that if increased flows are generated by development, they are the responsibility of the developer. The increase in flow may be handled by in-line or off-line detention or a restructuring of the drainage network. Unless specifically authorized by the permit, the applicant shall not alter the existing drainage patterns or the existing flow of drainage water.

### 11.2 Drainage Considerations for Driveways

All driveways and burffer areas shall be constructed so as not to impair drainage within the highway right-of-way, direct water onto the roadway, alter the stability of the roadway subgrade or the improved area, or impair the drainage of adjacent areas. Where a drainage ditch or swale exists, the applicant shall install adequate pipe (minimum 15 inches) under the driveway in accordance with the permit.

It is important to check the condition of the bottom of the ditch to be sure that the pipe will be set at the proper grade. If the bottom of an unpaved ditch is too high, the ditch must be cleaned. If the ditch bottom is too low, suitable material must be spread to obtain proper grade. The flow line of the installed pipe may be a little lower than the bottom of the ditch. It must never be higher than the ditch bottom. Figures 17 and 18 in Appendix C show approved methods of placing pipe beneath driveways.

All culverts, catch basins, drainage channels, pipes, and other drainage structures required, or being changed by the property owner, within the buffer area and/or under the driveway, as the result of the property being developed, must be installed in accordance with the standards of the current edition of the DOH Drainage Manual.

If water is allowed to drain from steep approaches onto the roadway pavement, the DOH may require a slotted drain or box drain for the full width of the driveway, depending on the driveway width, grade, and the amount of water (sheet flow) which could flow onto the roadway. See Figures 9A, 9B, and 18 in Appendix C.

Driveway slopes shall be installed as specified in Section 8.4.5.

Water shall not be discharged across sidewalks or onto adjacent property.

A paved apron equal to one-half the distance between the edge of pavement and the drop inlet or slotted drain shall be provided.

The applicant is responsible for obtaining all necessary permits from the Corps of Engineers, Division of Environmental Protection, Division of Natural Resources, etc.

### **11.3 Repair / Replacement**

The property owner is responsible for repairing or replacing drainage structures that have failed. Should the DOH damage or destroy the drainage structure, it is responsible for restoring in kind or improving the entrance and drainage structure.

### **11.4 Stormwater Management Plan**

A stormwater management plan will be required when any of the following conditions are anticipated:

- (a) The proposed site development may cause a significant increase in flow or volume of water onto the roadway right-of-way or into DOH drainage facilities. This includes drainage that initially flows away from the roadway but may affect the roadway downstream.
- (b) The proposed site development may cause an increase in flow or volume of water onto another owner's property, either abutting the site development or across the roadway.
- (c) The development is in an area of known drainage or flooding problems.

When it has been determined that a stormwater management plan is required for a proposed site development, it shall be the responsibility of the applicant to ensure the plan is developed in accordance with DOH instructions. Instructions for preparation are contained in the DOH Drainage Manual, Chapter 1. Computations, which must be submitted as part of the plan, shall be made in accordance with the Drainage Manual. The plan shall be prepared under the supervision of a registered professional engineer who possesses a current license issued by the WV Board of Registration for Professional Engineers.

## 12. SPEED-CHANGE LANES

A speed-change lane is an auxiliary lane, including tapered areas, used primarily for acceleration or deceleration of vehicles entering or leaving through-traffic lanes. The terms “speed-change lane,” “deceleration lane,” or “acceleration lane,” as used here, apply broadly to the added pavement joining the traveled way of the roadway or street with that of the turning roadway and do not necessarily imply a definite lane of uniform width.

The combination of roadway speed, traffic volume, location, arrangement of driveways and intersections, and safety may require the installation of an acceleration or deceleration lane, or both, to serve a proposed or existing driveway. When required, the speed-change lane shall be of sufficient length and width to allow vehicles to safely enter or leave the property.

### 12.1 Criteria for Speed-Change Lanes

A left-turn deceleration lane should be provided on roadways where traffic volumes are high enough or safety considerations are sufficient to warrant them. Exhibit 9-75 in the 2001 edition of AASHTO A Policy on Geometric Design of Highways and Streets is a guide to traffic volumes where left-turn facilities should be considered.

### 12.2 General Guidelines

The following are the general guidelines pertaining to speed-change lanes:

1. Auxiliary or speed-change lanes shall be provided based on the minimum requirements set forth in Section 12.1.
2. An auxiliary lane may be required even though the regulations mentioned in Section 12.1 are not met where safety considerations, such as sight distance, dictate.
3. Auxiliary lanes when required shall be constructed at no cost to the DOH.
4. When the width of the existing highway right-of-way is insufficient to permit the construction of a needed auxiliary lane, the applicant shall, at no cost to the WVDOH, provide all necessary additional rights-of-way.
5. When two accesses have speed-change lanes that overlap or are in close proximity, a continuous lane shall be established between the accesses to improve roadway consistency and safety, and to maintain edge continuity.



6. If the location of the access driveway(s) is within two different speed zones, the criteria for the higher speed zone shall apply.
7. A speed-change lane shall be at least 10 feet wide or equal in width to that of the through lane, whichever is greater.
8. When no curb and gutter are required, a paved shoulder shall be provided that matches the existing shoulder width along the roadway or is a minimum of 2 feet in width, whichever is greater.
9. When curbing is used adjacent to the auxiliary lane, an appropriate curb offset shall be provided.

### **12.3 Length of Storage for Speed-Change Lanes**

The length of a speed-change lane should be determined using the equation  $[2 \times (25 \text{ feet per vehicle}) \times (\text{peak-hour volume})] / [30 \text{ cycles per hour}]$  or by software methods as agreed upon in discussions with the District Engineer or as required in AASHTO [A Policy on Geometric Design of Highways and Streets](#).

### **13. INTERNAL CIRCULATION**

In order to ensure efficient internal circulation, storage areas at access drives must be designed to have adequate capacity. Storage on a driveway should be of sufficient length to keep stopped vehicles from blocking the path of entering vehicles or vehicles traveling along the internal circulating roadways.

The following guidelines provide efficient internal circulation in medium- and large-size developments:

#### **1. Site Layout**

Where large commercial developments (greater than 100,000 square feet of building area) are involved, the following should be considered in designing the access and site-circulation:

- (a) Provide a throat length (distance to the first internal intersection or driveway) of 250 feet, which is necessary for a high-capacity access driveway. There should be no approaches along this throat within 150 feet from the state maintained roadway.
- (b) Orient the long dimension of linear developments parallel to the roadway. This will provide for longer signal spacing and good on-site circulation.
- (c) Provide ring roads.
- (d) Design the parking lot to minimize disruption to inbound traffic.

#### **2. Internal Storage**

To determine the correct length of storage, traffic volumes should be assigned to the applicable lanes and the highest volume should be accommodated. The following are accepted values:

- (a) For major regional centers, double left turns and a 250 feet throat length for vehicle storage should be provided.
- (b) For smaller community centers, a minimum of 120 feet to 150 feet of throat length for storage space should be provided.
- (c) To avoid traffic backup onto the roadway, traffic control should be designed so that traffic entering the site from the roadway has the right-of-way.

## 14. MAINTENANCE

Driveways or entrances become unserviceable due to heavy equipment damage, reclamation by natural causes, increased traffic volume, and other related factors. They should be well maintained to ensure that the original profile is retained, that operating speeds are not reduced by rough surfaces, and that no damage to or deterioration of the roadway pavement is caused by the condition of the driveway.

The DOH places the responsibility on the property owner to maintain driveways and adjacent areas within the state highway right-of-way. Maintenance shall be done in a manner satisfactory to the DOH. The DOH assumes no obligation, financial or otherwise, for maintenance of driveways or entrances.

To ensure the safety of motorists and pedestrians and to promote effective drainage, the following guidelines shall be followed by the property owner with regard to the maintenance of driveways.

### 1. Within Right-of-Way Limits

#### (a) Entrances in curb and gutter sections

If the DOH is responsible for maintenance of adjacent sidewalks, it shall maintain the entrance to the back edge of the sidewalk. If there is no sidewalk, or if the DOH is not responsible for the maintenance of the sidewalk, it shall maintain the entrance only to a line 2 feet behind the gutter line. The property owner is responsible for the satisfactory maintenance of the remainder of the entrance.

#### (b) Entrances not in curb and gutter sections

The DOH shall maintain that portion of the entrance between the edge of the pavement and normal shoulder line. The property owner shall be responsible for the satisfactory maintenance of the remainder of the entrance with the following exceptions:

- (i) When the DOH constructs a separation island as part of a road project or safety improvement, it is responsible for the maintenance of the island unless the right-of-way agreement designates the responsibility as that of the landowner.
- (ii) When the entrances are constructed under permit, the maintenance of the separation island shall be the responsibility of the property owner.

## **2. Drainage**

Maintenance activities pertaining to drainage within the owner's property or drainage installed by permit on the Division's right-of-way shall be the owner's responsibility. This includes leakage in pipe-joints, blockages in inlets, grates, curb openings or combination inlets due to trash accumulation and erosion control.

## **3. Snow Removal**

It is the responsibility of the property owner to remove or clear snow, sleet, and ice, or to open windrows of such materials upon any portion of the driveway or entrance along the state roadway. Snow and ice from the driveway shall not be moved onto the traveled surface or shoulder of the roadway.

## **15. TRAFFIC ACCESS AND IMPACT STUDY**

A site traffic access and impact study is a tool used to obtain information needed to assess the effects a particular development will have on the surrounding transportation network. It will determine what provisions are needed for safe and efficient site access and traffic flow. It will also address other related issues.

Driveway permit applicants for major developments that have a significant impact on the roadway system shall submit a traffic impact study report which determines the type of access and scope of required roadway improvements required to accommodate the proposed development. The study and the report shall be prepared by and under the supervision of a registered Professional Engineer specializing in traffic engineering studies. This work must be done in cooperation and coordination with the District Traffic Engineer and personnel of the Traffic Engineering Division of the DOH.

### **15.1 Warrants for Traffic Impact Study**

The following situations are thresholds that commonly trigger the requirement for a traffic impact study:

1. When the development will generate the following specified number of vehicular trips:
  - (a) The proposed development is expected to generate 3,000 or more vehicle trips per day (total inbound and outbound development traffic).
  - (b) The total adjoining roadway plus development traffic will exceed 500 vehicles per hour during the adjoining roadway's peak hour and 100 or more of these vehicles are newly generated peak direction trips to or from the site.
2. When the development contains more than 100 dwelling units or commercial property with more than 150,000 square feet of gross leasable area.
3. At the discretion of the District Traffic Engineer.

See Appendix E for a list of items that should be included in a traffic impact study.

### **15.2 References**

Traffic engineering techniques/methodologies described in the following references should be used as guides for performing the traffic impact study:

1. American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, Washington, DC, current edition.
2. Federal Highway Administration, Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Washington, DC, current edition.
3. Highway Capacity Manual, Transportation Research Board Special Report 209, National Research Council, Washington, DC, current edition.
4. Institute of Transportation Engineers, Traffic Access and Impact Studies for Site Development - A Recommended Practice, Washington, DC, current edition.
5. Institute of Transportation Engineers, Trip Generation, current edition.
6. Stover, Vergil G. and Koepke, Frank J., Transportation and Land Development, Institute of Transportation Engineers, Washington, DC, current edition.

### **15.3 Final Report**

A final report must be prepared to document the results of the traffic impact study and there commended improvements to accommodate the projected traffic due to the proposed development. Specific contents of the report should be discussed in a scope of work meeting between the study preparer and the DOH traffic engineer. The report must be presented in a format which can be understood by both technical and non-technical parties. The presentation of data and analysis results should be accomplished on either schematic diagrams of the study area or through the use of charts and/or tables. All sources of data and methodologies which were used in the study must be properly referenced and documented. The report should be prepared in accordance with the previously cited ITE Recommended Practice. Appendix E identifies the contents of a traffic impact study report.

### **15.4 Review Procedure**

The final report shall be submitted to the DOH for review and approval. Reports that do not contain the required information or indicate that the study was not done in accordance with DOH requirements will be returned for correction and resubmission.

## 15.5 Developer's Participation in Project Costs

The following guidelines have been developed in an effort to obtain an equitable method of determining developer responsibility for participation in funding traffic signal work and traffic control devices necessitated by land development.

1. Where the proposed development will generate sufficient traffic to warrant signalization, the total cost for materials and installation shall be borne by the developer.
2. Where an existing traffic signal must be modified to accommodate traffic movements to or from the development, the developer shall bear the total cost for any materials, installation, and relocation required to accommodate the development traffic.
3. If the development traffic causes the level of service of the facility to worsen, the developer will be required to fund the roadway improvements needed.
4. The developer shall, at his/her own expense, install and maintain as specified in the permit, all non-electrically-powered traffic control devices on their approach, which are required to provide for the safe and orderly movement of vehicular and/or pedestrian traffic. These devices shall include, but not be limited to, any required regulatory, warning or guide signs, delineators, and pavement markings.

**Note:** The maintenance and utility costs of the traffic signal(s) shall be the responsibility of the DOH or municipality. An operating agreement is required prior to installation of a traffic signal.

**APPENDIX A**  
**WEST VIRGINIA CODE**



## Sections of the West Virginia Code

### **§17-2A-12. Traffic control factors; parking regulations.**

In the interest of safety and the convenience, coordination and control of pedestrian and vehicular traffic, the commission may from time to time cause surveys and findings to be made as to the necessity and propriety of setback lines, traffic islands, curb separations, entrance approaches, sidewalks and other traffic control factors. The commission may, pursuant to such surveys and findings, promulgate and enforce reasonable rules and regulations relating to and controlling the location, construction and maintenance of all such traffic control factors, but shall not in any case unduly interfere with any abutting property owner's entrance or access rights or approaches to any road or highway unless with the consent and voluntary action of such abutting property owner or through appropriate proceedings in court in the exercise of the right of eminent domain for determination of the lawful rights of the respective parties and the damages, if any, to be assessed. The limitations of this section on the commission's authority to regulate entrance and access to roads and highways shall not apply to freeways as defined in section thirty-nine of article four of this chapter.

The commission may regulate and, when the safety and convenience of the traveling public so require, may prohibit parking of vehicles on and along roads and highways and the rights- of-way thereof.

### **§17-4-47. Access from commercial, etc., property and subdivisions to highways -- Purposes of regulation; right of access; provisions inapplicable to controlled-access facilities; removal of unauthorized access.**

- (a) Access to and from state highways from and to real property used or to be used for commercial, industrial or mercantile purposes or from and to real property that is subdivided into lots is a matter of public concern and shall be regulated by the state road commissioner to achieve the following purposes:
  - (1) To provide for maximum safety of persons traveling upon, entering or leaving state highways;
  - (2) To provide for efficient and rapid movement of traffic upon state highways;
  - (3) To permit proper maintenance, repair and drainage of state highways; and
  - (4) To facilitate appropriate public use of state highways.
- (b) Except where the right of access has been limited by or pursuant to law, every owner or occupant of real property abutting upon any existing state highway has a right of reasonable means of ingress to and egress from such state highway consistent with those policies expressed in subsection (a) of this section and any regulations issued by the commissioner under section forty-eight of this article.
- (c) If the construction, relocation, or reconstruction of any state highway, to be paid for in whole or in part with federal or state road funds, results in the abutment of real

property as defined in subsection (a) of this section on such state highway that did not previously abut on it, no rights of direct access shall accrue because of such abutment, but the commissioner may authorize and limit access, if any, from such property compatible with the policies stated in subsection (a) of this section and any regulations issued by the commissioner under section forty-eight of this article.

- (d) The policies expressed in this section are applicable to state highways generally and shall in no way limit the authority of the state road commissioner to establish controlled- access facilities under the provisions of sections thirty-nine through forty-six of this article.
- (e) Any unauthorized access to a state highway may be removed, blocked, barricaded or closed in any manner deemed necessary by the commissioner to protect the public and enforce the policies of this section and sections forty-eight, forty-nine and fifty of this article.

**§17-4-48. Same -- Regulations by commissioner.**

The state road commissioner is hereby authorized to issue reasonable regulations specifying standards for the location, design and construction of access facilities to state highways and any other regulations necessary to carry out the policies stated in section forty-seven of this article. Such regulations may be based upon any or all of the following:

- (a) Standards suggested by any public organization or body concerned with highway or traffic safety; or
- (b) Studies, surveys or reports made for the commissioner or for any other governmental agency; or
- (c) Any other data deemed relevant by the commissioner. Regulations affecting access previously issued by the commissioner or the state road commission shall continue in effect until altered or withdrawn by the commissioner.

**§17-4-49. Same -- Points of commercial, etc., access to comply; plans, objections and procedures for new points; review of and changes in existing points; commissioner's preliminary determination.**

- (a) No new points of access to and from state highways from and to real property used or to be used for commercial, industrial or mercantile purposes shall be opened, constructed or maintained without first complying with the provisions of this section and sections forty-seven and forty-eight of this article. Access points opened, constructed or maintained without such compliance are deemed unauthorized.
- (b) Plans of any such new point of access shall be submitted to the state road commissioner directly, and the following rules shall apply:
  - (1) Notice of the proposed new point of access shall be filed with the

- commissioner, along with a plan of the proposed new point of access.
- (2) The commissioner shall review the plan to insure compliance with the policies stated in section forty-seven of this article and with any regulations issued by the commissioner under section forty-eight of this article.
  - (3) The commissioner shall reduce his objections to the proposed new point of access, if any, to writing and promptly furnish notice of such objection to the owner or owners of the real property affected and of their right to demand a hearing thereon. A plan not so objected to within six weeks from the time it is filed with the commissioner shall be deemed to have been approved by the commissioner.
  - (4) In any case where the commissioner so objects to the proposed new point of access, the owner or owners of the real property affected shall have reasonable opportunity for a hearing on such objections.
- (c)
- (1) Existing points of access to and from state highways from and to real property used for commercial, industrial or mercantile purposes may be reviewed by the commissioner to determine whether such points of access comply with the policies stated in section forty-seven of this article and with any regulations issued by the commissioner under section forty-eight of this article. The commissioner may direct reasonable changes in existing points of access to and from state highways from and to property used for commercial, industrial or mercantile purposes if he determines from accident reports or traffic surveys that the public safety is seriously affected by such points of access and that such reasonable changes would substantially reduce the hazard to public safety. When such changes require construction, reconstruction or repair, such work shall be done at state expense as any other construction, reconstruction or repair.
  - (2) If the commissioner makes a preliminary determination that any such changes should be made, the following rules shall apply:
    - (a) The commissioner shall reduce his preliminary determination to writing and promptly furnish notice of such preliminary determination to the owner or owners of the real property affected and of their right to demand a hearing thereon. Such notice shall include a description of suggested changes deemed by the commissioner suitable to reduce the hazard to the public safety.
    - (b) In any case where the commissioner makes a preliminary determination that any such changes should be made, the owner or owners of the real property affected shall have reasonable opportunity for a hearing on such preliminary determination.

**§17-4-50. Same -- Commissioner's authority as to subdivisions abutting state highway; notice of proposal to subdivide; filing, approval or disapproval of subdivision plans.**

- (A) In addition to other authority granted the commissioner to control access to state highways, the commissioner shall have authority in regard to the subdividing of land, any part of which abuts upon a state highway, as provided in this section.
- (B) For purposes of this section, the following terms have the following meanings:
  - (1) "Lot" means an identified area of land one acre or less in size.
  - (2) "Subdividing" means the dividing, laying out or separating of five or more lots from or within a parcel of land or a successive dividing, laying out or separating of lots resulting in the creation of five or more lots within a parcel of land within five years.
  - (3) "Subdivision plan" means a graphic representation of a parcel of land showing the lots therein and any other relevant natural or man-made topographical feature.
  - (4) "Parcel" means an identified area of land owned by a person or owned by a combination of persons jointly or in common; or more than one identified area of land where such areas are contiguous and the owners act in concert in relation to such land.
- (C) Subdividing occurs and a subdivision results within the meaning of this section whenever:
  - (1) A person subdivides five or more lots from a parcel at one time; or
  - (2) A successive division of lots out of a parcel results in the separation of the fifth or subsequent lot within a five- year period; or
  - (3) A person divides a parcel into tracts of land larger than a lot knowing, or having reason to know, that such parcels will in turn be divided or separated into a total of five or more lots.
- (D) The remedies provided by this section shall not apply to lots which became such prior to the effective date of this section, but such lots may be considered in determining when an act of subdividing occurs after the effective date of this section, and in reviewing subdivision plans and applying remedies to lots which became such after the effective date of this section.
- (E) The subdivision plans of the subdividing of any land, a part of which abuts on a state highway, shall be submitted to the state road commissioner directly, and the following rules shall apply:
  - (1) Notice of the proposal to subdivide shall be filed with the commissioner, along with a plan of the proposed subdivision.
  - (2) The commissioner shall review the plan to insure compliance with the policies stated in section forty-seven of this article and with any regulations issued by the commissioner under section forty-eight of this article.
  - (3) The commissioner shall reduce his objections to the proposed point of access

to and from the state highway from and to the real property that is to be subdivided into lots, if any, to writing and promptly furnish notice of such objections to the person proposing such subdivision and of his right to demand a hearing thereon. A subdivision plan not so objected to within six weeks from the time it is filed with the commissioner shall be deemed to have been approved by the commissioner.

- (4) In any case where the commissioner so objects to the proposed access to and from a new subdivision plan, the person submitting such plan shall have reasonable opportunity for a hearing on such objections.
- (F) A subdivision is deemed disapproved if it was not submitted to the commissioner for review under the provisions of this section or if the commissioner has made timely objection to such plan and such objections have not been withdrawn. Disapproval shall have the following effect:
- (1) The commissioner may post signs upon the adjacent highway right-of-way stating that the subdivision is disapproved, that access to and from lots in such subdivision from and to the state highway is not allowed, and any other relevant information deemed by the commissioner necessary to warn the public of such disapproval and its effect; and
  - (2) The commissioner shall have authority to limit access to and from such subdivision as a whole from and to the state highway to such access as would have been reasonable before the land was subdivided and to prevent and prohibit any other access to and from the state highway from and to such subdivision.

**§17-4-51. Same -- Amendment or withdrawal of objections or preliminary determinations by commissioner; delegation of authority by commissioner.**

- (a) The state road commissioner may revise, amend or withdraw any objections issued by him and any preliminary determinations made by him under sections forty-seven, forty-eight, forty-nine or fifty of this article upon reasonable notice to the owner or owners of the property affected or to the person submitting a subdivision plan.
- (b) The commissioner may delegate the authority to make, revise, amend and withdraw objections and preliminary determinations and hold hearings required or authorized under this section and sections forty-seven, forty-eight, forty-nine and fifty of this article.

**§17-4-52. Same -- Requirements for objections, preliminary determinations and notices.**

- (a) All objections and preliminary determinations made pursuant to sections forty-seven,

forty-eight, forty-nine and fifty of this article, and all notices required to be given pursuant to sections forty-seven, forty-eight, forty-nine, fifty and fifty-one of this article, shall be in writing. All such objections and preliminary determinations shall be signed by the person making them, and all such notices shall be signed by the person charged with the duty of giving the notice.

- (b) Notice of any preliminary determination or objection required or authorized by sections forty-seven, forty-eight, forty-nine or fifty of this article shall be given by causing such notice to be delivered to the owner or owners of the real property affected or by causing a copy thereof to be sent by certified or registered mail to such owner or owners at his or their last-known place of business or residence.

**§17-16-6. Permit by commission or county court for openings in or structures on public roads; franchises and easements of oil, etc., transportation companies.**

No opening shall be made in any state or county-district road or highway, nor shall any structure be placed therein or thereover, nor shall any structure, which has been so placed, be changed or removed, except in accordance with a permit from the state road commission or county court, as the case may be. No road or highway shall be dug up for laying or placing pipes, sewers, poles or wires, or for other purposes, and no trees shall be planted or removed or obstructions placed thereon, without the written permit of the commission or county court, or its duly authorized agent, and then only in accordance with the regulations of the commission or court. The work shall be done under the supervision and to the satisfaction of the commission or court; and the entire expense of replacing the highway in as good condition as before shall be paid by the persons to whom the permit was given, or by whom the work was done: Provided, however, That nothing herein contained shall be so construed as to prevent any oil or gas company or person having a proper permit or franchise from transporting oil or gasoline along any of the public highways of this state, nor to give such company a franchise without paying to the landowners through whose lands such road passes the usual and customary compensation paid or to be paid to the landowners for such right of way. Any grant or franchise when made shall be construed to give to such company or person only the right to use the easement in such public road.

A violation of any provision of this section shall be a misdemeanor, and the person or corporation violating the same shall, upon conviction thereof, be fined not less than twenty-five nor more than one hundred dollars for each offense.

**APPENDIX B**  
**ADMINISTRATIVE REGULATIONS**

**Sections of the “Division of Highways Legislative Rules, Title 157, Series VI, Section 6”.**

**§157-6-4. Rules for Issuance of Permits for Making Openings or Placing Structures; In, Upon, Along, Over, Under and Across State Roads.**

- 4.1. General Regulations for Issuance of Such Permits.
  - 4.1.a. Form of Application. Applications for permission to perform work within highway right of way must be made on the Division’s standard permit form. The applicant must provide full information concerning the work to be done and must include a sketch.
  - 4.1.b. Signature Required. Applications must be signed by the applicant or his duly authorized representative.
  - 4.1.c. Security. The applicant must deposit security with the Division in the form of a certified check, money order, or executed bond, with surety satisfactory to the Division, to cover any damage the Division may sustain due to granting the permit, including any expense incurred in restoring the highway to its original condition, or the proper repair of any and all damages that may result within one (1) year from the date of the completion of the work.
  - 4.1.d. Completion Date. The application must state the date the proposed installation is to be completed.
  - 4.1.e. Approval of Application. Applicants for permits must file the original and three (3) copies of the application with the District Administrator in whose District the proposed installation is to be made before any work can be started, the application must be approved by District Administrator or the Director of the Highway Operations Division.
  - 4.1.f. Inspection. The work must be done under the supervision and to the satisfaction of the Division. The applicant must agree to reimburse the Division for any inspection costs incurred under the permits.
  - 4.1.g. Notification. The application must notify the Division at least 48 hours in advance of the date work will begin.



- 4.1.h. Control of Traffic. The traveling public must be protected at all times in accordance with the Division's manual "Traffic Control for Streets and Highway Construction and Maintenance Operations." This manual may be obtained by contacting the Division's central headquarters in Charleston, or any of the Division's district headquarters.
- 4.1.i. The applicant will repair, at his or her expense, damage to the road at any time resulting from work authorized under the permit. Unsatisfactory repairs may be corrected by the Division or its authorized agent and the cost thereof paid by the applicant.
- 4.1.j. Save Harmless. The person, firm or corporation to whom a permit is issued must agree to save harmless the State, the Commissioner, and any and all officers, agents and employees of the Division from any damages to persons or property arising or resulting from work authorized or done under the permit.
- 4.1.k. Liability. The Division assumes no liability for damage to the proposed installation by reason of construction or maintenance work on the road.
- 4.1.l. Removal. All permits granted shall be subject to the removal of the installation by the permittee at no cost to the Division when required for improvement of the road, and subject to all rules now or hereinafter adopted by the Commissioner.
- 4.1.m. Cancellation. The Commissioner reserves the right at any time to cancel any permits in the event the applicant or the person by whom the work is being done thereunder fails to comply with the terms and conditions under which it is granted.

**§157.6.5. Removal of Obstructions From Roadway.**

- 5.1. Procedure for Effecting Removal of Obstructions. The procedure for effecting the removal of any obstruction, as defined in WV Code §17-16-1, from the right of way limits of any state highway, shall be as follows:
  - 5.1.a. Notice. The County Maintenance Superintendent shall notify the owner or the person responsible for the obstruction, that he or she

is violating the law in placing, or causing to be placed, the obstruction within the highway right of way limits, and that immediate steps must be taken not only to remove the obstruction, but also to make any necessary repairs resulting from the existence of the obstruction.

- 5.1.b. **Additional Notice.** In the event of failure to undue delay on the part of the owner or the person responsible to remove immediately the obstruction, the County Maintenance Superintendent shall notify the District Administrator of the circumstances relating thereto. Thereupon the District Administrator shall notify the responsible party by letter to remove the obstruction. If the obstruction is not removed within ten (10) days, the Commissioner, or his duly authorized representative, shall then cause a written notice to be served upon the owner or person responsible for the obstruction in the manner provided by law for service of notice or process, notifying such owner or responsible person to remove said obstruction within ten (10) days from the date of service of the notice. If, following service of the notice, the obstruction is not removed within ten days, the Division will remove the obstruction. The costs and applicable penalties for the obstruction removal will be the responsibility of the owner or responsible person of the obstruction. The assessment and collection of costs will be pursued in accordance with W.Va. Code, §17-16-3, 4 and 5.

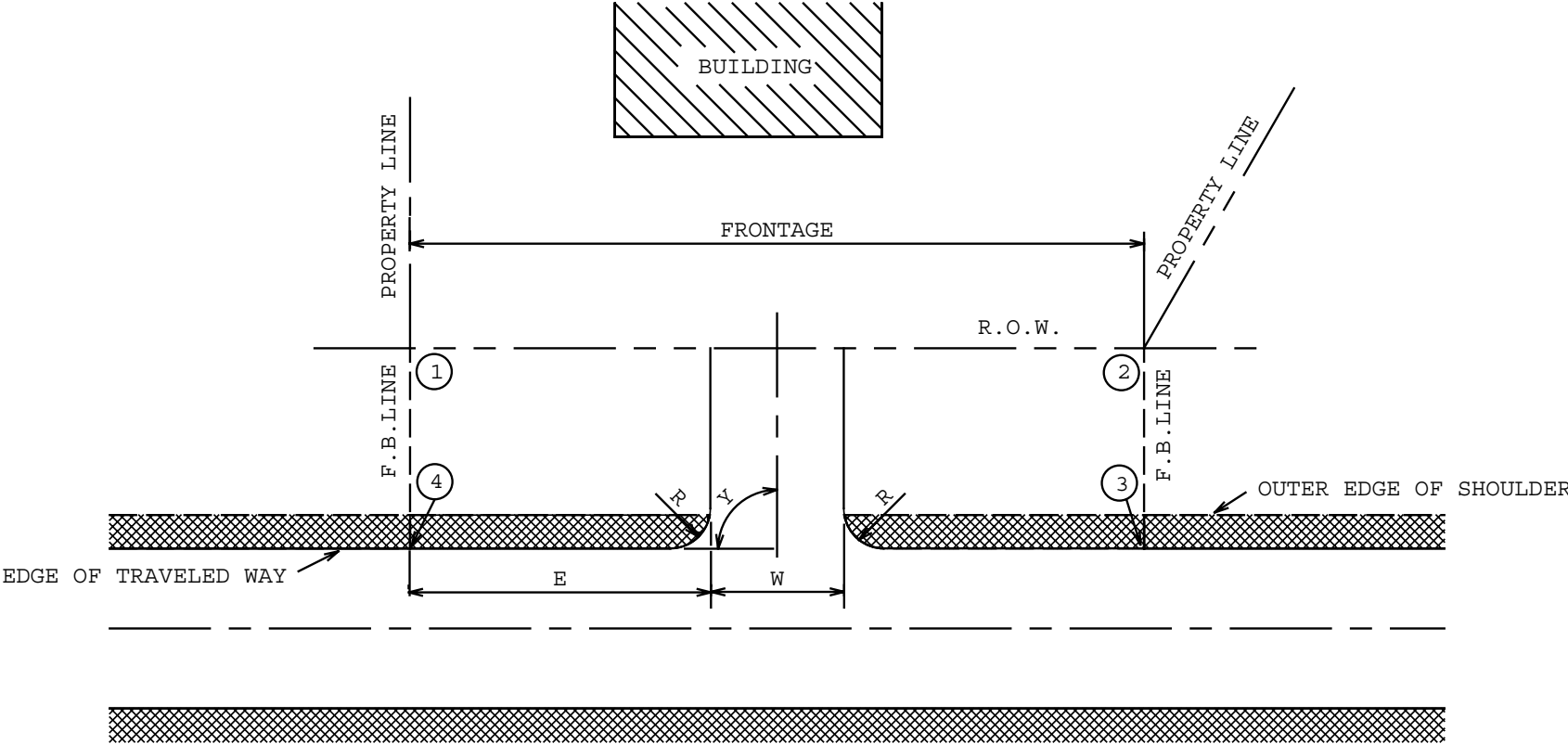
**§157-6-6. Constructing Driveways on State Highway Right-of-Way.**

- 6.1. Any person desiring to construct or reconstruct one or more driveways or other connections to or within the right of way of any state system street or highways, must do so in accordance with the requirements specified in the Division's manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way". This manual may be obtained by contacting the Division's district headquarters.

## **APPENDIX C**

### **FIGURES**

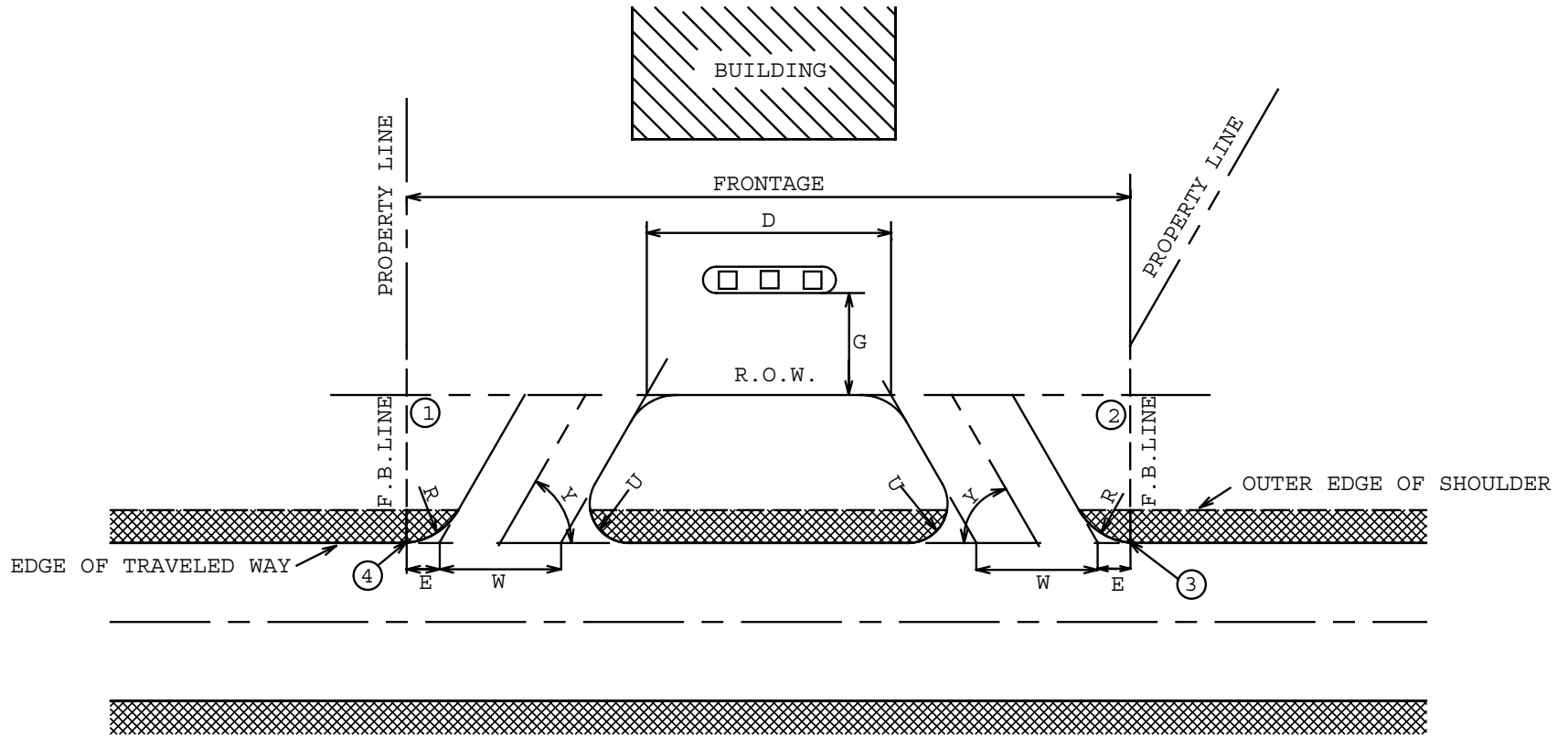
NOTE: F. B. LINE = FRONTAGE BOUNDARY LINE



### SINGLE DRIVEWAY - DIAGRAMMATIC

FOR ILLUSTRATING DEFINITIONS

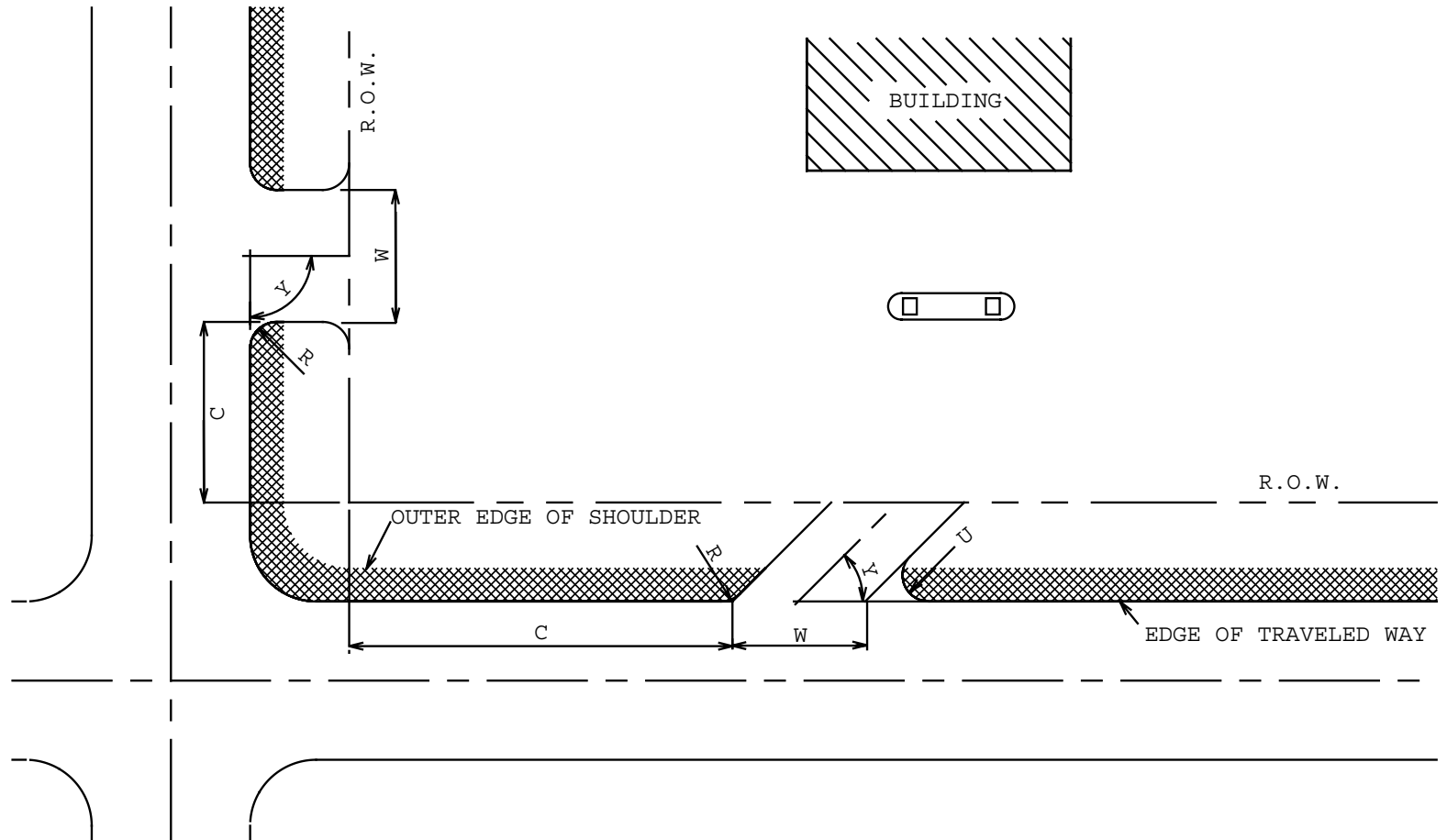
FIGURE 1



### DOUBLE DRIVEWAY - DIAGRAMMATIC

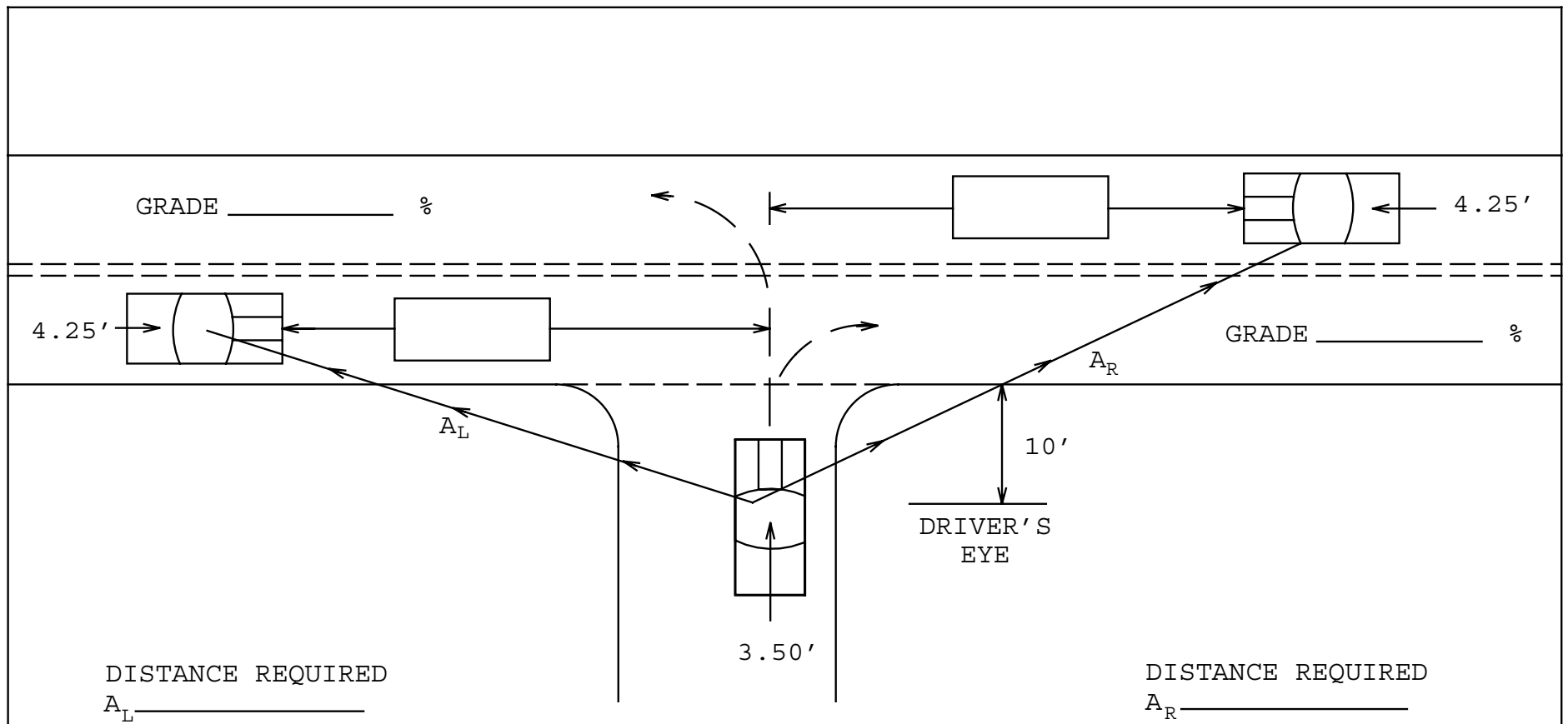
FOR ILLUSTRATING DEFINITIONS

FIGURE 2



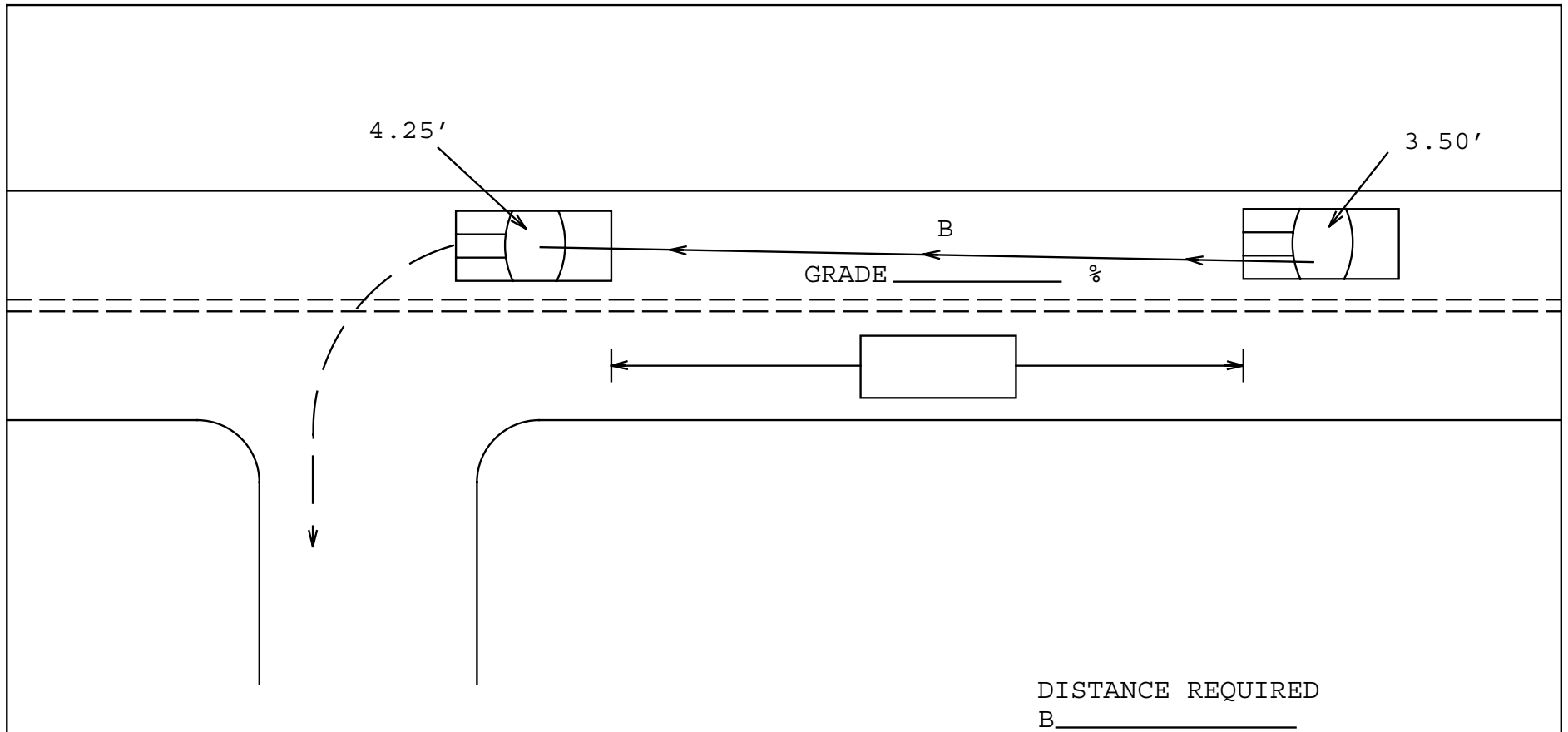
DRIVEWAYS FOR CORNER INSTALLATIONS - DIAGRAMMATIC  
FOR ILLUSTRATING DEFINITIONS

FIGURE 3



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT AN ACCESS LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

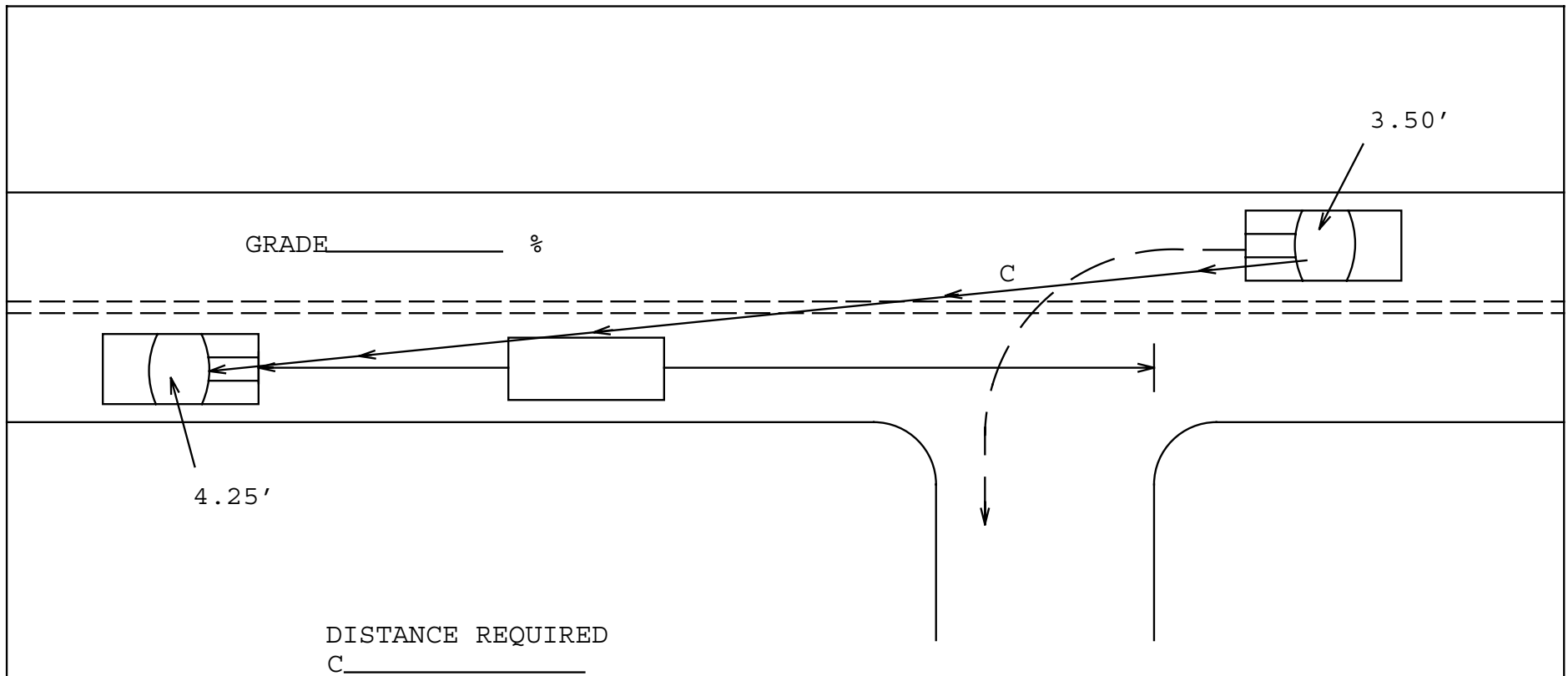
FIGURE 4A



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS INTENDING TO MAKE A LEFT TURN INTO AN ACCESS.

FIGURE 4B

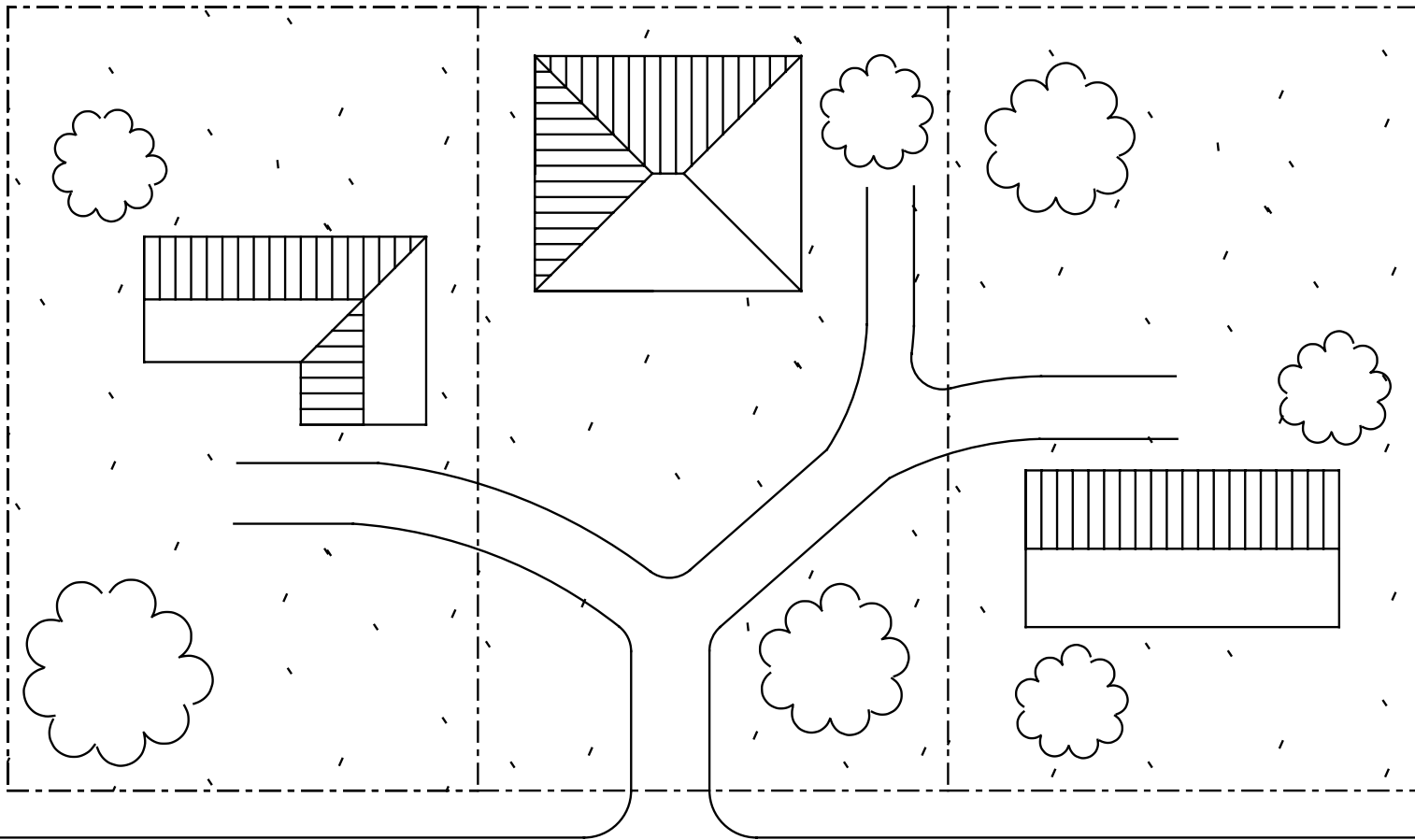




THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO AN ACCESS CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

FIGURE 4C

09

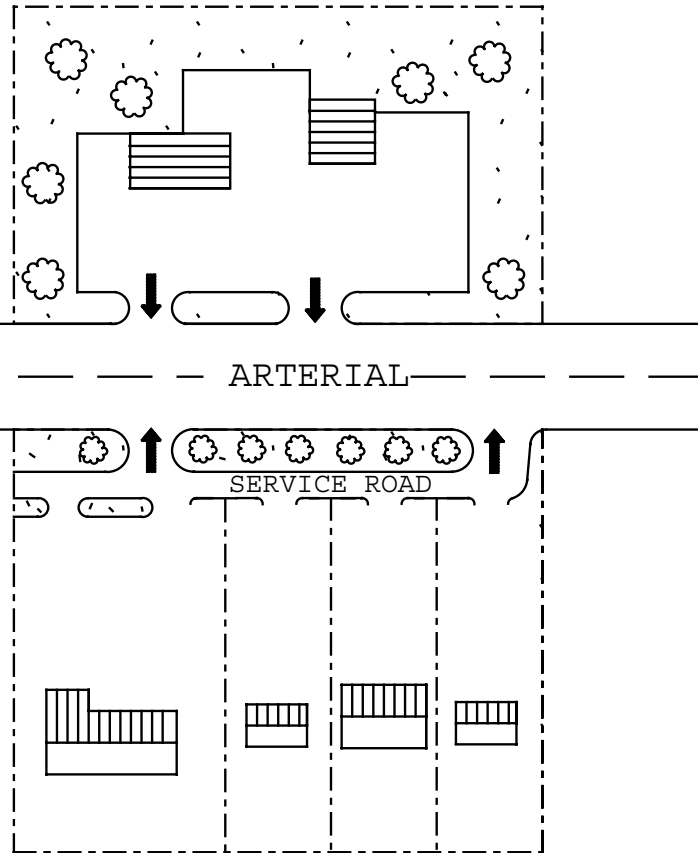


# SHARED DRIVEWAYS

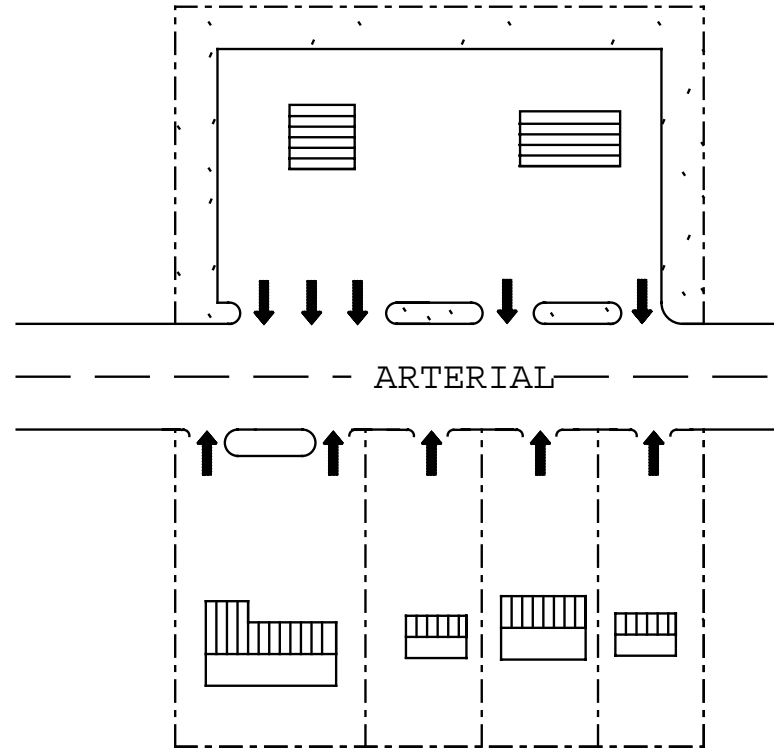
FIGURE 5A

SHARED COMMERCIAL DRIVEWAYS REDUCE  
CONGESTION AND CONFLICT POINTS

THIS:

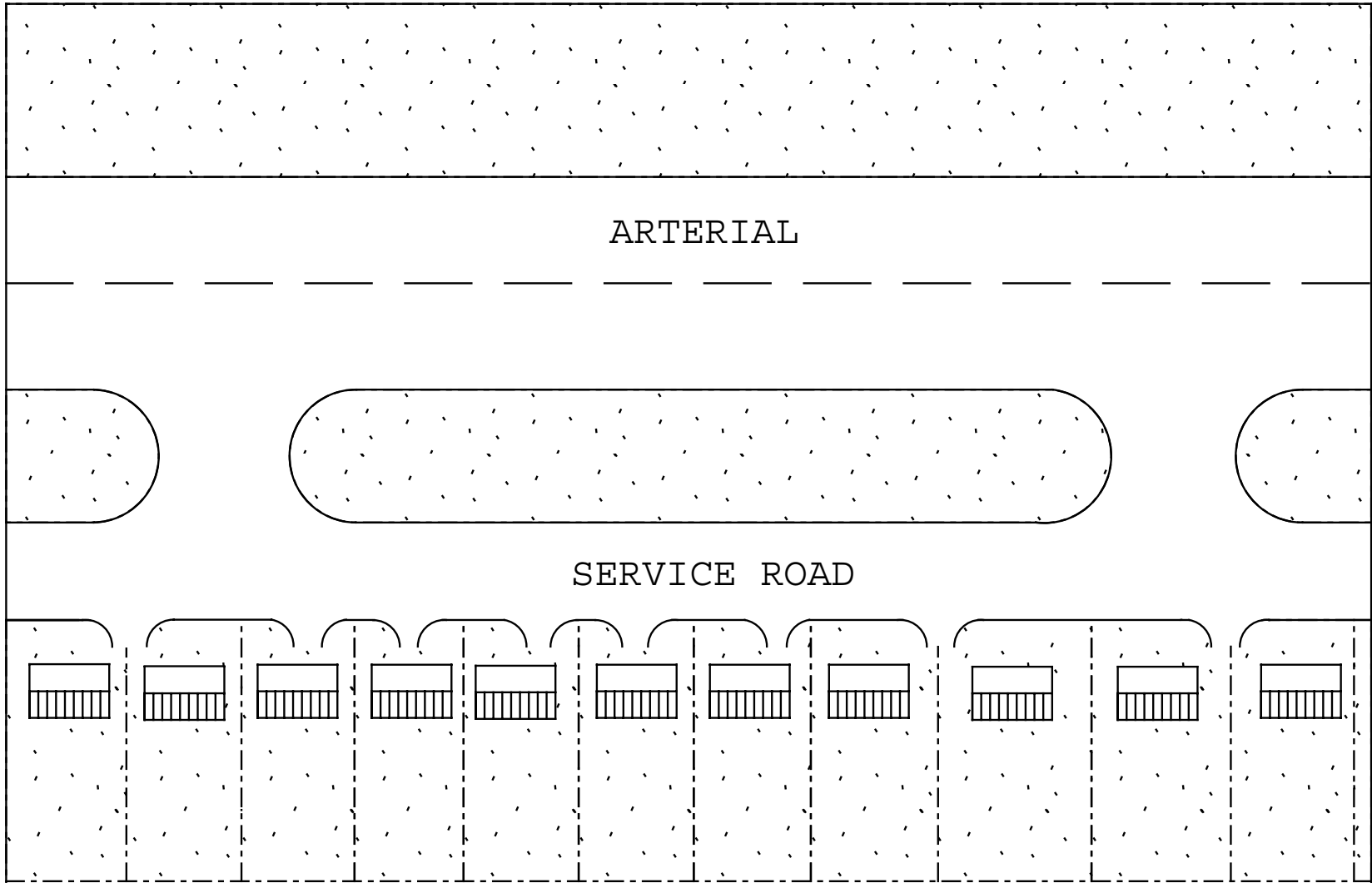


NOT THIS:



SHARED COMMERCIAL DRIVEWAYS

FIGURE 5B



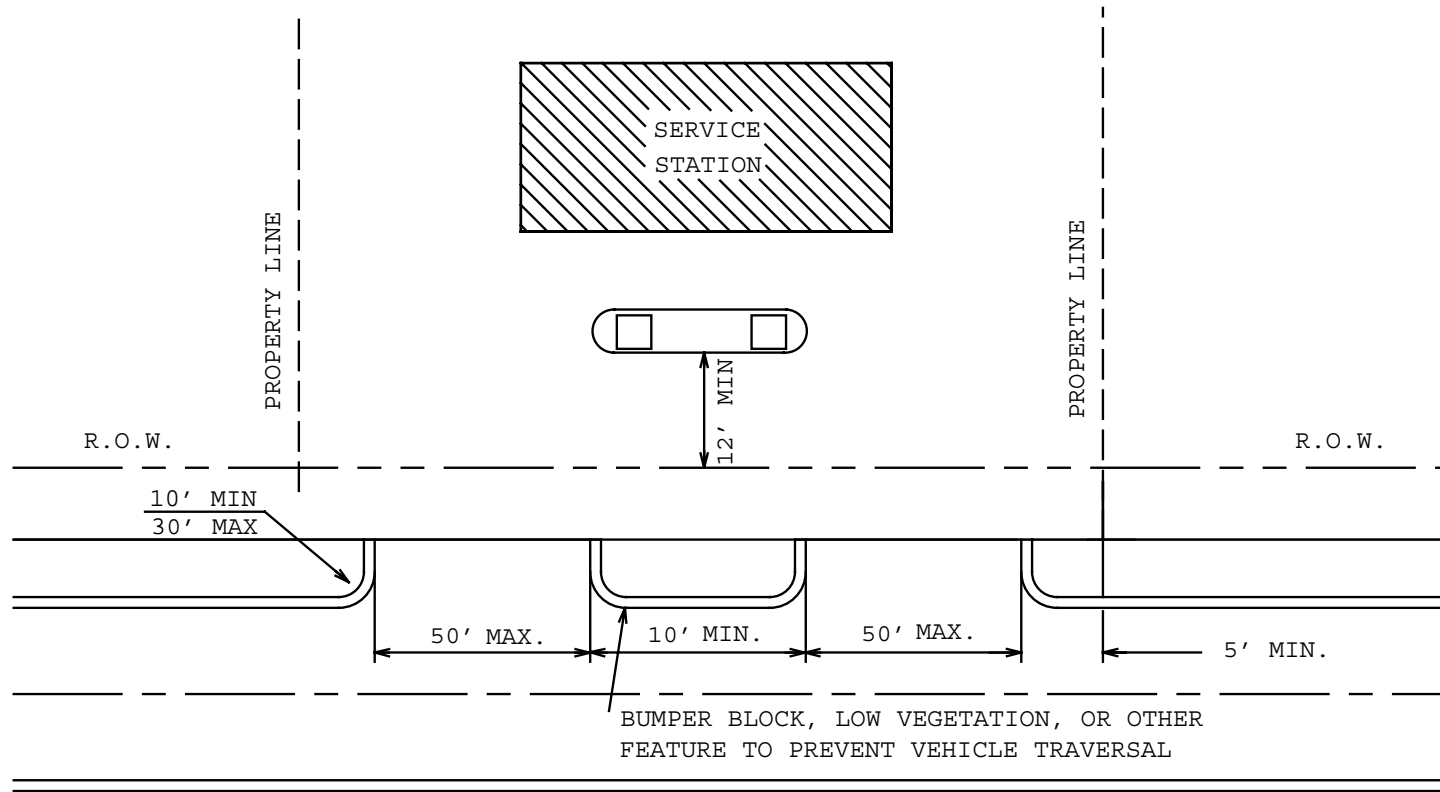
62

A SERVICE ROAD HANDLES MUCH OF THE LOCAL TRAFFIC  
LEAVING THE ARTERIAL CLEAR FOR THROUGH TRAFFIC.

SERVICE ROAD

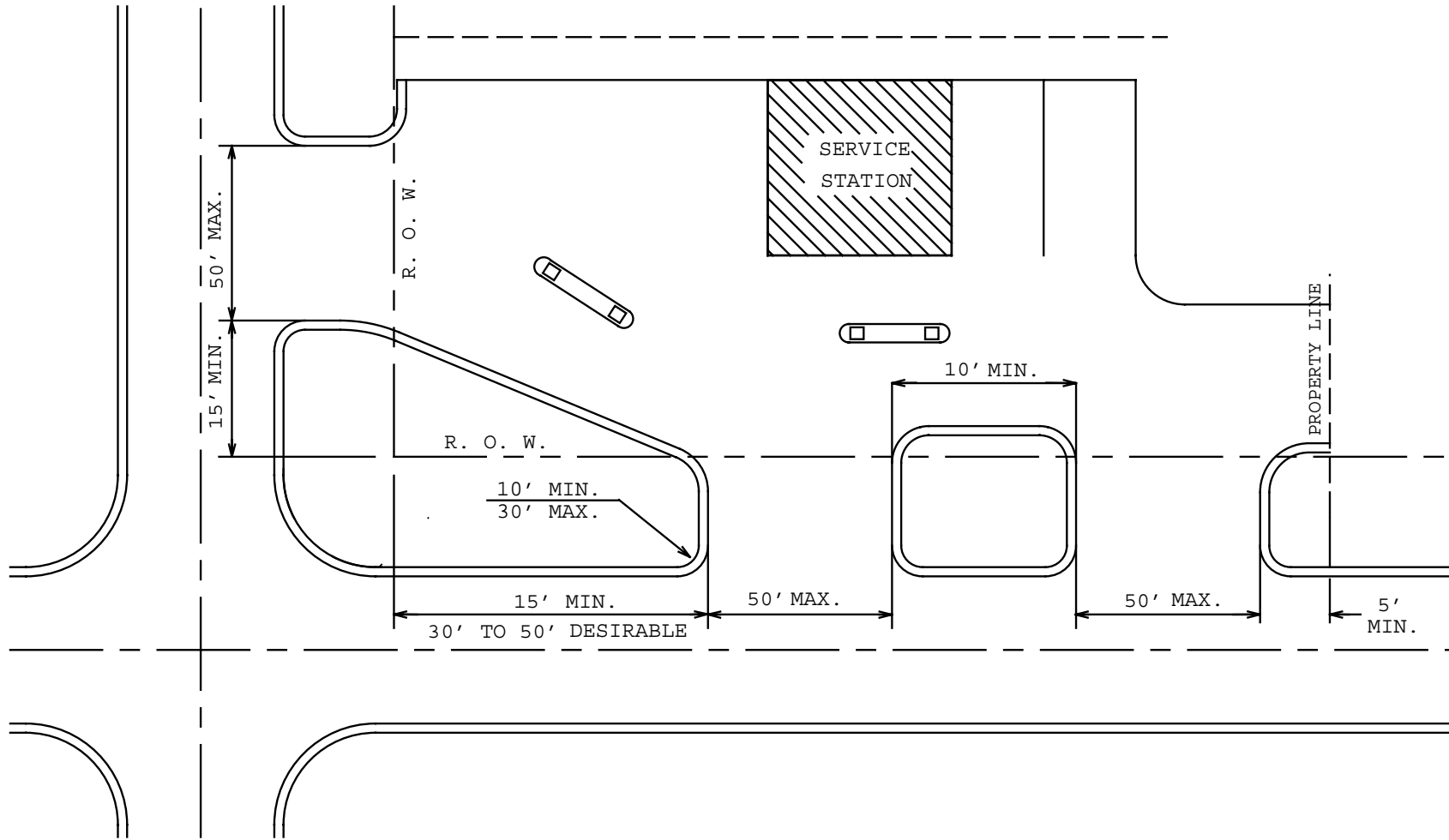
FIGURE 5C





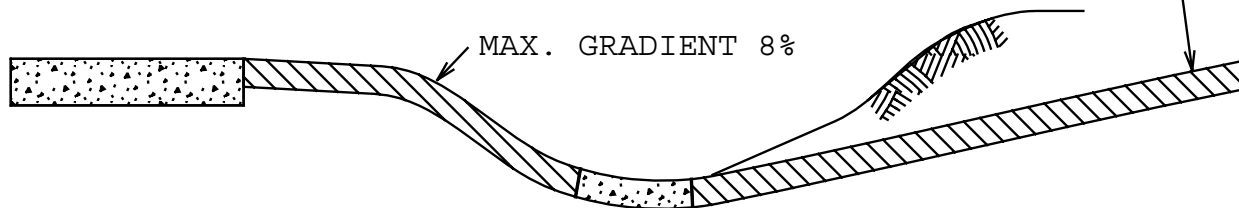
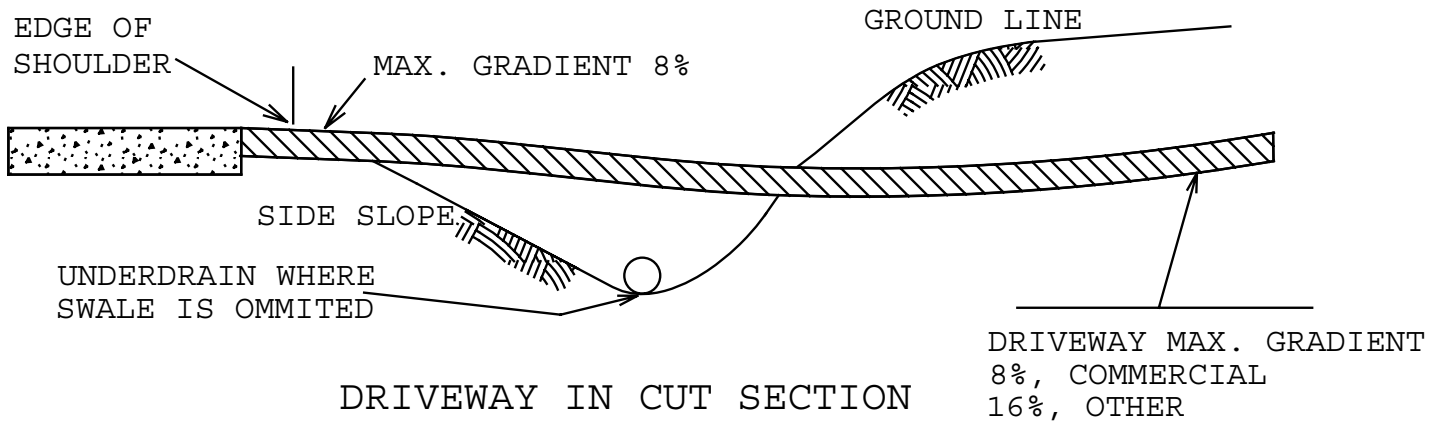
DOUBLE DRIVEWAYS TO A MIDBLOCK SERVICE STATION -- URBAN

FIGURE 7



DOUBLE DRIVEWAYS TO A CORNER SERVICE STATION -- URBAN

FIGURE 8



DRIVEWAY WITH VALLEY GUTTER

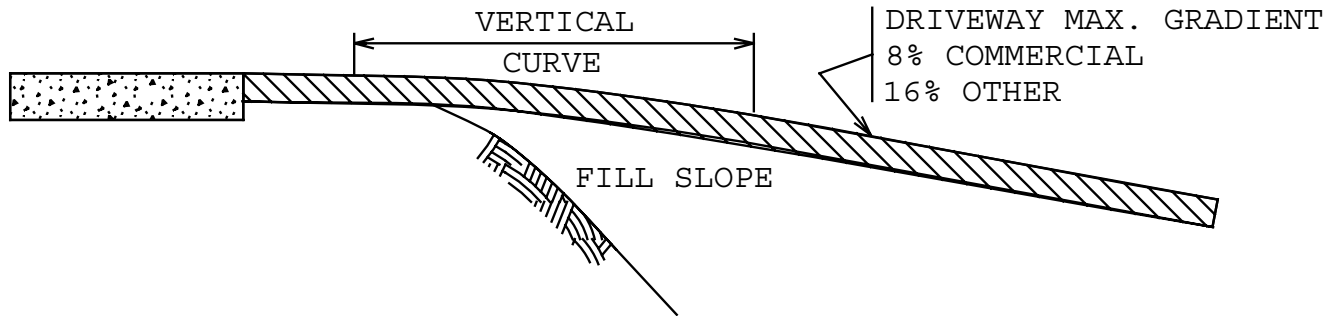
NOTE: WHEN NEITHER OF THESE IS ACHIEVABLE,  
A SLOTTED DRAIN OR BOX DRAIN MAY BE USED.

WITHOUT HIGHWAY EDGE CURB

## DRIVEWAY PROFILE CONTROLS

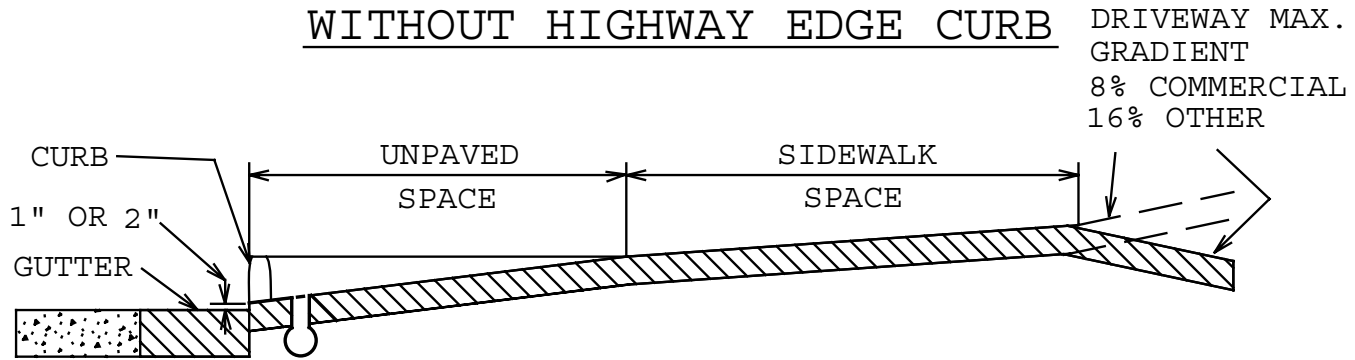
FIGURE 9A





DRIVEWAY AT A FILL SECTION

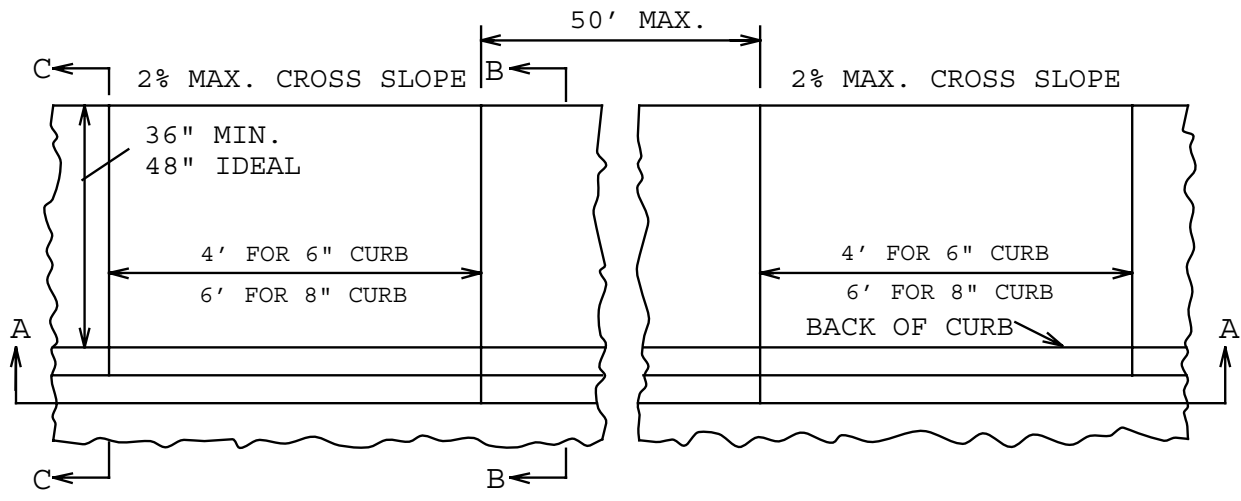
WITHOUT HIGHWAY EDGE CURB



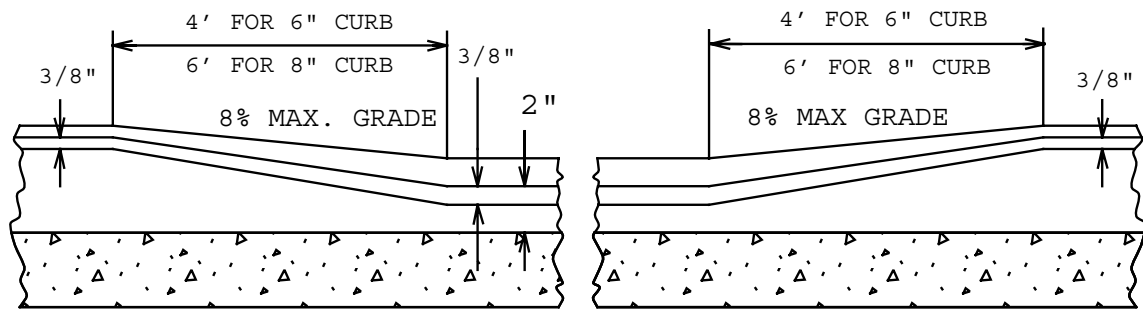
WITH HIGHWAY EDGE CURB

DRIVEWAY PROFILE CONTROLS

FIGURE 9B



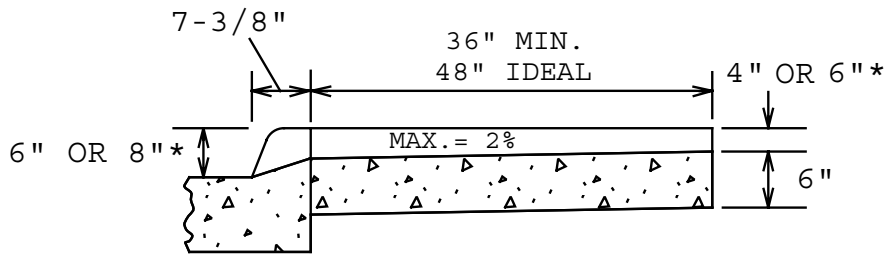
PLAN



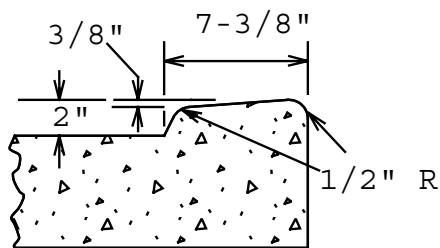
SECTION A-A

SIDEWALK AND CURB TREATMENT  
AT DRIVEWAYS -- URBAN

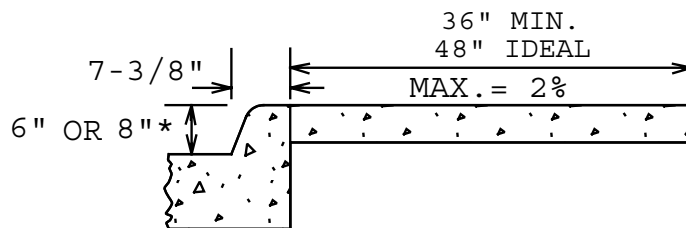
FIGURE 10A



SECTION B-B



CURB DETAIL SECTION  
B-B DROP CURB

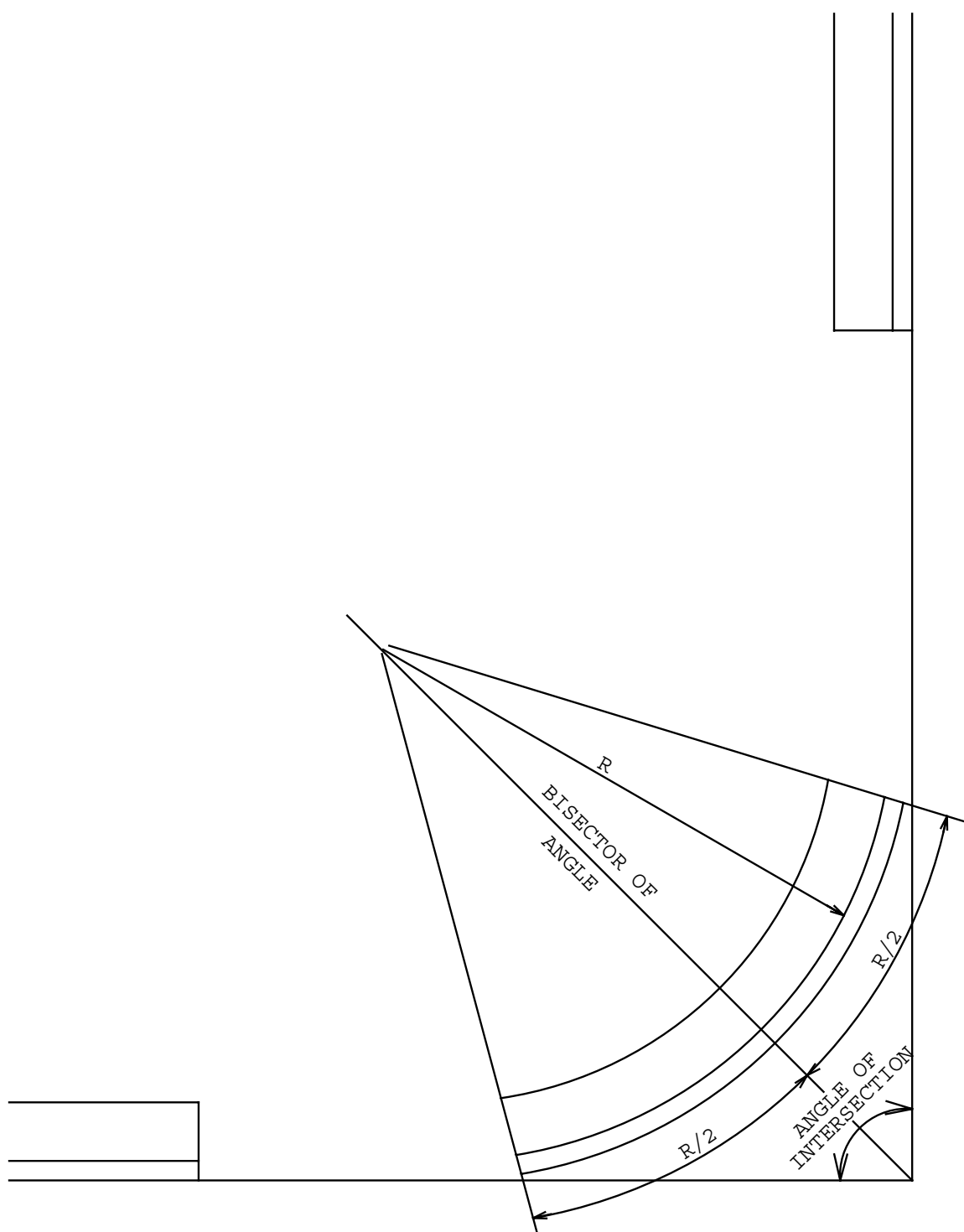


SECTION C-C

SIDEWALK AND CURB TREATMENT  
AT DRIVEWAYS -- URBAN

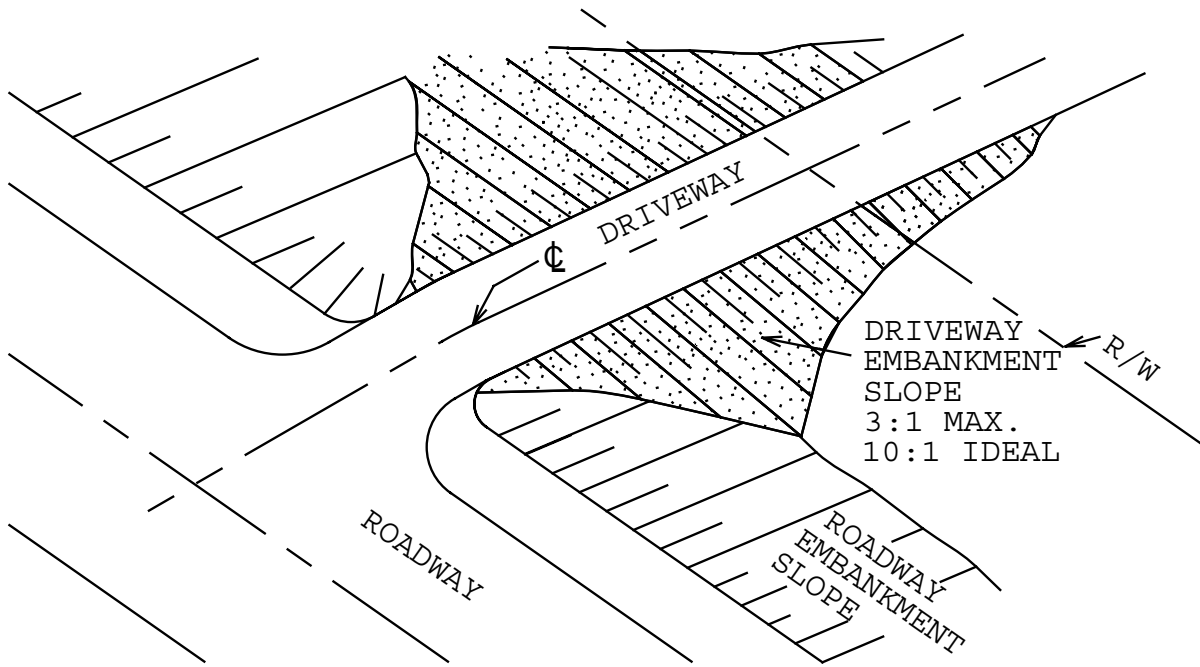
FIGURE 10B

\* SEE FIGURE 10A



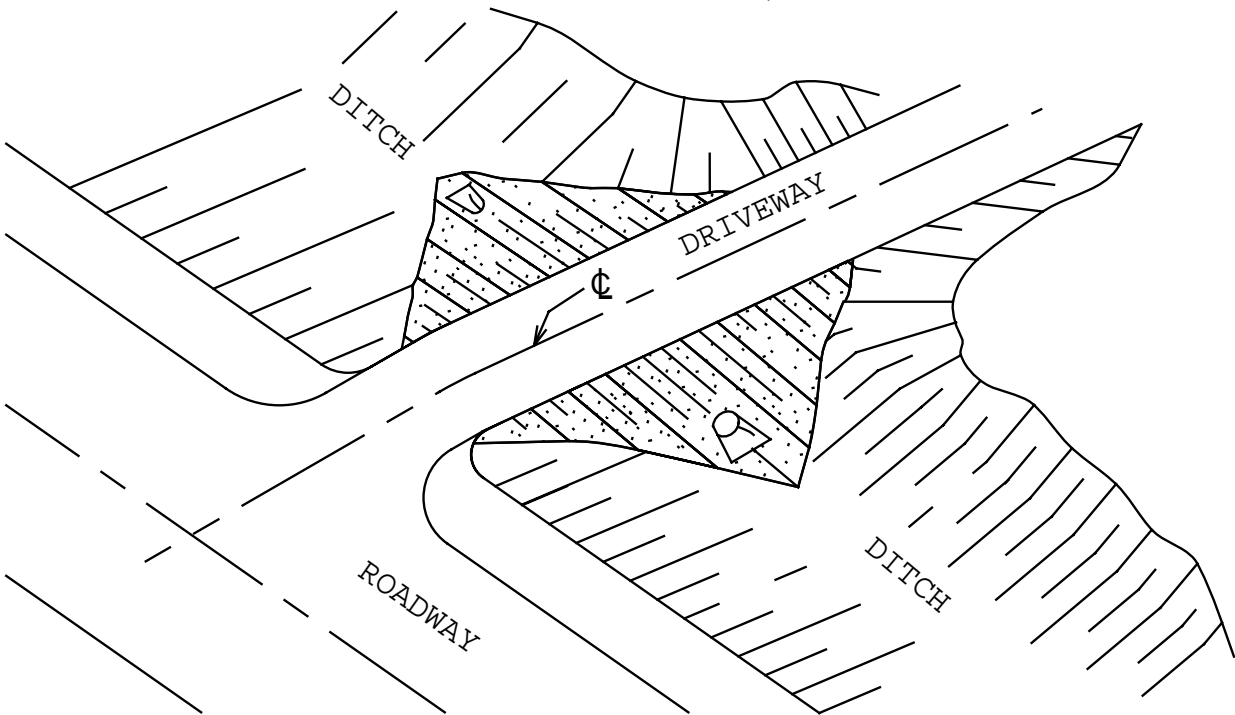
TYPICAL CORNER ISLAND  
 RADIUS 25 FEET OR GREATER  
 ANGLE OF INTERSECTION LESS THAN  $120^\circ$

FIGURE 11

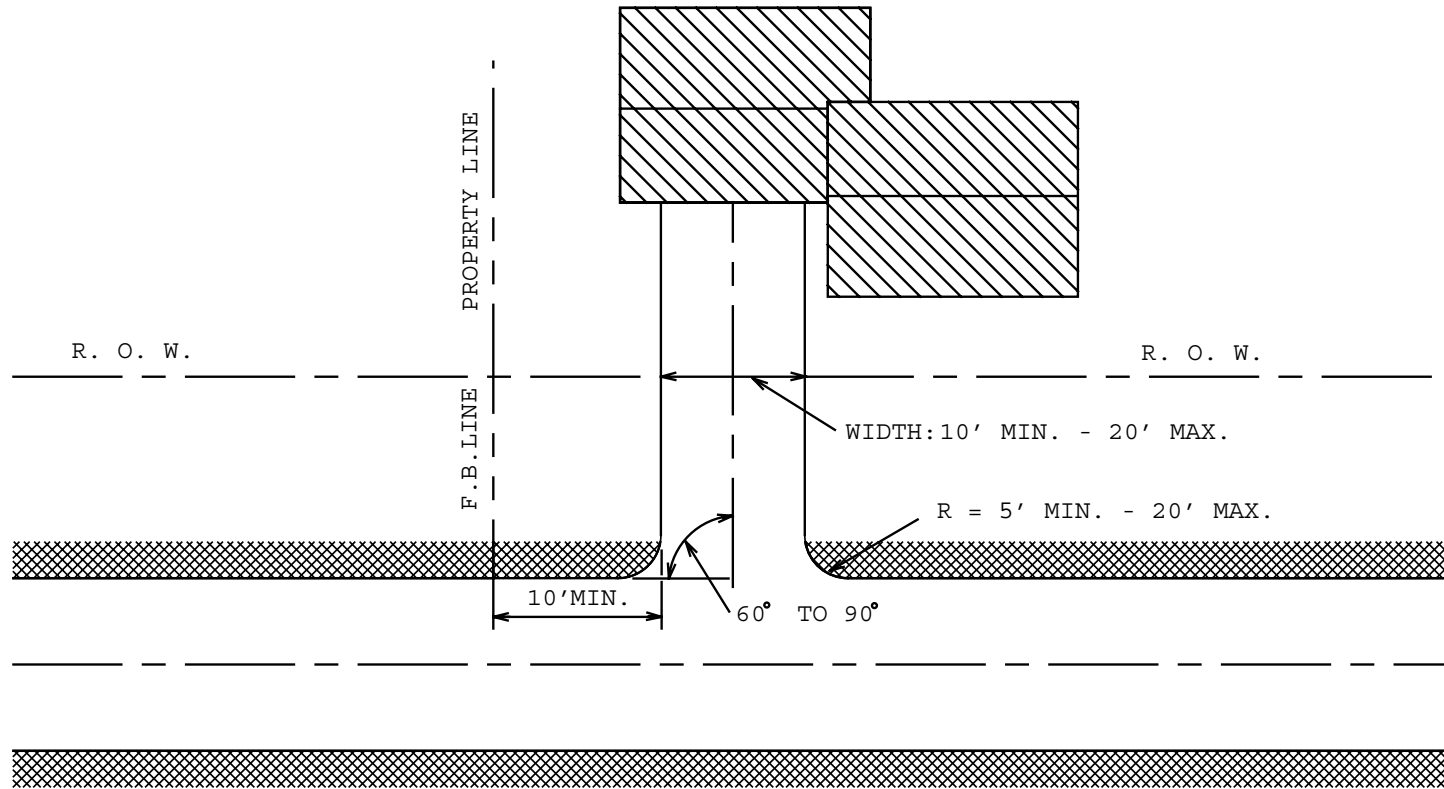


WHERE THE ROADWAY SLOPE IS 3:1 OR FLATTER, THE DRIVEWAY EMBANKMENT SLOPE WITHIN THE ROADWAY R/W SHALL BE 10:1 OR FLATTER.

WHERE THE ROADWAY SLOPE IS STEEPER THAN 3:1, GUARDRAIL IS USUALLY INSTALLED AT THE TOP OF THE ROADWAY SLOPE AND STEEPER SLOPES ARE PERMISSIBLE ON THE DRIVEWAY WITHIN THE R/W.

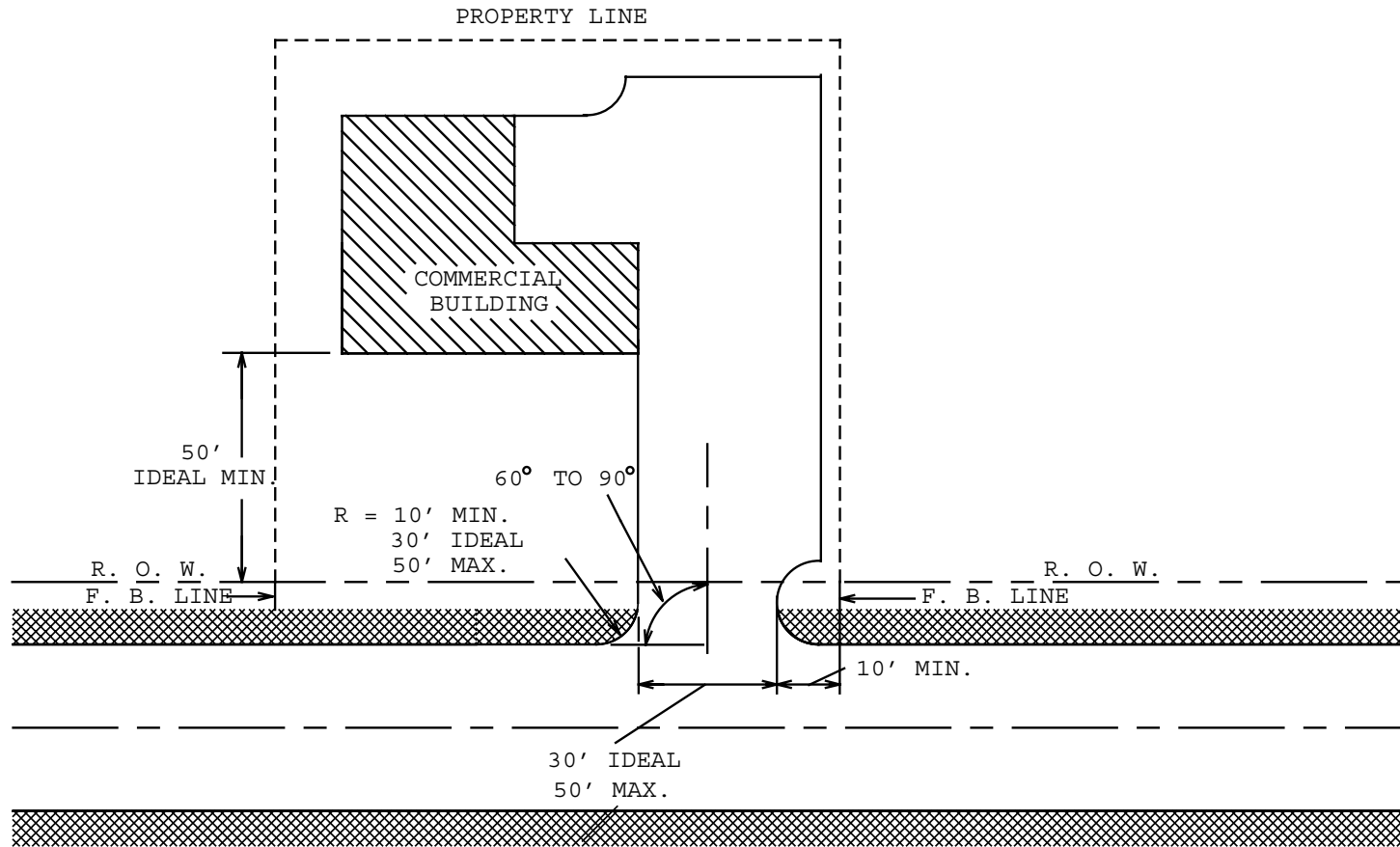


DRIVEWAY FILL SLOPES  
FIGURE 12



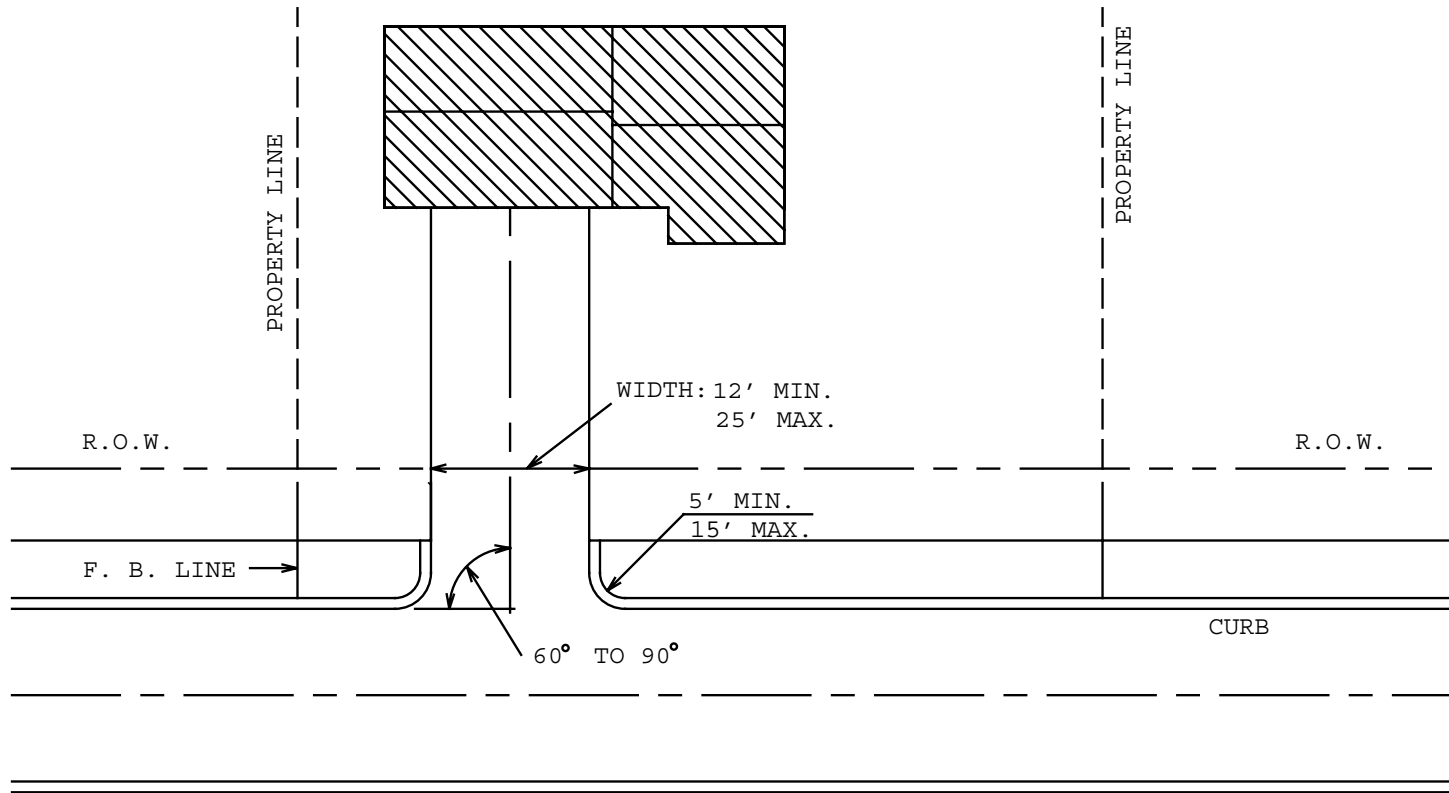
# RESIDENTIAL DRIVEWAY -- RURAL

FIGURE 13



SINGLE DRIVEWAY COMMERCIAL ESTABLISHMENT -- RURAL

FIGURE 14

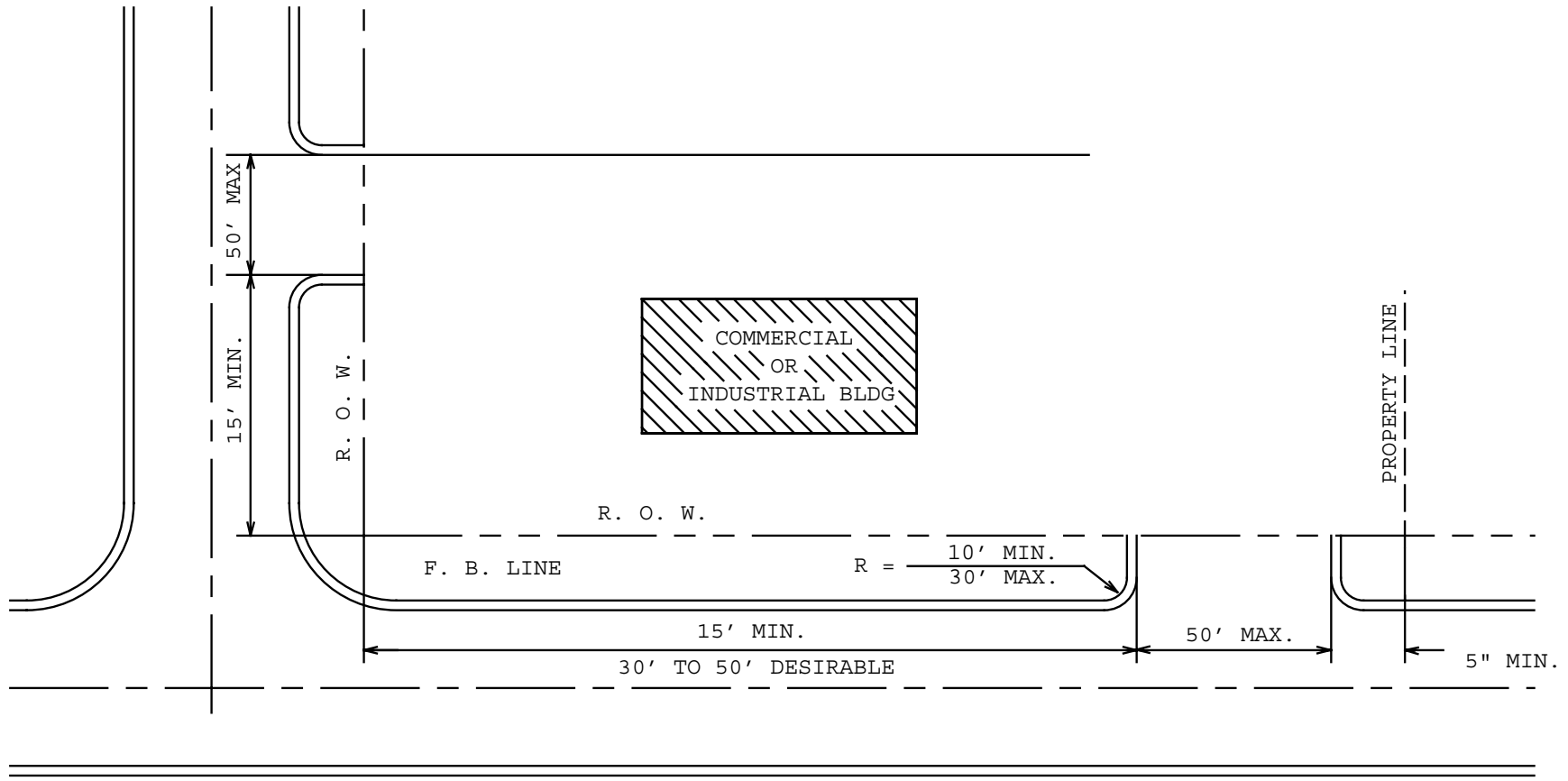


NOTE: IF SIDEWALKS ARE PRESENT OR PROPOSED THEN SEE FIGURE 10A & 10B FOR ENTRANCE DETAIL.

# RESIDENTIAL DRIVEWAY -- URBAN

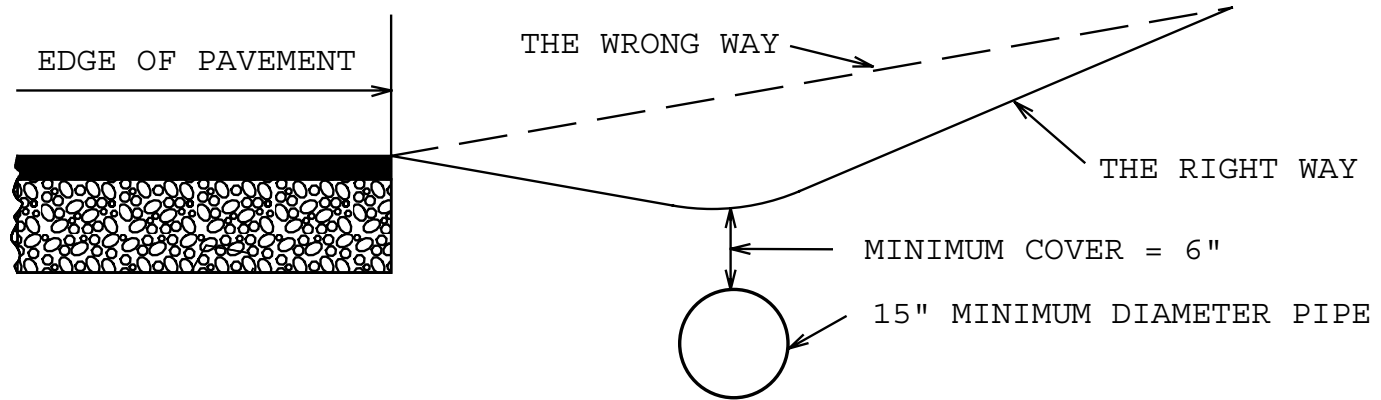
FIGURE 15





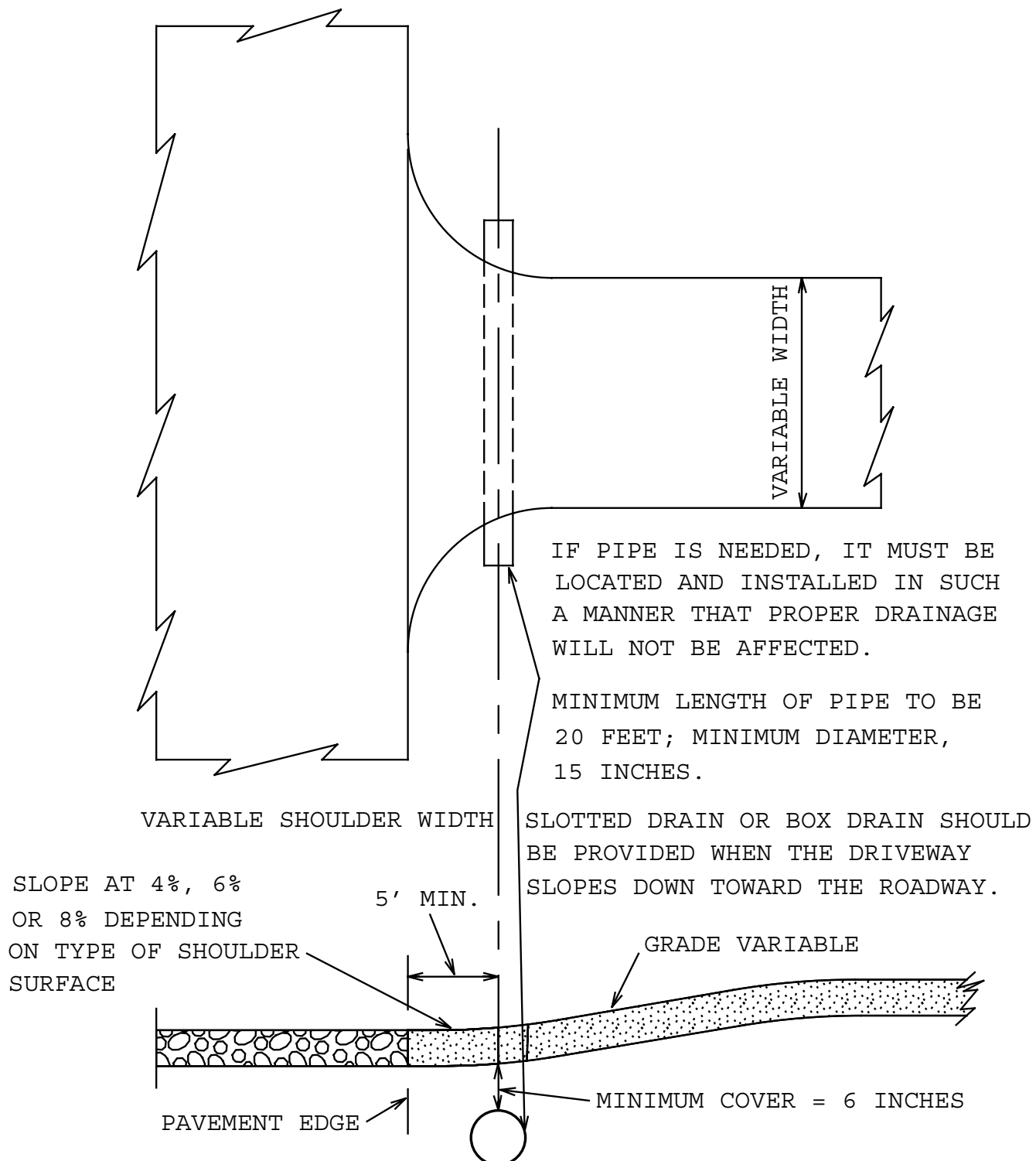
DRIVEWAYS TO A CORNER COMMERCIAL ESTABLISHMENT -- URBAN

FIGURE 16



PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17



PIPE INSTALLATION FOR SIDE ROAD OR PRIVATE ENTRANCE APPROACH

FIGURE 18

**APPENDIX D**  
**LIST OF DISTRICT OFFICES**

<b>District</b>	<b>Street Address</b>	<b>Mailing Address</b>	<b>Phone</b>
1	1334 Smith Street Charleston, WV 25301	1334 Smith Street Charleston, WV 25301	(304) 558-3050
2	801 Madison Avenue	P. O. Box 880 Huntington, WV 25712	(304) 528-5579
3	624 Depot Street	624 Depot Street Parkersburg, WV 26101	(304) 420-4818
4	Exit 121, I-79 Meadowbrook Road (Bridgeport)	P. O. Box 4220 Clarksburg, WV 26302- 4220	(304) 842-1572
5	U. S. Rt. 50	P. O. Box 99 Burlington, WV 26710	(304) 289-3521 (ext. 280)
6	One DOT Drive	One DOT Drive Moundsville, WV 26041	(304) 843-4086
7	Depot Street	P.O. Drawer 1228 Weston, WV 26452	(304) 269-0400
8	U. S. Rt. 219 North Parsons Road	P. O. Box 1516 Elkins, WV 26241	(304) 637-0220
9	103 ½ Church Street Lewisburg, WV 24901	103 ½ Church Street Lewisburg, WV 24901	(304) 647-7450
10	270 Hardwood Lane Princeton, WV 24740	270 Hardwood Lane Princeton, WV 24740	(304) 487-5293

**Note:** Refer to the enclosed state of West Virginia map to identify various counties in each district.



**APPENDIX E**  
**CONTENTS OF TRAFFIC IMPACT STUDY REPORT**

## I. Introduction

- A. Letter of transmission identifying who did the report and for whom
- B. Description of study area and proposed land use including building floor space
- C. Location of proposed access points
- D. Identification of peak hours and day of peak hours

## II. Basic Traffic Conditions

- A. Description of road network and intersections in vicinity of site and specifically at the access points
- B. Traffic counts during peak-impact hours
- C. Gap or queue length studies, if appropriate

## III. Traffic Analysis

- A. Site Access
- B. Capacity and Level of Service
- C. Traffic Safety
- D. Traffic Signals
- E. Site Circulation and Parking

## IV. Site Traffic Generation

- A. Trip generation rates used and their source
- B. Traffic generated during peak-impact hours

## V. Site Traffic Distribution

- A. Method used
- B. Tables or figures showing estimated site traffic movements by direction
- C. Discussion of method used for traffic assignment and assumptions used for assignment of traffic to network.



VI. Non-Site Traffic Projections

- A. Definition of design year (opening of proposed development)
- B. Identification of individual developments in study area whose traffic is to be included in impact calculations
- C. Adjustments of off-site through traffic volumes, if needed, using agreed upon growth rate
- D. Assembling of off-site traffic forecast for design year, if needed

VII. Traffic Assignments

- A. Assignments of peak-period traffic to intersections and access points
- B. Figures for existing peak impact hours traffic, site traffic, and total traffic
- C. Recommended access design and improvements

VIII. Review of Site Plan

- A. Internal reservoir at access points
- B. Parking layout
- C. Loading dock locations and access, including design truck used
- D. Recommended changes

IX. Improvement Analysis

- A. Improvements to accommodate base traffic
- B. Additional improvements to accommodate site traffic
- C. Alternative improvements
- D. Status of improvements already funded, programmed, or planned
- E. Evaluation

X. Findings

- A. Site accessibility
- B. Traffic impacts
- C. Need for improvements
- D. Compliance with applicable local codes

XI. Recommendations

- A. Site access / circulation plan
- B. Roadway improvements
  - 1. On-site
  - 2. Off-site
  - 3. Signal phasing, if appropriate
- C. Transportation System Management Actions
  - 1. Off-site
  - 2. On-site operational
  - 3. On-site
- D. Other

XII. Conclusions

**Note:** Not all analysis described in the final report guidelines will be required for each study. Applicable analyses should be determined in a scope of work meeting between the study preparer and the DOH traffic engineer. Only those analyses needed to address the issues relevant to the proposed development, its site and vicinity, and current and anticipated traffic conditions will be required.

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