

Access Control / Drive Design

City of Steubenville - Public Works

The following have been excerpted from the requirements of the Ohio Department of Transportation with modifications for City use. Please note that additions are shown in *italics* and deletions are shown as ~~strikethrough~~.

802.2 General Access Criteria

802.21 Street or Highway Access Considerations

The basic considerations that govern the location and design of *street or highway* access shall be to facilitate:

- A. The safe and expeditious movement of vehicles on the *street or highway*.
- B. The provision of the best service possible to the private or public facility being served by the drive access.
- C. The safe movement of pedestrian traffic.

802.22 Median Openings

Median openings are normally not permitted on divided *streets or highways*. Exceptions may be for public roads or streets or traffic generators such as large shopping centers or industrial plants, if satisfactorily justified and in the public interest.

If a median opening exists prior to the construction of a drive, the opening may be further modified, including relocation, to accommodate the turning movements of the expected traffic. The design modifications shall, however, be consistent with the overall design of the *street or highway*.

802.23 Added Street or Highway Lanes

The construction of an additional lane adjacent to the existing *street or highway* lanes to serve as an acceleration, deceleration, turning or passing lane may be permitted if benefit to the operation of the through *street or highway* will result. The design of any added lane must be consistent with the overall design of the *street or highway*.

802.24 Number of Drives Permitted

When adequate frontage is available on a non-limited access *street or highway*, ~~one two~~ driveways to a property used for a single purpose may be permitted. ~~When a single property is used for two or more purposes and two driveways cannot provide adequate access, then more than two drives may be permitted.~~ Each request for more than ~~one two~~ drives must be accompanied by sufficient information to justify the request. *Requests shall be made to the City Engineering and Building Appeals Board.*

802.25 Joint Drives

A jointly owned drive may be permitted upon joint application by both property owners. *Recorded reciprocal easements shall be furnished from both property owners prior to approval of driveway access.*

802.26 Location of Drive in Relation to Side Property Line

Figure 802-1 shows the controls for locating drives in relation to side property lines.

A. Controls

- (1) 90 degree Control Line - a line at right angles to the centerline of the *street or highway* which extends through the intersection of the side property line with the *street or highway* right-of-way line.
- (2) ~~4-foot Control - maximum width of driveway approach flare as measured along the 90 degree control line from the street or highway pavement edge.~~

B. *Curbed and Uncurbed Street or Highways* - the approach radius may begin at the intersection of the 90 degree control line with the *street or highway* pavement edge but may not cross the 90 degree control.

C. ~~*Uncurbed Streets or Highways* - the approach radius, but not the approach edge extension, may cross the 90 degree control line within the limits of the 4-foot control.~~

~~A permit may be issued for the construction of a driveway which encroaches on the abutting property frontage in excess of the controls set forth above only when written permission from the affected property owner is presented and made a part of the State's record of the permit, and only when such encroachment does not interfere with an existing driveway. It shall be the responsibility of the permit applicant to make all necessary arrangements and agreements with the affected property owners when the relocation of existing driveways is necessary. The expense involved shall be borne by the applicant.~~

802.27 Location of Drive in Relation to an Intersection

The proximity of a new drive to a *street or highway* intersection shall conform to the corner island details shown in Figure 802-2 and to the following:

A. When the intersection radius is:

- (1) 40 FEET, OR LESS, the beginning of the approach radius shall be at least 20 feet from the angular bisector as measured along the face of curb or pavement edge, EXCEPT:
 - (a) Where a sidewalk exists, the beginning of the approach radius shall not begin nearer the roadway intersection than the back edge of the sidewalk.
- (2) GREATER THAN 40 FEET, the beginning of the approach radius shall not

begin closer to the roadway intersection than a distance equal to one-half the effective intersection radius as measured from the angular bisector along the face of curb or pavement edge, EXCEPT:

- (a) When the *street or highway* intersection is 120 degrees, the beginning of the approach radius 20 feet from the angular bisector, as along the face of curb or pavement
- (b) When the *street or highway* intersection radius is greater than 80 feet the beginning of the approach radius may begin 40 feet from the angular bisector.

B. AT CHANNELIZED INTERSECTIONS the above conditions shall apply, unless their use would encourage "wrong-way" operation along a directional portion of the intersection. In such case, special drive designs will be required.

802.28 Drive Sight Distance

Wherever possible, drives should be located in accordance with the intersection sight distance criteria in *ODOT L&D Manual* Secion 201.3. (*Available upon request*)

802.29 Location of High Volume Drives

Special consideration should be given to the location of drive access to high volume traffic generators such as shopping centers, industrial plants and parks, as well as other types of development having similar traffic characteristics.

A new driveway should not be located where it will create an offset intersection opposite an existing street, highway, or major commercial driveway.

A driveway serving all directions of traffic should be located a minimum of 600 feet from the nearest major street or highway intersection.

803 Drive Geometric Design

803.1 Mailbox Facilities

803.11 Mailbox Supports

Mailbox installations located within the clear zone shall be installed as shown in Figure 803-1 using "breakaway" type supports. Satisfactory supports are as follows:

- A. Maximum 4"x4" square or 4 1/2" dia. round timber.
- B. Maximum 2" diameter (2-3/8" O.D.) standard strength steel pipe.
- C. Any material with breakaway cross section characteristics equivalent to A or B above.

Group mailbox supports should be placed on three foot centers and the turnout lengthened to accommodate the grouping. No more than two mailboxes shall be placed on each post.

Where guardrail exists, mailboxes and their supports should be located behind the guardrail. Supports must still meet the breakaway requirements listed above.

803.12 Mailbox Turnouts

Where the existing or proposed *street or highway* shoulder paving is less than 6 feet wide, mailbox turnouts should be provided as shown in Figure 803-1 and Standard Construction Drawing BP-4.1. ~~Mailbox turnouts should be constructed of the same material used in the drive approach and combined with the drive approach where possible.~~

803.2 Rural Residential and Field Drives

Rural residential drives and field drives should normally conform to the Type 1 design shown in Standard Construction Drawing BP-4.1.

803.21 Drive Intersection Angle

New drives should intersect the *street or highway* at an angle between 70 degrees and 90 degrees. However, in some cases, it may be necessary to retain existing drive angles that vary from these desirable angles.

803.22 Drive Widths

If the project involves existing drives, the existing width is normally retained unless it is less than 12 feet. In which case, it should be widened to provide a 12 foot throat width. In the case of new drives, the width should normally be 12 feet. If the new driveway is a combined drive between two properties, the width should normally not exceed 24 feet. Also, a wider field drive may be used if it will keep the farm equipment operator from encroaching on the opposing traffic lane when entering or exiting the *street or highway*.

803.23 Drive Radii

The radii of the Type 1 driveway should normally be 25 feet. The radii may be increased on field drives if it is deemed that the larger values will improve driveway operation and reduce the hazard to the motorists and farm equipment operator.

803.24 Curbed Drives

Driveways abutting uncurbed *streets or highways* may be curbed. However, the curb shall not extend closer to the through pavement edge than eight feet or the treated shoulder width, whichever is greater, to avoid curb obstruction for vehicles, snowplows, etc., using the shoulder.

803.3 Urban Residential Drives

Either *Type A or B drives shown in City Drawing ST-272* ~~Type 1 or 2 drives, shown in Standard Construction Drawing BP-4.1,~~ may be used in urban areas. If used in urban areas, the radii and flare dimensions may be reduced so that the apron does not extend past the back of the sidewalk, or past the right-of-way line if there are no sidewalks. The desirable minimum radii for *Type A or B* ~~Type 1~~ drives, when the through *street or highway* is curbed, is 15 feet.

Shown on ~~Fig. 803-2~~ *City Drawing ST-272, Page 4* are three methods for designing driveways between the curb line and sidewalk to provide for turning vehicles. Other designs, may be used if they are approved for use by the local governmental agencies responsible for maintenance of the project. Additional details are shown in ~~Figure 803-3~~ *City Drawing ST-272, Page 5* when the tree lawn is less than 6 feet. Residential drives on curbed streets should use a dropped curb as shown in Section B-B on ~~Fig. 803-2~~ *City Drawing ST-272, Page 4*.

803.4 Service Station Drives

Service station drive approach geometry is probably the most complex of any drive design. Many of the geometric features may be used in the design of other commercial and industrial drives. The following Figures illustrate service station approach designs under varying conditions:

Figure 803-4 - "Uncurbed Roadway/Uncurbed Approach"

Figure 803-5 - "Special Paved Shoulder Detail"

Figure 803-6 - "Uncurbed Roadway/Curbed Approach"

Figure 803-7 - "Curbed Roadway/Curbed Approach"

803.41 Uncurbed Approaches

Figure 803-4 shows the general design for Service Station drives with uncurbed approaches.

When curbing does not exist at the edge of pavement and curbs are not installed along the edges of the approach, the Department of Transportation may install guard posts, within the *street or highway right-of-way*, to delineate the approaches.

In rural sections (where no curbing or treated shoulder exists) having a high traffic volume and speed limits in excess of 40 mph, the shoulder may be paved for a distance of 175 feet preceding, and 175 feet following, the entering and exiting approaches respectively. This paved shoulder shall not be less than eight feet in width and need not be more than ten feet in width, conforming as nearly as possible within these limits to the existing shoulder width. The ends of these paved shoulders shall be tapered from one foot to full width in 75 feet, this taper being included in the overall length. The transverse slope of the paved shoulder shall not be less than 1/4 inch per foot, nor more the 3/4 inch per foot sloping away from the pavement edge. See Figure 803-5.

803.42 Curbed Approaches

Where curbing does not exist along the through pavement, the approaches and islands may be curbed at the option of the permit applicant. (See Figure 803-6). Curbed approaches may be used where the smallest permissible approach radii are required to utilize a small *street* or highway frontage.

Where curbing exists along the edge of the through pavement, the edges of the approach shall be delineated by a similar curb through the arc of the radius. Curbing along the entire approach and islands, may be installed at the option of the permit applicant.. (See Figure 803-7). Service station drives on curbed streets should use a dropped curb as shown in Section B-B on ~~Fig. 803-2~~ *City Drawing ST-272, Page 4*.

803.43 Intermediate Islands

Between all approaches there shall be an intermediate island of a length greater than six (6) feet for curbed islands or islands along curbed roadways, and fifteen (15) feet for uncurbed islands.

To discourage improper use of uncurbed intermediate islands between dual approaches, the island should be seeded or sodded except for a 4-foot wide treated shoulder of stabilized material adjacent to the *street* or highway pavement.

803.44 Drive Intersection Angles

The location and angle of an approach in relation to an adjacent *street* or highway intersection shall be such that a vehicle entering or leaving the site may turn out of or into the nearest lane of traffic moving in the desired direction and be channeled within this lane before entering the intersection or proceeding along the *street* or highway.

The interior angle between the axes of dual approaches and the centerline of the roadway shall fall between 45 degree and 90 degrees. This interior angle shall fall between 70 degrees and 90 degrees for single approaches designed for two-way operation.

803.45 Drive Widths

The width of all approaches shall not be greater than 35 feet in the throat of the approach measured at right angles to the axis of the approach.

Where public alleys adjoin the service station property, approaches may begin at the far side of the alley, and if so used, the width of the alley shall be included as part of the approach opening.

803.46 Drive Radii

Approach radii on uncurbed *street* or highways shall be as follows:

A. Turning Radii - 15 feet minimum, 25 to 35 50 feet desirable.

B. Non-turning Radii - 5 feet minimum, 10 feet maximum.

Approach radii on curbed *streets or highways* shall be as follows:

A. Turning Radii - 3 feet minimum, 15 to 25 feet desirable.

B. Non-turning Radii - 3 feet minimum, 5 feet maximum.

Where the approach radius controls the turning radius of a right turn vehicle entering the service station from the adjacent traffic lane of the roadway, the radius of that edge shall be as long as practical to provide a free and safe movement.

803.47 Safety Curbs at Right-of-Way

Where sidewalks exist, safety curbs of concrete or masonry at least six feet in length for curbed islands or fifteen feet in length for uncurbed islands shall be provided along the right-of-way line between approaches.

803.48 Location of Pump Islands and Other Devices

Pump islands shall not be nearer to the right-of-way line than ten feet. All devices for the servicing of automotive vehicles shall be so located that no part of the vehicle being serviced will extend into the public right-of-way.

No lights, signs or other advertising devices shall be permitted on, or to overhang, *street or highway* right-of-way.

803.5 Commercial Drives

The access requirements of most commercial developments can be served by driveways having standard design characteristics. The exceptions are driveways having high traffic volumes, those being used by large vehicles, or those serving businesses which have traffic patterns unique to the business being conducted.

803.51 Standard Commercial Drives (See Fig.803-8)

A. Radii:

1. 15 foot minimum, when the through *street or highway* is curbed.
2. 25 foot minimum, when the through *street or highway* is uncurbed.

B. Width -35 foot maximum

C. A dropped curb should be used on curbed streets as shown in Section B-B on Figure 803-2.

803.52 Exceptions to Standard Commercial Drives

Where access requirements are such that a non-standard driveway is necessary, the design may approximate the design of shopping center driveways as discussed in Sec.

803.6 or public road intersections, *ODOT L&D Manual* Section 401. (Available upon request)

Specially designed radii and a width greater than 35 feet may be permitted, as necessary, to accommodate the type vehicle using the driveway. (Example: A truck stop may require two one-way driveways or a single drive with width greater than 35 feet and radii as great as 75 feet to facilitate turning movements).

803.6 Shopping Center and Industrial Drives (See Figure 803-9)

This section is intended as a guide for the design of driveways to high volume traffic generators such as shopping centers, industrial plants, industrial parks, and other types of developments having similar traffic characteristics. Many of the design features discussed in Section 401, Intersections At-Grade, will be applicable. Geometric considerations are listed below:

- A. Driveways should intersect the *street or highway* at an angle between 70 degrees and 90 degrees.
- B. Each driveway traffic lane should have a minimum width of 10 feet, with 12 feet preferred.
- C. Major driveways in shopping centers should be constructed to prevent cross movement of internal traffic within 100 feet of the entrance approach. This may be accomplished by use of a raised divider, 6 inches high, 6 feet wide (mm.) and 100 feet long, and/or by use of curbing, sidewalk or other barrier along the drive edges for a length of 100 feet (See Fig. 803-9).
- D. Driveways designed for traffic signal operation should have curbed radii and should provide a minimum of two lanes for vehicles entering the *street or highway*.

804 Drive Profile Design

804.1 Drive Profiles (Uncurbed Roadways)

Drive profiles on uncurbed roadways shall slope down and away from the pavement edge at the same slope as the graded shoulder. Any vertical curve should be developed outside the normal graded shoulder width. Vertical curve lengths should be 10 to 20 feet, depending on the grade differential. Under normal circumstances, rural drive grades should not exceed 10 percent with 8 percent considered to be the preferred maximum.

804.2 Drive Profiles (Curbed Roadways)

The design vehicle used to develop the profile criteria of this section is shown on ~~Fig. 803-2~~ *City Drawing ST-272, Page 4*. The profile criteria shown provides clearance for this vehicle when its springs are completely compressed. If conditions of a particular driveway do not meet the cross-section criteria listed below, a template of the design vehicle can be used

to design the driveway profile.

For tree lawns six feet or wider, the ramp grade from the gutter to the edge of the sidewalk will be one inch per foot or less for normal cross-section design. ~~Fig. 803-2~~ *City Drawing ST-272, Page 4* shows this condition for the following cross-section conditions:

- A. Sidewalk and tree lawn slope of 1/4 inch per foot, and
- B. 6 inch height of curb with pavement slope of 3/16 inch or 1/4 inch per foot, or
- C. Type 2 curb and gutter with pavement slope of 3/16 inch per foot

If the cross-section design does not meet the above conditions (has sharper grade breaks), the profile should be designed using a template of the design vehicle.

For tree lawns less than six feet wide, ~~Figure 803-3~~ *City Drawing ST-272, Page 5* shows the profile treatment. Clearance for the design vehicle is achieved by depressing the sidewalk 1 inch at the driveway. The sidewalk cross-slope of 1/4 inch per foot is retained. The design may be used directly with curbed *streets* or highways having cross-section criteria as listed above and the profile conditions of ~~Figure 803-2~~ *City Drawing ST-272, Page 4*. For other cross-sections, a template of the design vehicle may be used to design the profile.

~~Figure 803-3~~ *City Drawing ST-272, Page 5* shows an isometric view and profile for a driveway where only a 3-foot tree lawn is available. This design is shown, not because it is desirable, but because right-of-way width and property development may require this type of design. Whenever feasible, the tree lawn should be 8 feet or wider, as discussed in *ODOT L&D Manual* Sections 306.14 and 306.15. (*Available upon request*)

Where the total width of tree lawn and sidewalk is less than 6 feet, the minimum 3-foot apron designs are inappropriate, and cannot be used, as they extend curb or sharp flares into the sidewalk area. For this condition, the sidewalk and curb are transitioned to meet the drive profile as shown on the lower portion of ~~Figure 803-3~~ *City Drawing ST-272, Page 5*. The profile of the drive meets the one inch depressed grade of the sidewalk as shown in the drive profile of ~~Figure 803-3~~ *City Drawing ST-272, Page 5*.

The tree lawn and walk design shown in ~~Fig. 803-2~~ *City Drawing ST-272, Page 4* and ~~803-3~~ will keep storm water, flowing at the curb design height or less, from flowing over the sidewalk. If it is necessary to lower the curb and sidewalk more than 1 inch, the drainage condition should be checked thoroughly.

804.3 Commercial Drive Profiles (Curbed Roadways)

Commercial drive profiles usually use a dropped curb across the approach. However, some commercial drives serving large traffic generators may be designed as at-grade intersections, without dropped curbs, because of their high traffic volumes.

Shown on ~~Figure 804-1~~ *City Drawing ST-272, Page 6* are the grade controls for commercial

driveways. The grade should be as flat as possible and still meet drainage requirements. The 20-foot length between grade breaks is required by the low clearance and the long axle spacing of the commercial design vehicle (Figure 804-2). Tree lawn profile design should be in accordance with ~~Figure 803-2~~ *City Drawing ST-272, Page 4* and ~~Figure 803-3~~ *City Drawing ST-272, Page 5*. The grade break at the face of the curb is critical for some commercial vehicles and the cross-section requirements for residential drives on curbed streets should be used.

805 Drive Pavement Design

805.1 Field Drives

Field driveways should be paved with six inches of 411 or 304 aggregate. They shall be paved from the edge of the pavement or treated shoulders, to a point where the grade of the new driveway intersects the grade of the existing driveway, or on relocated driveways to where the grade of the new driveway intersects the existing ground.

805.2 Residential Drives

Residence driveways shall be paved from the edge of new pavement to the *R/W line or back of walk*. ~~point where the grade of the new driveway intersects the grade of the existing driveway, or on relocated driveways to the point where the geometric limits of the new driveway meet the existing driveway.~~

Residence driveways having an existing hard surface or an existing aggregate surface shall be replaced with a pavement of a similar type, insofar as practicable, using one of the following designs for the portion beyond the flared apron:

- A. 6" 452 Plain Portland cement concrete *with fibers*
- B. ~~2" 404 Asphalt concrete~~
~~408 Prime coat at 0.4 gallon per square yard.~~
~~6" 304 Aggregate base or 7" 411 Stabilized crushed aggregate~~
- C. ~~1 1/4" 404 Asphalt concrete~~
~~3 3/4" 301 Bituminous aggregate base~~
- D. ~~8" 411 or 304 Aggregate base~~

In incurbed areas, the apron pavement design depends on the treated shoulder material as follows:

- A. The flared portion of residence driveways adjacent to paved shoulders shall be constructed of *six inches 452 Plain Portland cement concrete with fibers*. ~~the same material and composition as used in the treated shoulder paving.~~
- B. ~~The flared portion of residence driveways adjacent to surface treated aggregate shoulders shall be constructed of the same material as used in the treated shoulder, except it shall be surfaced with two inches of 404 asphalt concrete.~~
- C. ~~The flared portion of residence driveways on projects for which earth shoulders are~~

~~specified shall be paved with either six inches 452 Plain Portland cement concrete, or with two inches 404, asphalt concrete on six inches of 411 or 304 aggregate.~~

805.3 Commercial Drives

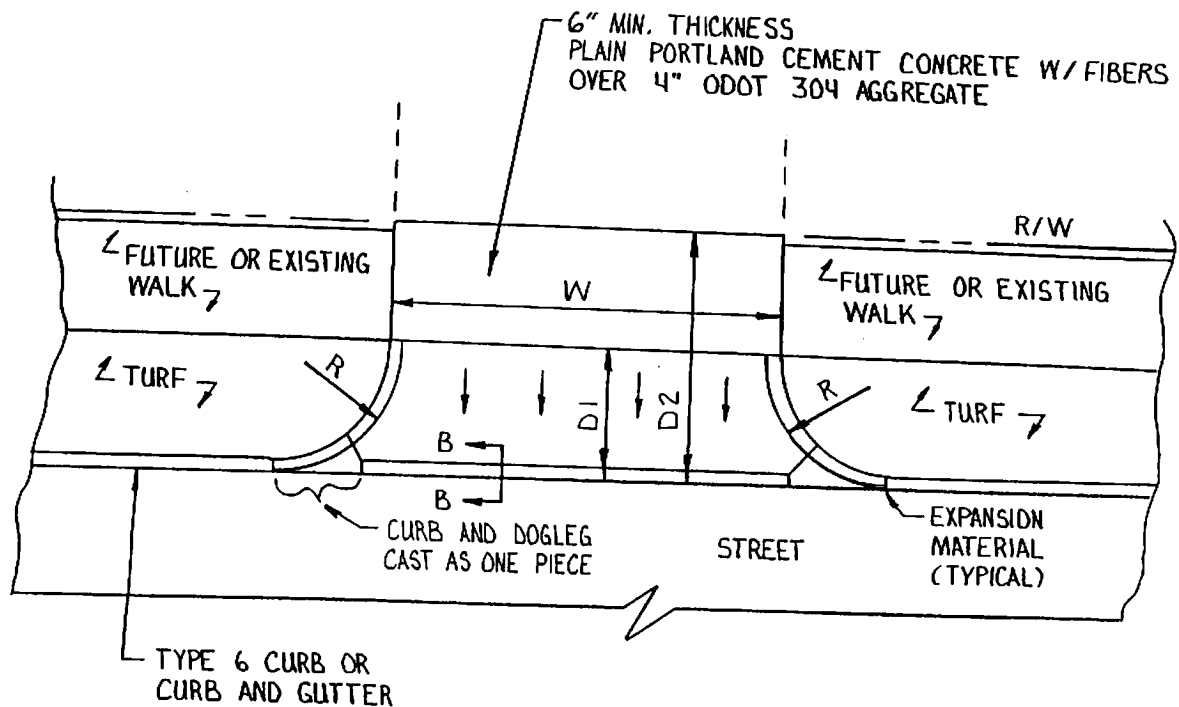
Commercial driveways shall be paved from the edge of the new pavement to the *R/W line* or *back of walk*. ~~point where the grade of the new driveway intersects the grade of the existing driveway, or on relocated driveways to the point where the geometric limits of the new driveway meet the existing driveway.~~

Commercial driveways having an existing hard surface or aggregate surface shall be replaced with a pavement of a similar type insofar as practical, using one of the following designs for the portion beyond the return or apron:

- A. 8" 452 Plain Portland cement concrete *with fibers*
- B. ~~1 1/4" 404 Asphalt concrete~~
- ~~1 3/4" 402 Asphalt concrete~~
- ~~408 Prime coat at 0.4 gallon per sq. yd.~~
- ~~8" 304 Aggregate base~~
- C. ~~1 1/4" 404 Asphalt concrete~~
- ~~4 3/4" 301 Bituminous aggregate base~~
- D. ~~10" 411 or 304 Aggregate base~~

Additional thicknesses may be provided for the above courses where unusual weights or types of vehicles are expected to use the commercial driveway.

Commercial driveway aprons shall be constructed as previously outlined for residential driveway aprons, except that additional thicknesses should be provided to meet nominal pavement design for commercial driveways.



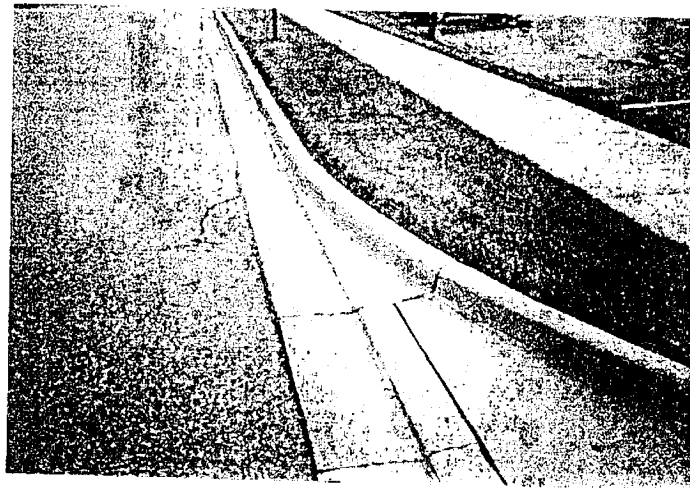
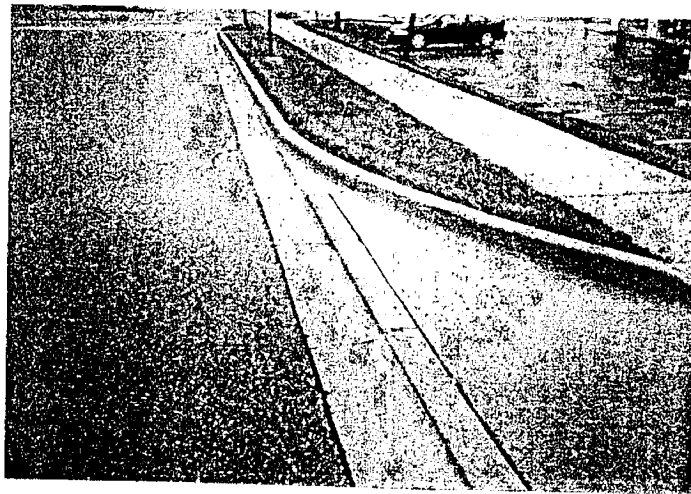
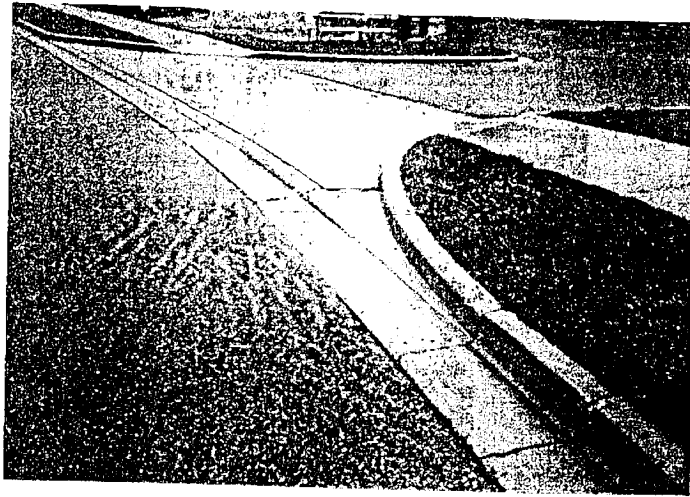
NOTES:

1. RADIUS = 5 FT. MIN. / 25 FT. MAX.
2. SEE LOCATION AND DESIGN MANUAL FIGURES 803-2, 803-3, 804-1 FOR PROFILE AND ADDITIONAL DETAILS
3. SECTION B-B - ODOT LOCATION AND DESIGN MANUAL FIGURE 803-2
4. CONCRETE SHALL CONFORM TO THE CITY OF STEUBENVILLE GENERAL SPECIFICATION FOR FIBEROUS CONCRETE
5. CURB ON DRIVEWAY SHALL NOT EXTEND INTO WALK
6. W = DRIVEWAY THROAT WIDTH
7. D1 = MINIMUM CONCRETE APRON DEPTH
8. D2 = DEPTH TO R/W

COMMERCIAL & RESIDENTIAL DRIVEWAYS
TYPE A - APPROACH DETAILS

CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

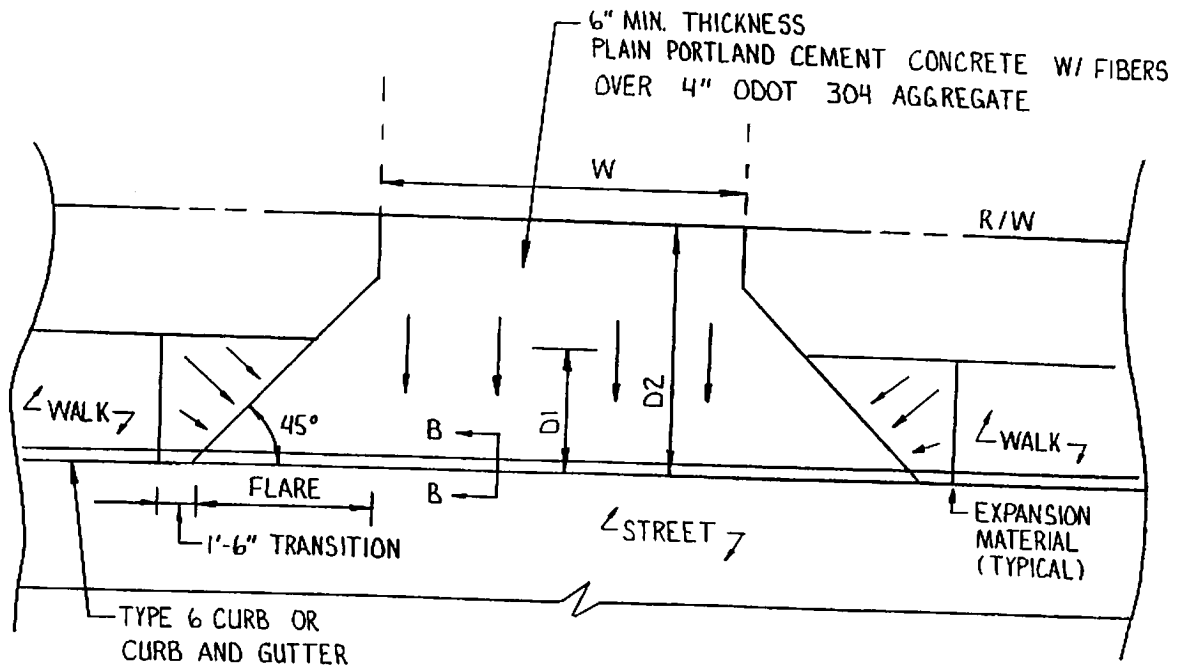
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	DTS	DD	DTS	01/24/03	N.T.S.	1 of 6	ST-272



**COMMERCIAL & RESIDENTIAL DRIVEWAYS
TYPE A - AS BUILT APPROACH PHOTOS**

CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

SURVEY	DESIGN	DRAWN	CHECK	DATE	SCALE	SHEET NO.	DWG NO.
	DTS	DD	DTS	01/24/03	N.T.S.	2 of 6	ST-272



NOTES:

1. FLARE = 5 FT. MIN. / 25 FT. MAX.
2. SEE LOCATION AND DESIGN MANUAL FIGURES 803-2, 803-3, 804-1 FOR PROFILE AND ADDITIONAL DETAILS
3. SECTION B-B - ODOT LOCATION AND DESIGN MANUAL FIGURE 803-2
4. CONCRETE SHALL CONFORM TO THE CITY OF STEUBENVILLE GENERAL SPECIFICATION FOR FIBEROUS CONCRETE
5. W = DRIVEWAY THROAT WIDTH
6. DI = MINIMUM CONCRETE APRON DEPTH
7. D2 = DEPTH TO R/W

**COMMERCIAL & RESIDENTIAL DRIVEWAYS
TYPE B - APPROACH DETAILS**

CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

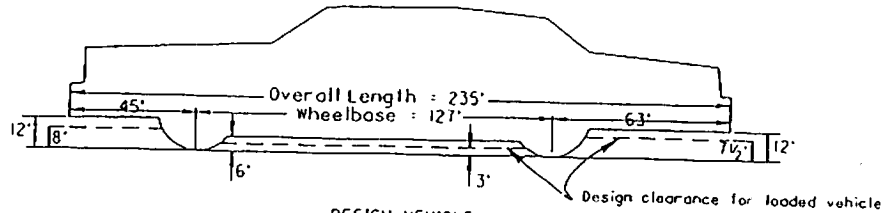
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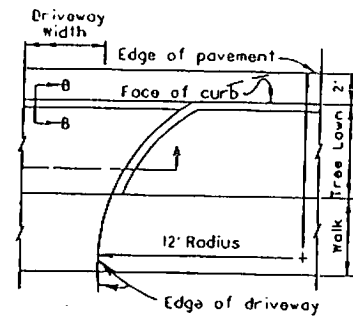
URBAN RESIDENTIAL DRIVE DETAILS

803-2

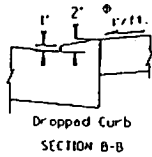
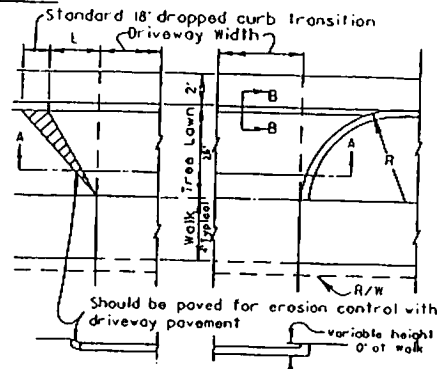
REFERENCE SECTION
803.3 & 804.2



DESIGN VEHICLE

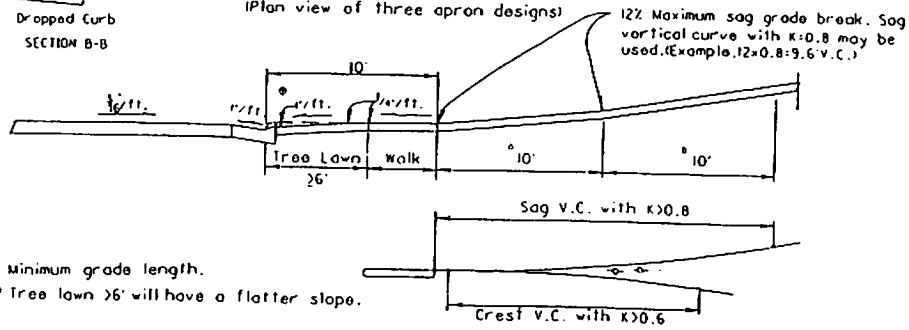


R=Tree Lawn width, 3' minimum
L= 1/2 Tree lawn width, 1'-6" min.



RESIDENTIAL DRIVEWAYS

(Plan view of three apron designs)



- * Minimum grade length.
- Tree lawn >6' will have a flatter slope.

RESIDENTIAL DRIVEWAY PROFILES
6' OR GREATER TREE LAWN

COMMERCIAL & RESIDENTIAL DRIVEWAYS APPROACH DETAILS 803-2

CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

SURVEY	DESIGN	DRAWN	CHECK	DATE	SCALE	SHEET NO.	DWG. NO.
	DTS	DD	DTS	01/24/03	N.T.S.	4 of 6	ST-272

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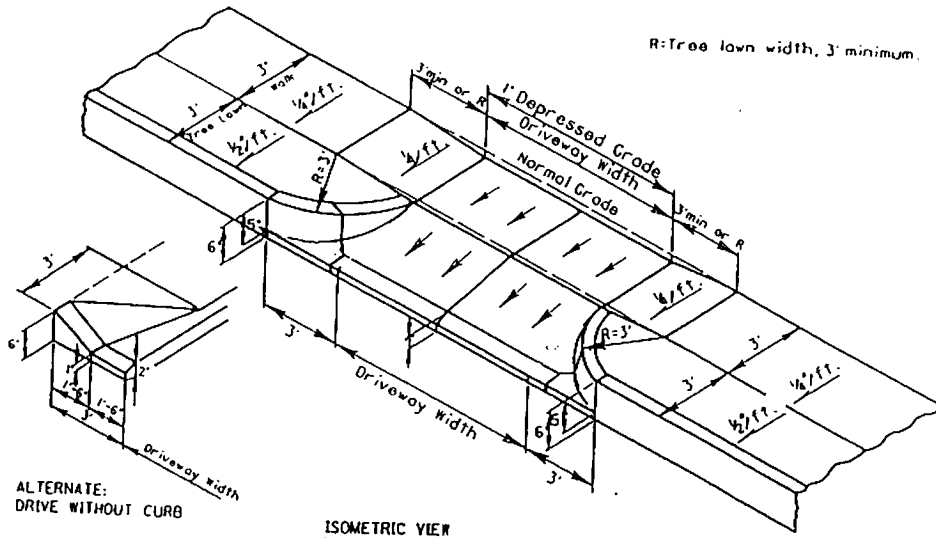
URBAN RESIDENTIAL DRIVE DETAILS

803-3

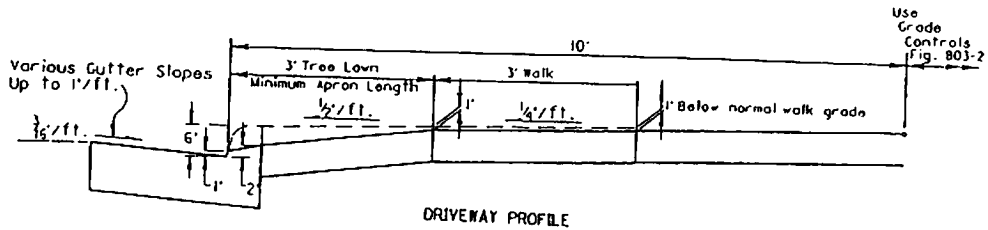
REFERENCE SECTION
803.3 & 804.2

CITY OF STEUBENVILLE

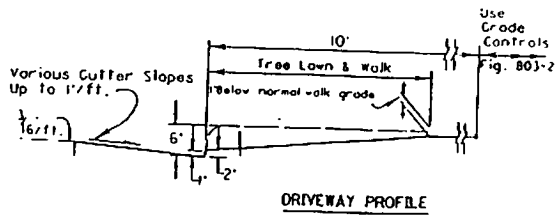
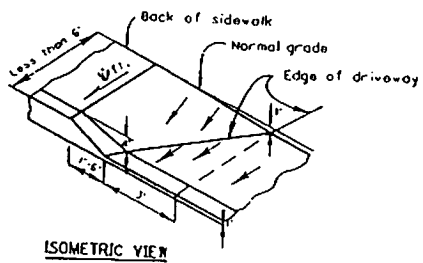
R: Tree lawn width, 3' minimum.



ALTERNATE:
DRIVE WITHOUT CURB



EXAMPLE: 3' TREE LAWN WITH 3' WALK DEPRESSED 1'
(Recommended Minimum Apron Design)



EXAMPLE: TREE LAWN AND WALK, LESS THAN 6'
WALK DEPRESSED 1'

RESIDENTIAL DRIVEWAY PROFILES
LESS THAN 6' TREE LAWN

COMMERCIAL & RESIDENTIAL DRIVEWAYS APPROACH DETAILS 803-3 MODIFIED

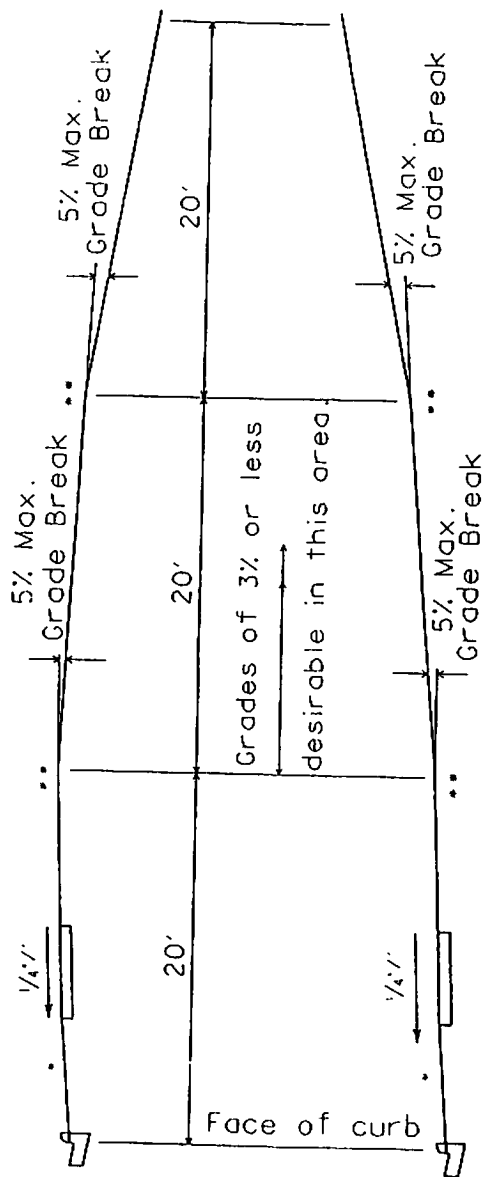
CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

SURVEY	DESIGN	DRAWN	CHECK	DATE	SCALE	SHEET NO.	DWG. NO.
	DTS	DD	DTS	01/24/03	N.T.S.	5 of 6	ST-272

**COMMERCIAL DRIVE
PROFILE CRITERIA**

804-1

REFERENCE SECTION
804.3



*See Fig. 803-2 & 803-3 for tree lawn and walk treatment.

**Although the use of grade breaks is allowable, a 10' rounding is desirable at these locations.

**COMMERCIAL & RESIDENTIAL DRIVEWAYS
PROFILE CRITERIA DETAIL 804-1**

CITY OF STEUBENVILLE - Department of Public Works - Division of Engineering & Building
238 South Lake Erie Avenue - Steubenville, Ohio 43952-2158

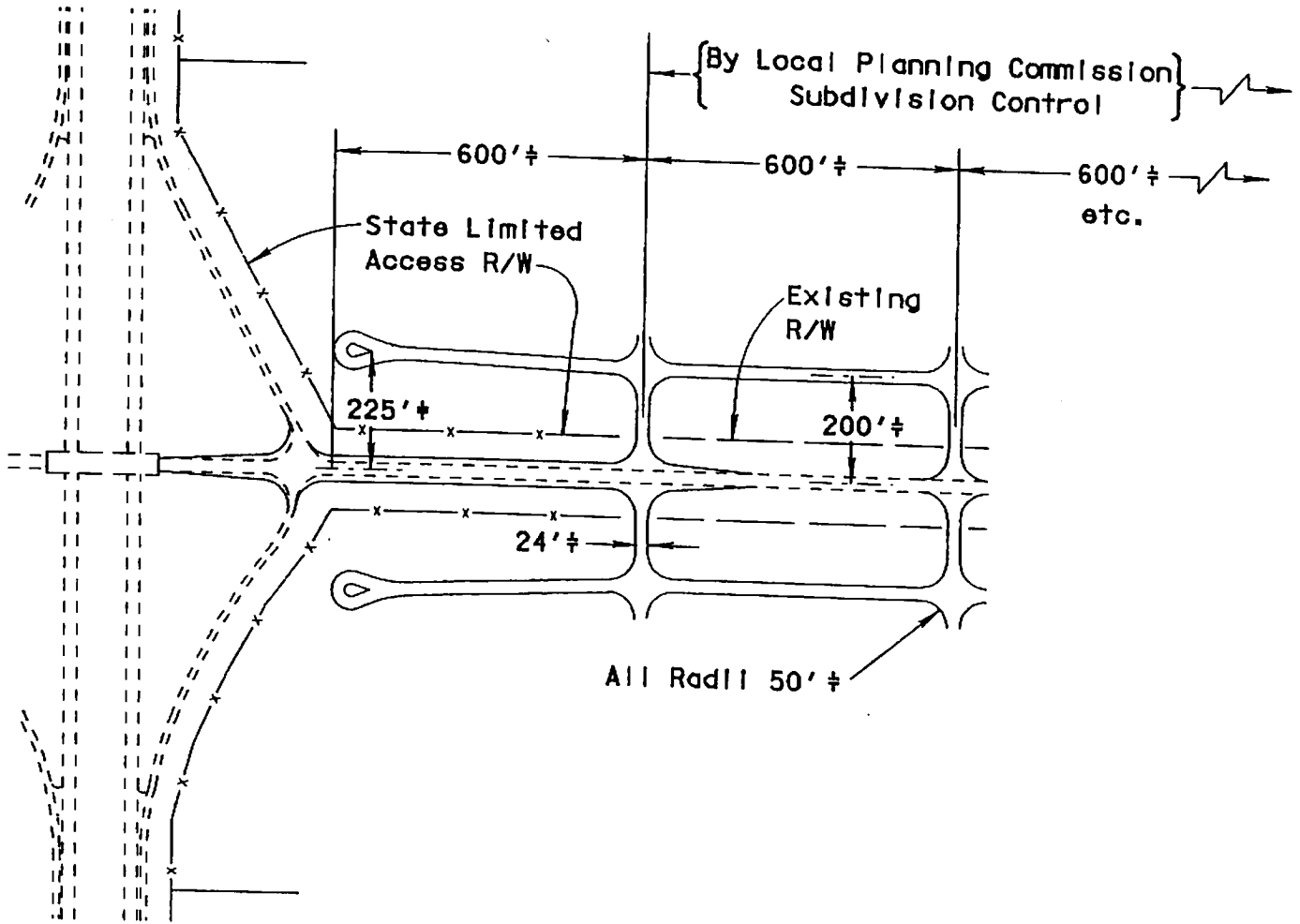
SURVEY	DESIGN	DRAWN	CHECK	DATE	SCALE	SHEET NO.	DWG. NO.
	DTS	DD	DTS	01/24/03	N.T.S.	6 of 6	ST-272

800 Access Control, R/W Use Permits and Drive Design

List of Figures

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801-2	Guidelines for Limitation of Access at Cloverleaf-Type Interchanges
802-1	Location of Drives in Relation to Property Lines
802-2	Corner Island Detail
803-1	Mailbox Facilities
803-2	Urban Residential Drive Details
803-3	Urban Residential Drive Details
803-4	Service Station Drives - Uncurbed Roadway/Uncurbed Approach
803-5	Service Station Drives - Special Paved Shoulder Detail
803-6	Service Station Drives - Uncurbed Roadway/Curbed Approach
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804-2	Commercial Design Vehicle

GUIDELINES FOR LIMITATION OF ACCESS AT DIAMOND TYPE INTERCHANGES	801-1
	REFERENCE SECTION 801.25

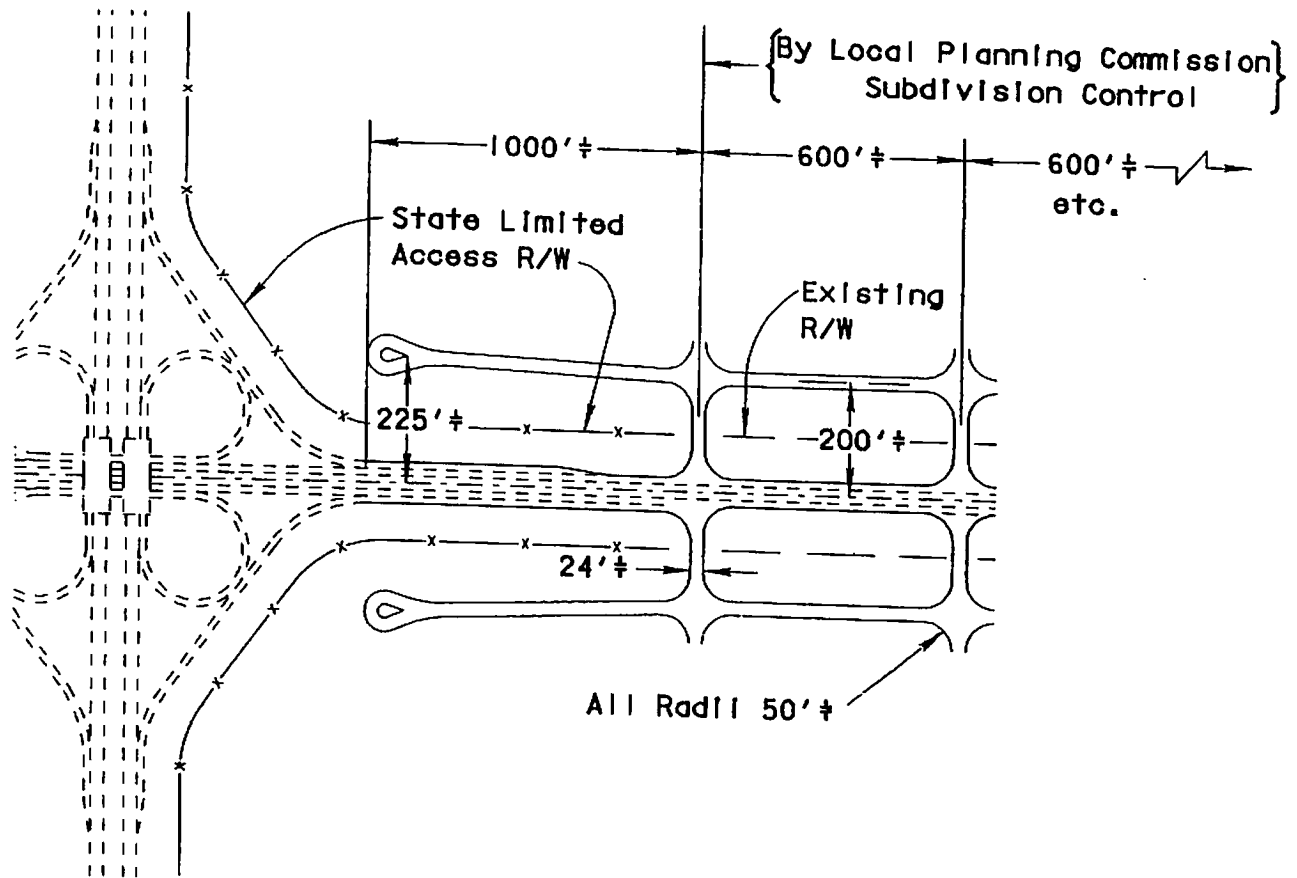


NOTE:
 (± symbol indicates desirable minimum)

RURAL INTERCHANGES

The control of developments, adjacent to diamond type interchanges on limited access highways can be effectively controlled by county, regional, or city planning commissions, through subdivision controls and building developments, and in addition by local zoning commissions as to zoning regulations. County commissioners or township trustees may exercise similar controls in the absence of planning and zoning commissions.

GUIDELINES FOR LIMITATION OF ACCESS AT CLOVERLEAF-TYPE INTERCHANGES	801-2
	REFERENCE SECTION 801.25



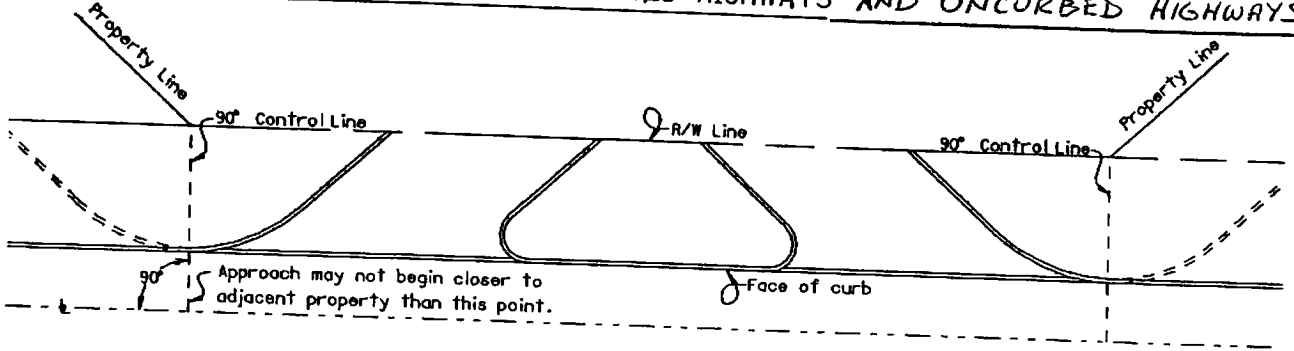
NOTE:
 (± symbol indicates desirable minimum)

RURAL INTERCHANGES

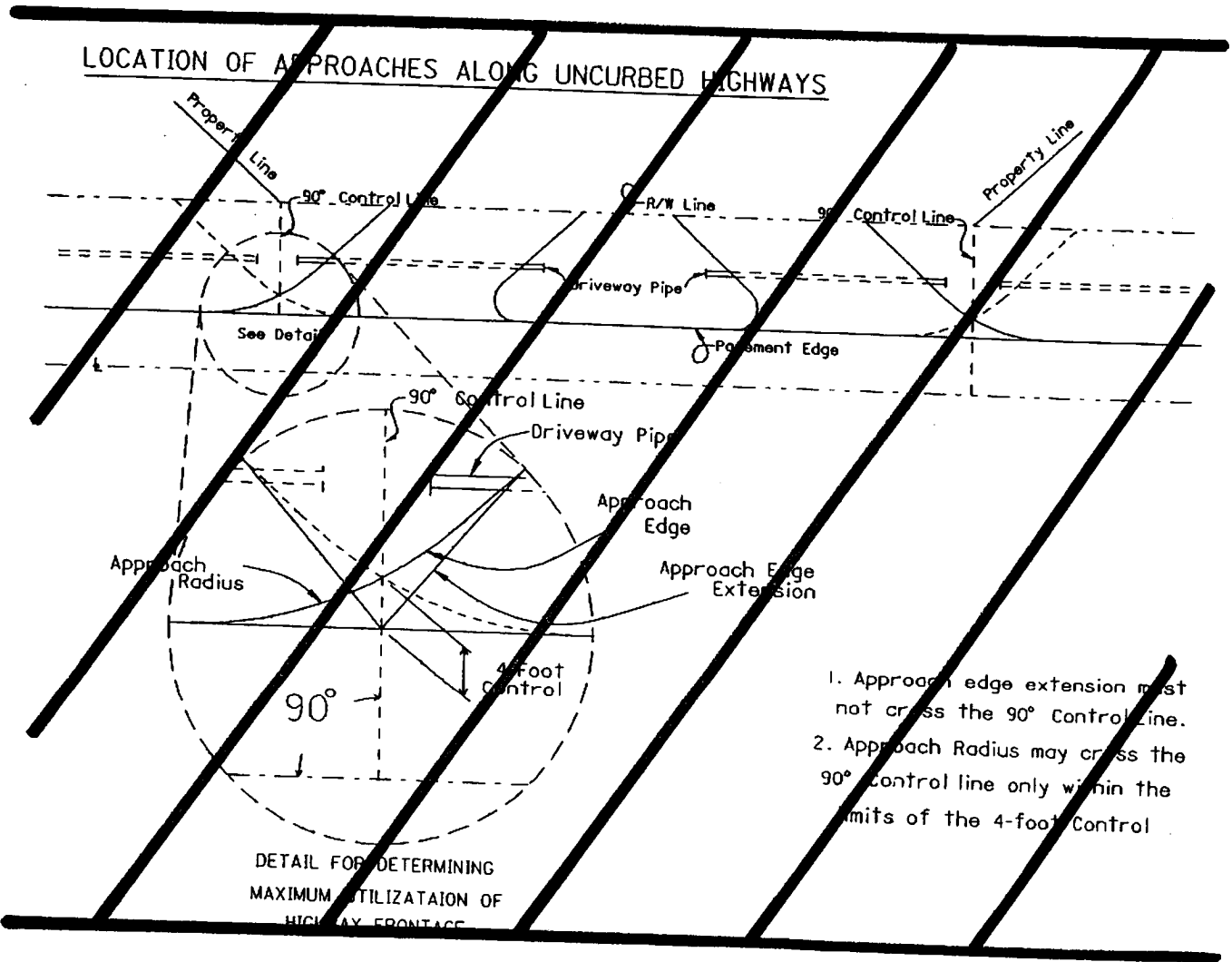
The control of developments, adjacent to cloverleaf type interchanges on limited access highways can be effectively controlled by county, regional, or city planning commissions, through subdivision controls and building developments, and in addition by local zoning commissions as to zoning regulations. County commissioners or township trustees may exercise similar controls in the absence of planning and zoning commissions.

<h1 style="margin: 0;">LOCATION OF DRIVES IN RELATION TO PROPERTY LINES</h1>	<h2 style="margin: 0;">802-1</h2>
	<p>REFERENCE SECTION 802.26</p>

LOCATION OF APPROACHES ALONG CURBED HIGHWAYS AND UNCURBED HIGHWAYS



LOCATION OF APPROACHES ALONG UNCURBED HIGHWAYS



1. Approach edge extension must not cross the 90° Control Line.
2. Approach Radius may cross the 90° Control line only within the limits of the 4-foot Control.

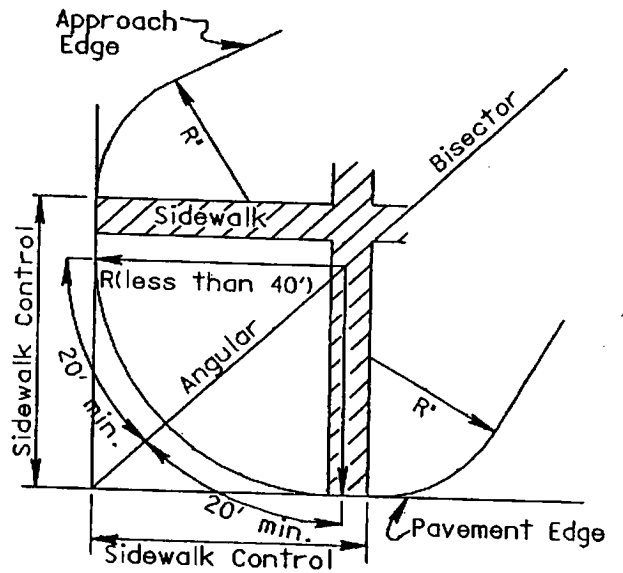
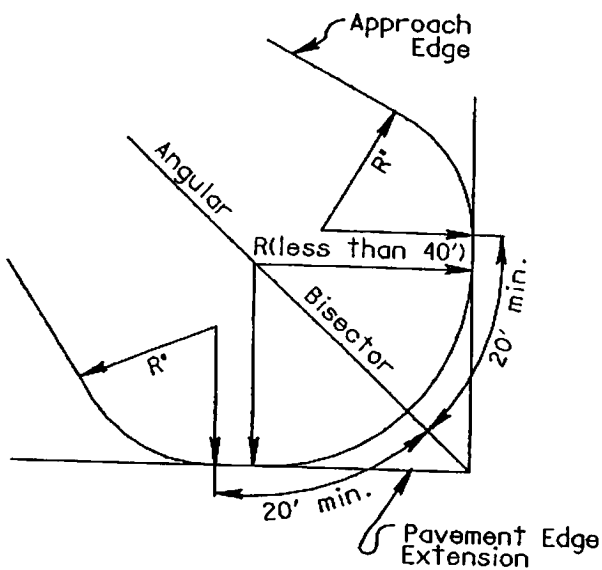
DETAIL FOR DETERMINING
MAXIMUM UTILIZATION OF
HIGHWAY FRONTAGE

CORNER ISLAND DETAIL

802-2

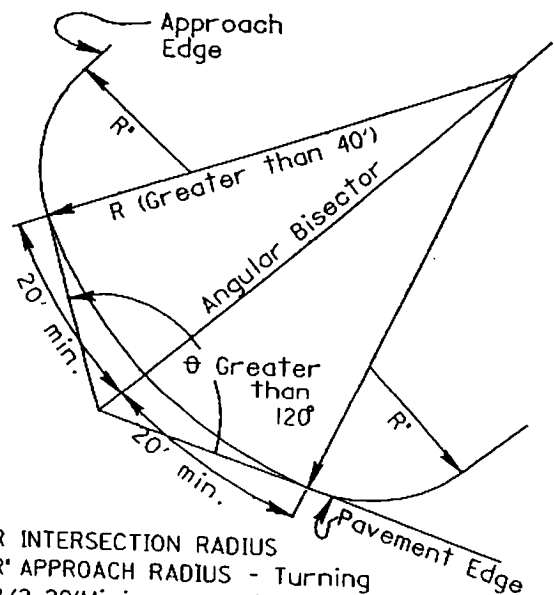
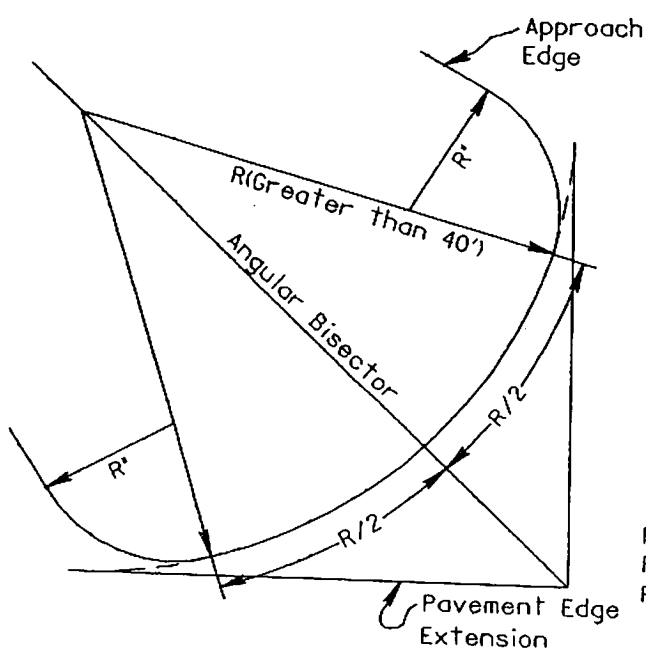
REFERENCE SECTION
802.27

INTERSECTION RADIUS LESS THAN 40 FEET



R INTERSECTION RADIUS
R* APPROACH RADIUS- Turning

INTERSECTION RADIUS GREATER THAN 40 FEET



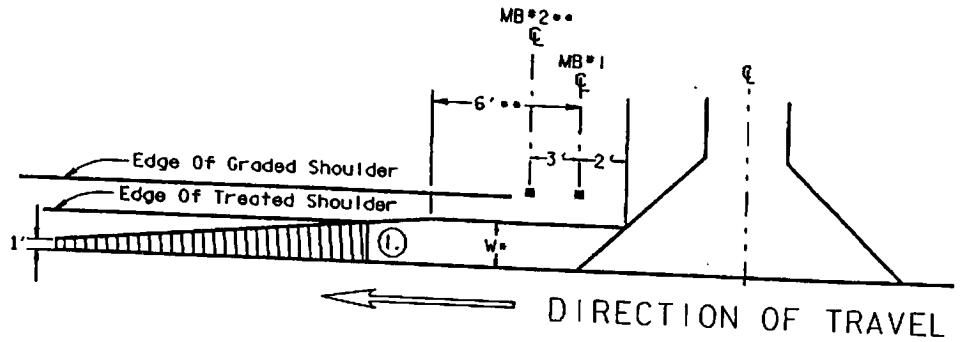
R INTERSECTION RADIUS
R* APPROACH RADIUS - Turning
R/2 20' Minimum. Maximum need
not be greater than 40'.

MAILBOX FACILITIES

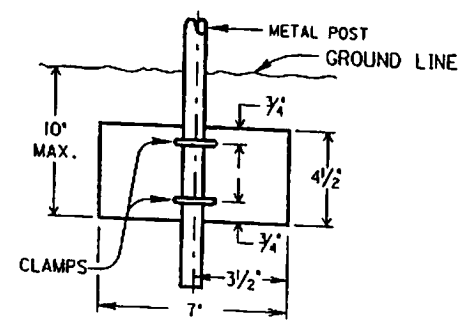
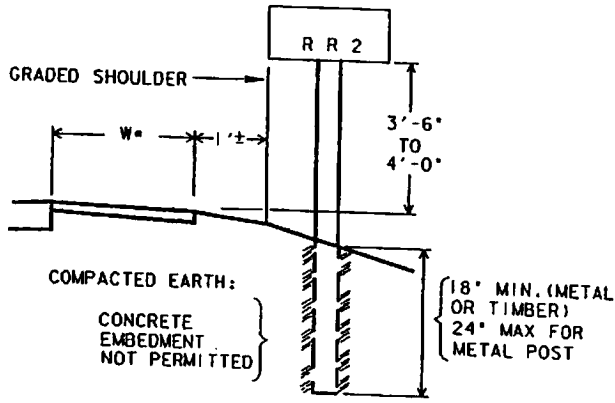
803-1

REFERENCE SECTION

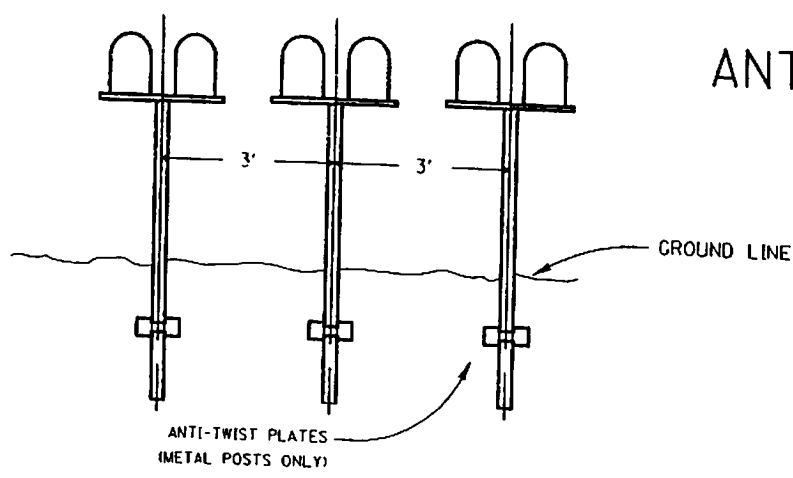
803.1



- (1) End mailbox turnout at edge of treated shoulder or 1' which ever is greater
- Where posts are behind guardrail, turnout shall extend to face of guardrail. Where no guardrail is required, turnout width shall be 6' minimum.
- Add 3' for each additional mailbox



ANTI-TWIST PLATE



GROUP MAILBOX INSTALLATION

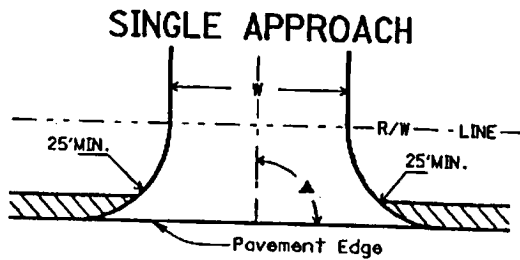
SERVICE STATION DRIVES

UNCURBED ROADWAY / UNCURBED APPROACH

803-4

REFERENCE SECTION

803.41



L 15' or greater

W 35' maximum

▲ 70° to 90° (for approach with two-way operation)

⊖ 45° to 90°

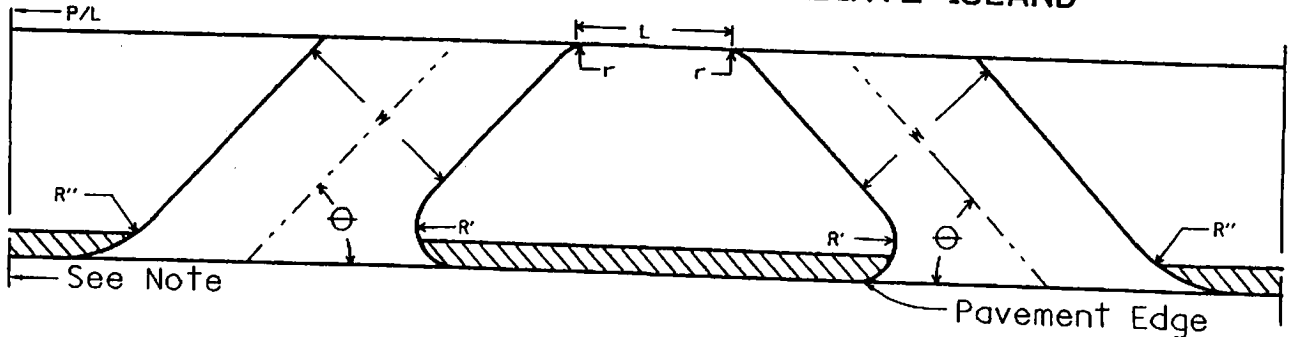
R' Non-Turning Radius, 5' min. to 10' max

R'' Turning Radius, 15' min, 25' to ~~50'~~ Desirable 35'

r Permissible Rounding 15' max

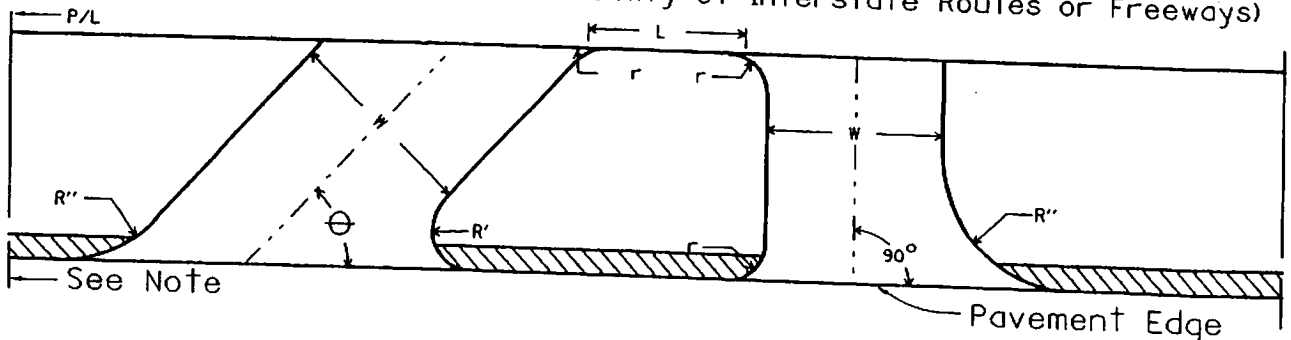
▨ Treated Shoulder

DUAL APPROACHES & INTERMEDIATE ISLAND



DUAL APPROACHES WITH RETURN FLOW & INTERMEDIATE ISLAND

(For use on Cross-Roads in the Vicinity of Interstate Routes or Freeways)



Note: See figure 802-1 for location of drives in relation to property line.

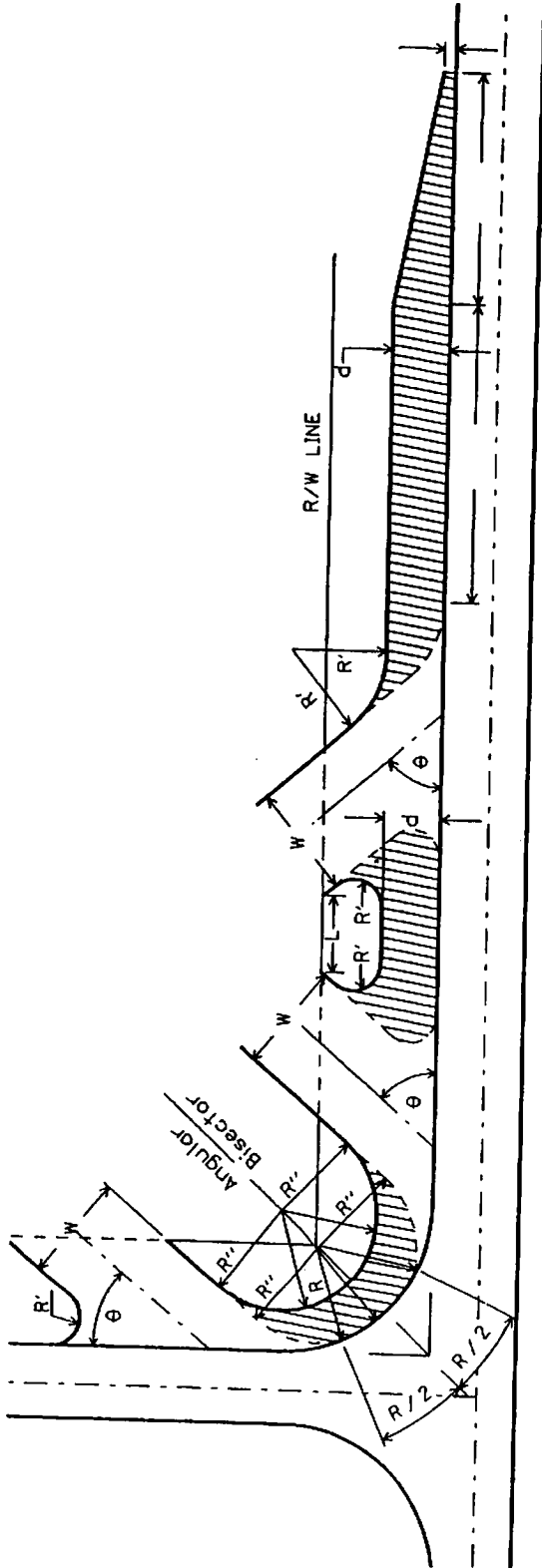
SERVICE STATION DRIVES

SPECIAL PAVED SHOULDER DETAIL

803-5

REFERENCE SECTION

803.41



L 15 ft. or greater.

W Not greater than 35ft.

θ 45° to 90°

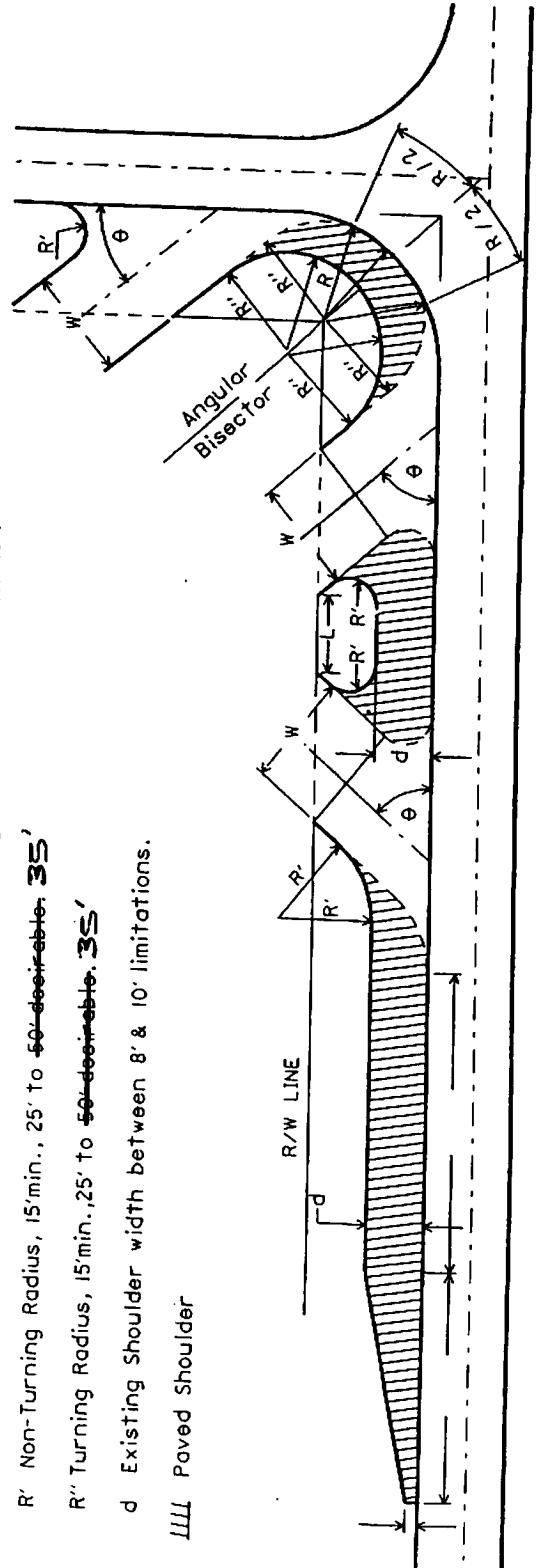
R Intersection Radius - Use 40' minimum when existing radius is less than 40'.

R' Non-Turning Radius, 15' min., 25' to ~~50'~~ **35'**

R'' Turning Radius, 15' min., 25' to ~~50'~~ **35'**

d Existing Shoulder width between 8' & 10' limitations.

|||| Paved Shoulder



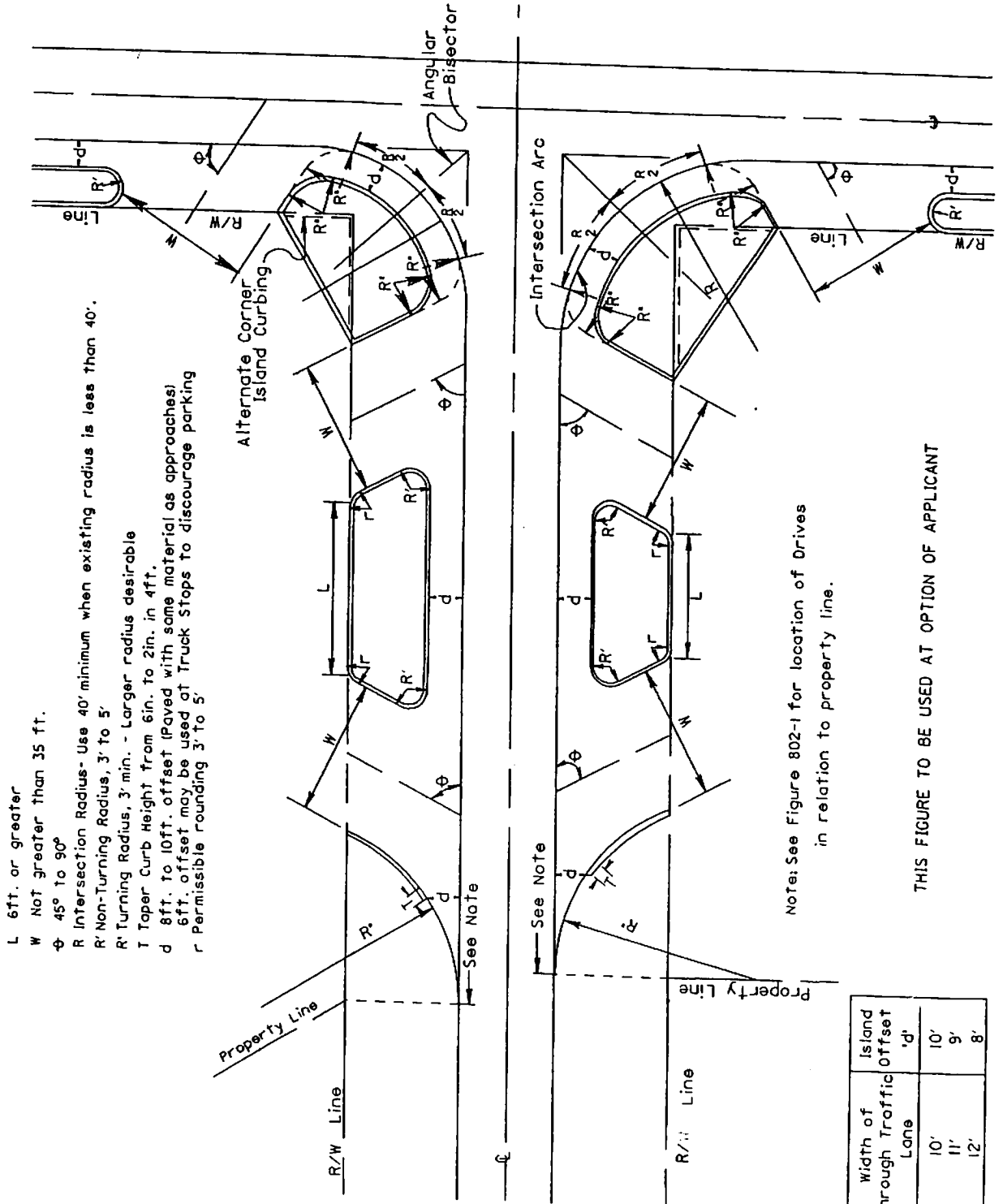
SERVICE STATION DRIVES

UNCURBED ROADWAY / CURBED APPROACH

803-6

REFERENCE SECTION

803.42



- L 6ft. or greater
- W Not greater than 35 ft.
- ϕ 45° to 90°
- R Intersection Radius- Use 40' minimum when existing radius is less than 40'.
- R' Non-Turning Radius, 3' to 5'
- R'' Turning Radius, 3' min. - Larger radius desirable
- T Taper Curb Height from 6in. to 2in. in 4ft.
- d 8ft. to 10ft. offset (Paved with some material as approaches)
- 6ft. offset may be used at Truck Stops to discourage parking
- r Permissible rounding 3' to 5'

Note: See Figure 802-1 for location of Drives in relation to property line.

THIS FIGURE TO BE USED AT OPTION OF APPLICANT

Width of Through Traffic Lane	Island Offset 'd'
10'	10'
11'	9'
12'	8'

SERVICE STATION DRIVES

CURBED ROADWAY / CURBED APPROACH

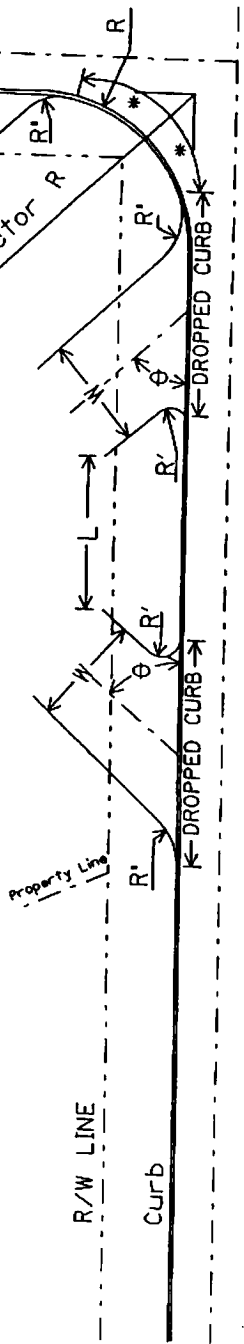
803-7

REFERENCE SECTION

803.42

- R Intersection Radius
- R' Non-Turning Radius, 3' min. to 5' max
- R" Turning Radius, 3' min., 15' to 25', Desirable
- W 35' Maximum
- L 6' or Greater
- θ 45° to 90°
- r Permissible Rounding 3' max.

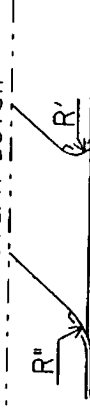
Note: See figure 802-1 for location of drives in relation to property lines.



- * When R is less than 40', use 20' min.
- When R is between 40' & 80' use $R/2$.
- When R is greater than 80', max. need not be more than 40'.

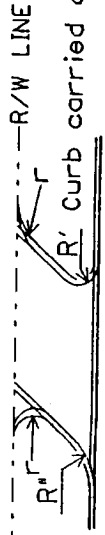
Standard Curb

Return Detail



Curb carried through arc of approach radius

ALTERNATE CURB RETURN DETAIL

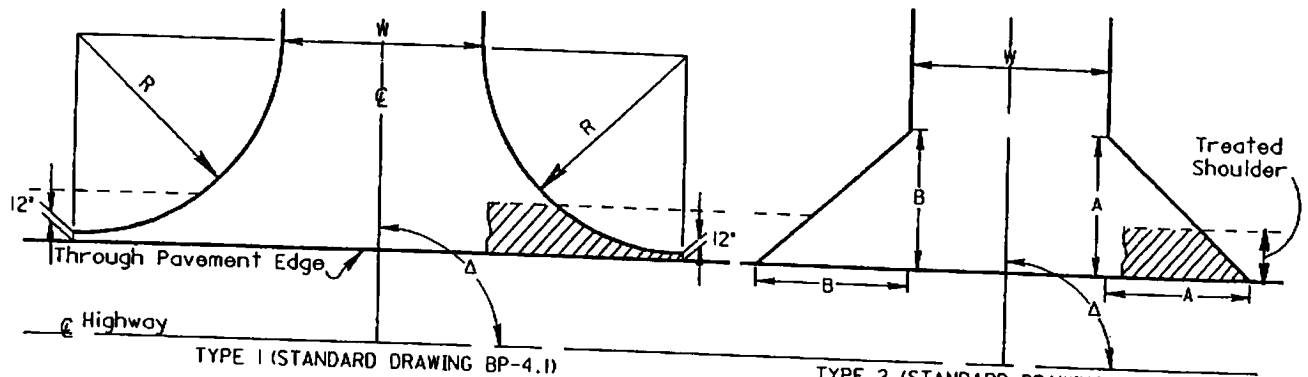


STANDARD COMMERCIAL DRIVE DESIGNS

803-8

REFERENCE SECTION
803.51

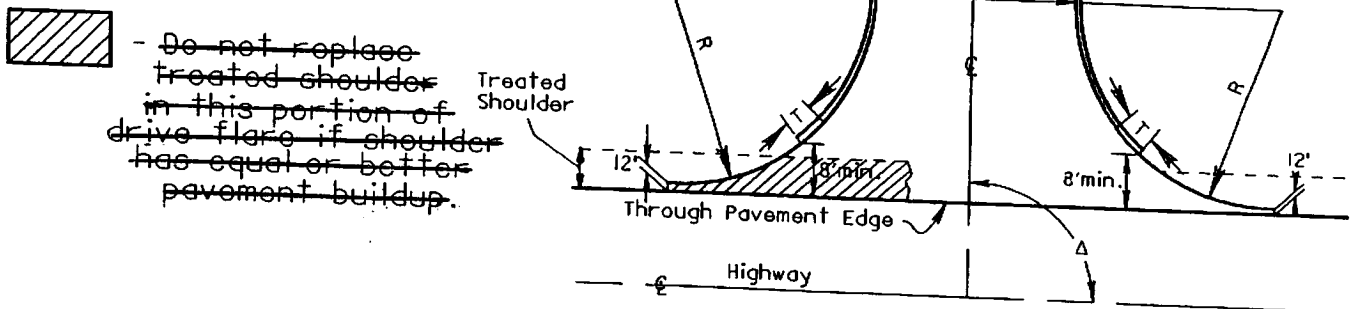
UNCURBED DRIVEWAY ALONG UNCURBED HIGHWAY



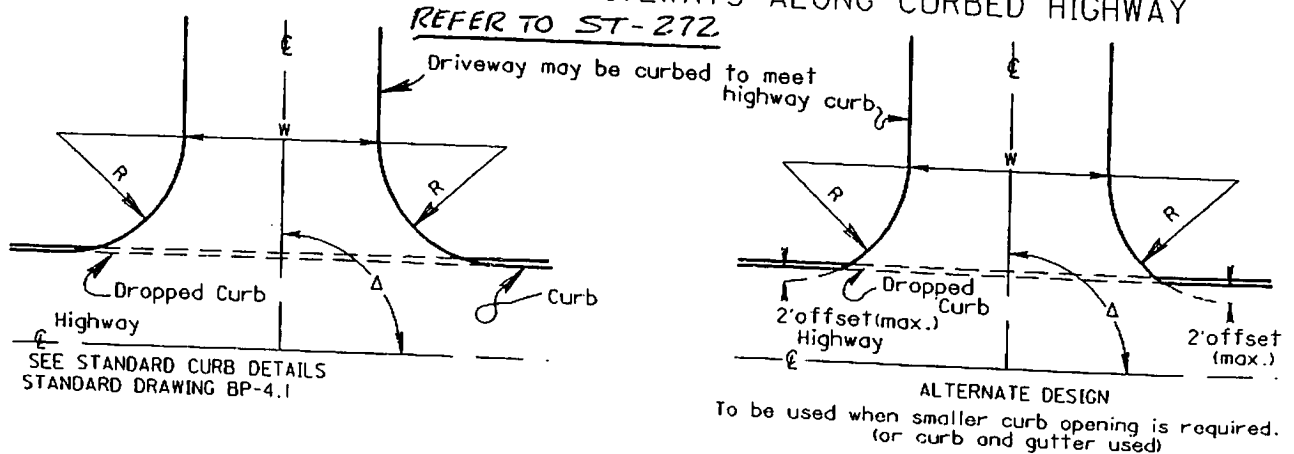
- W = 35 ft. Maximum
- R = 25 ft. Minimum on Uncurbed Highway
15 ft. Minimum on Curbed Highway
- T = Taper Curb Height from 6 in. to 2 in.
in. 4 ft.
- Δ = 70° to 90° (two-way operation)

Δ	A	B
85° to 90°	20'	20'
75° to 85°	25'	16'
65° to 75°	28'	13'
55° to 65°	33'	12'

CURBED DRIVEWAY ALONG UNCURBED HIGHWAY



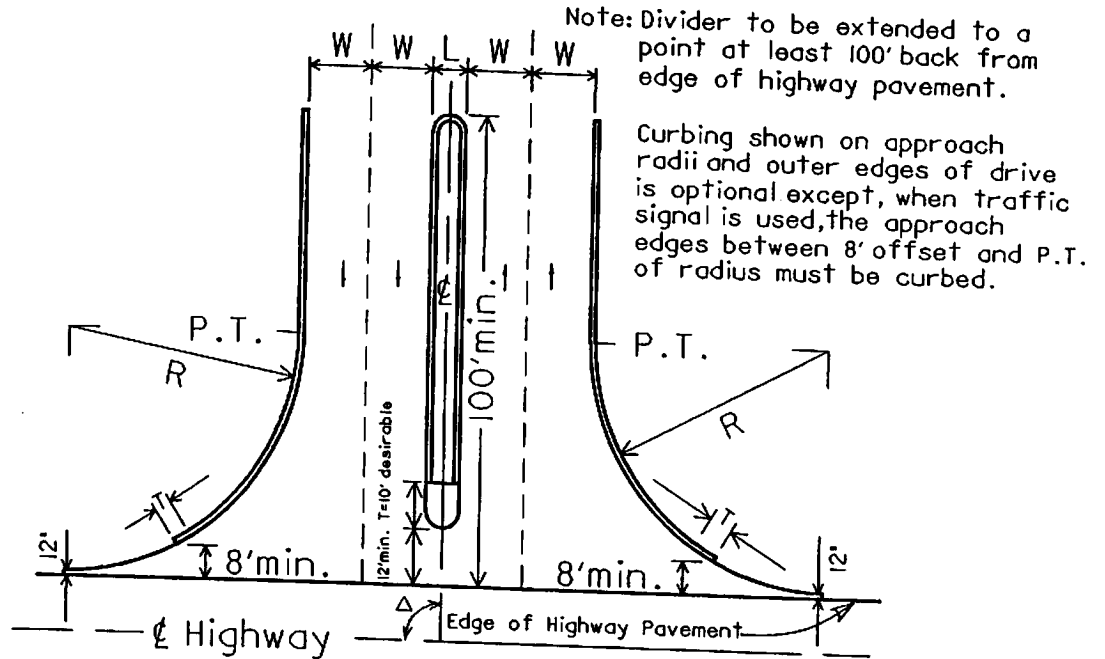
CURBED OR UNCURBED DRIVEWAYS ALONG CURBED HIGHWAY



SHOPPING CENTER & INDUSTRIAL DRIVE DESIGNS

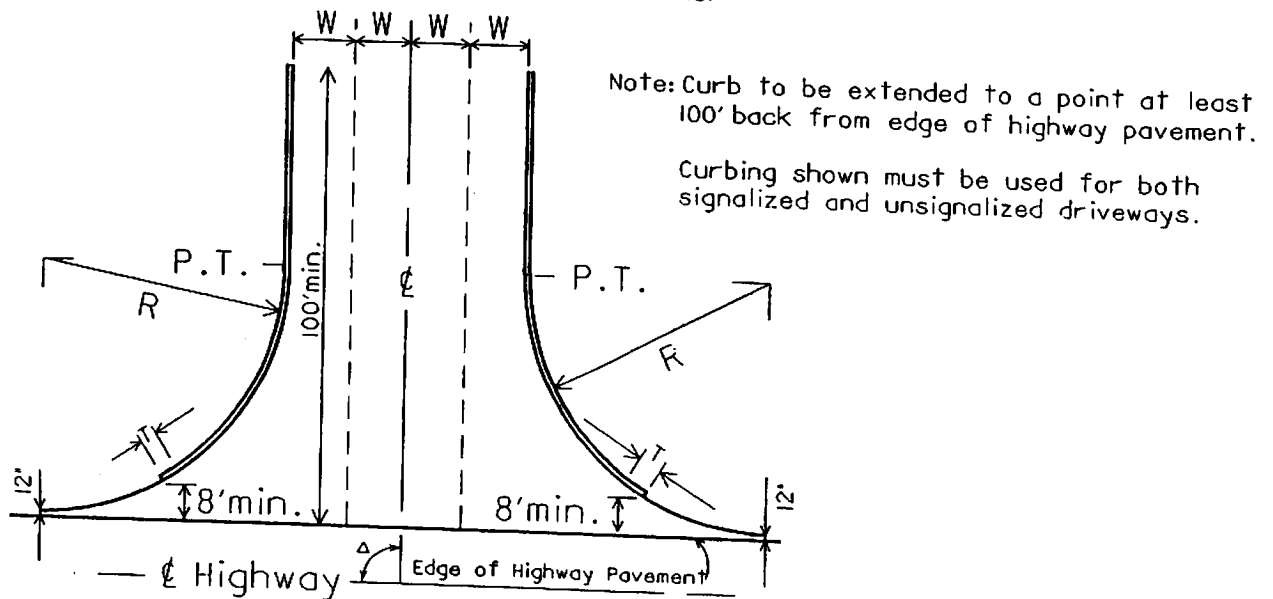
803-9

REFERENCE SECTION
803.6



DIVIDED DRIVE

- T = Taper Curb Height from 6' to 2' in 4' or greater.
- W = 10' to 14' per single traffic lane.
- R = 35' Minimum, 50' Desirable.
- ▲ = 70° to 90°
- L = Median Width, 6' Minimum.
(Median must be curbed for 6' to 15' widths)



UNDIVIDED DRIVE

COMMERCIAL DESIGN VEHICLE

804-2

REFERENCE SECTION
804.3

