

Application Name:	ODOT_Driveways.mvba
Current version:	V11.04.15
Required MicroStation Version:	MicroStation XM or V8i
Required GEOPAK Version:	GEOPAK XM or V8i

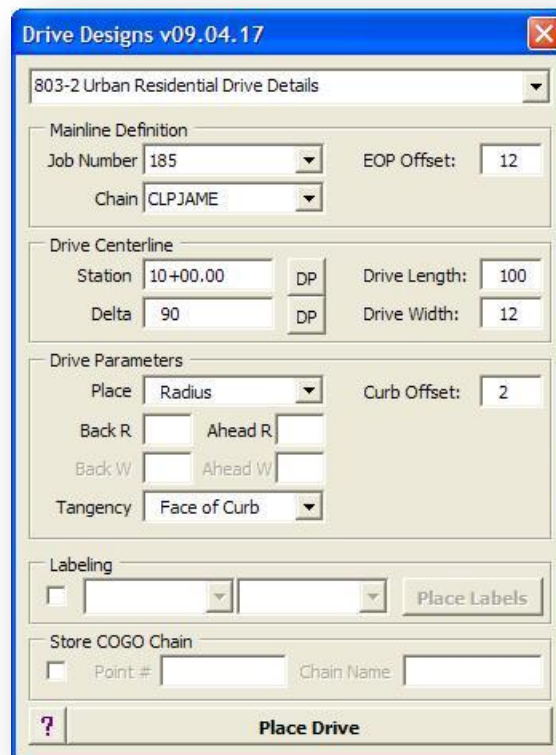
1.0 Introduction

ODOT_Driveways.mvba is a MicroStation visual basic application designed to facilitate the design and drafting of various driveway types according to the Location and Design Manual Volume 1 – Roadway Design, Figures 803-2, 803-8, and 803-9, and Standard Roadway Construction Drawing BP-4.1. Additional driveway information is available in Section 4.6 of the State Highway Access Management Manual. This program is provided to assist the designer in the drafting and design of various driveways. It is the responsibility of the designer to review the results for compliance with ODOT standards.

This application uses a GEOPAK COGO Chain to define the mainline centerline. GEOPAK must be activated and the Working Directory set to define the location of the .gpk file containing the COGO chains for the project.

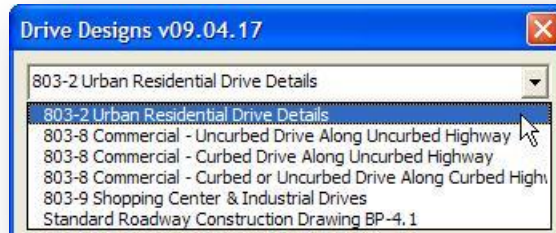
The application is activated by use of the following key-in command:

```
vba load driveways.mvba;vba run drivemain
```



1.1 Operation

The drop down menu at the top of the dialog is used to select the type of drive that you wish to place. Six options are available as shown below.



See the [Location and Design Manual Volume 1 – Roadway Design](#), Figures 803-2, 803-8, and 803-9, Standard Roadway Construction Drawing BP-4.1, and Section 4.6 of the [State Highway Access Management Manual](#) for details on driveway configuration.

1.1.1 Driveway Symbology

According to the [ODOT CADD Engineering Standards Manual](#), proposed driveways are placed on the level PV_P_Drive. The ByLevel settings for PV_P_Drive have been defined as follows:

Color = 8, Weight = 1, Line Code = 0

The graphics placed using Driveways.mvba are placed with the following symbology settings:

Feature	Level	Color	Weight	Line Code
Commercial Drive	PV_P_Drive	8	1	0
Industrial Drive	PV_P_Drive	5	1	0
Residential Drive	PV_P_Drive	4	1	0
Curb	PV_P_Curb	10	1	0
Drive Centerline	PV_P_Drive	0	0	4
Labeling	PV_P_Text	0	0,1	0
Mail Box cell	RD_P_Cells	8	1	0

If the driveway profile will be generated with GEOPAK using ODOT's driveway criteria file, drwy_uncb.x, the documentation for drwy_uncb.x defines unique symbology requirements to identify each driveway type as a specific residential or commercial pavement buildup. See Table 4 in the drwy_uncb.x documentation for more details.

The user must manually change the drive symbology appropriately to process drive profiles in accordance with drwy_uncb.x.

1.1.2 Mainline Definition

The **Mainline Definition** portion of the *Drive Designs* dialog is shown below. This portion of the dialog is used to define the GEOPAK COGO Chain along which driveways are to be placed.

The screenshot shows a dialog box titled "Mainline Definition". It contains three input fields: "Job Number" with a dropdown menu showing "185", "Chain" with a dropdown menu showing "CLPJAME", and "EOP Offset" with a text box containing "12".

Job Number

This drop-down menu is used to select the **Job Number** of the GEOPAK Coordinate Geometry Database containing the centerline **Chain**. The drop down menu will list the **Job Number** for every .gpk file found in the current GEOPAK Working Directory.

Chain

This drop-down menu provides a list of all the COGO chains found in the .gpk file identified by the selected **Job Number**. Select the **Chain** name along which driveways are to be placed.

EOP Offset

This field is used to key in the pavement width, from the centerline to the edge of pavement, for the mainline pavement. The default value is 12.

1.1.3 Drive Centerline

The **Drive Centerline** portion of the *Drive Designs* dialog is shown below. This portion of the Drive Details dialog is used to define the location, skew angle of the drive relative to the mainline **Chain**, the length and width of the driveway.

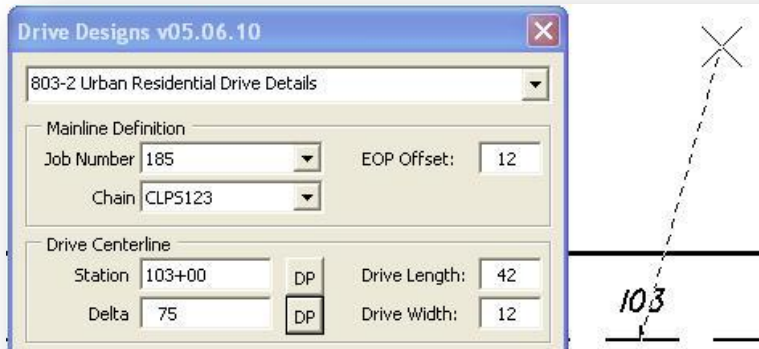
The screenshot shows a dialog box titled "Drive Centerline". It contains four input fields: "Station" with a text box containing "10+00.00", "Delta" with a text box containing "90", "Drive Length:" with a text box containing "100", and "Drive Width:" with a text box containing "12". There are two "DP" buttons, one next to the Station field and one next to the Delta field.

Station

This field is used to key in the **Station** for the drive location. The station is relative to the currently selected **Chain**. The **DP** button can be used to graphically identify the **Station** by selecting the location in MicroStation. The default value is the beginning station of the selected mainline **Chain**.

Delta

This key-in field is used to specify the **Delta** angle for the driveway relative to the mainline **Chain**. Angles greater than 90° are not supported. The **DP** button can be used to dynamically specify the **Delta** angle, and the **Drive Length** as shown in the example below. Whether the **Delta** angle is measured from the back tangent or the ahead tangent directions is determined graphically by the user when the drive is placed. In the example below, the **Delta** angle is measured from the ahead tangent. The default value is 90°.



Drive Length

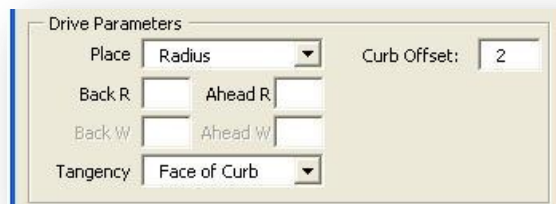
This key-in field is used to specify the length of the driveway, measured from the mainline **Chain** to the back of the driveway. The default value is 100.

Drive Width

This key-in field is used to specify the width of the driveway. The default value is 12.

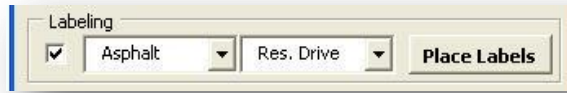
1.1.4 Drive Parameters

The **Drive Parameters** portion of the *Drive Designs* dialog, shown below, is used to specify the placement parameters for the driveway. The available parameters will vary depending on the drive type selected. Each of the **Drive Parameters** is described in detail in section **1.3 Placing Drives**.

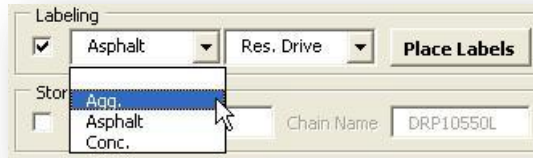


1.1.5 Labeling

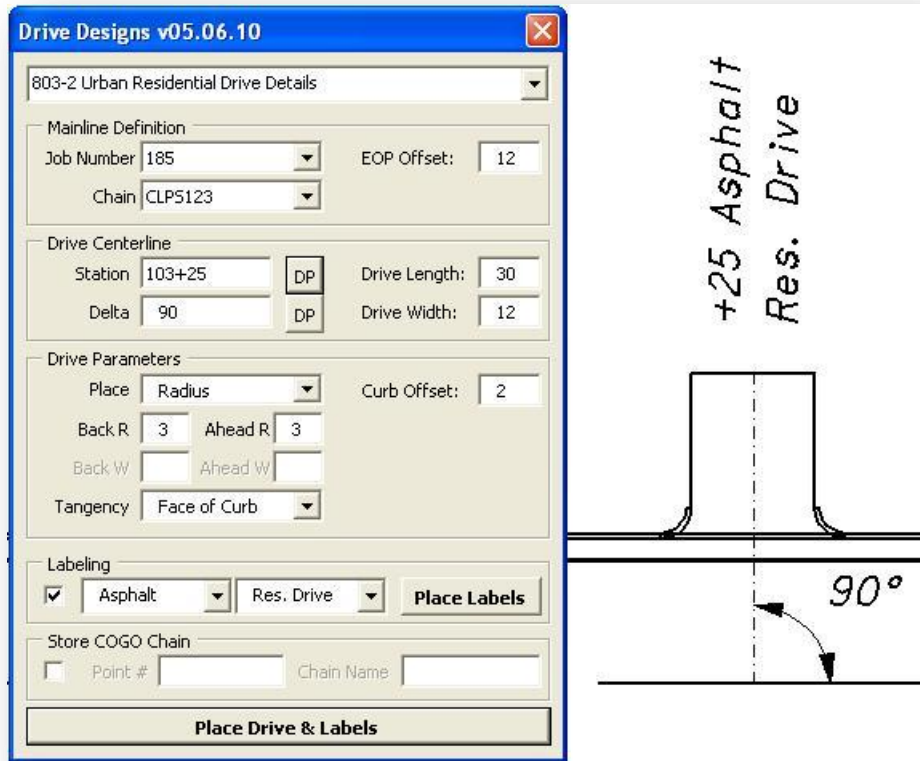
The **Labeling** portion of the dialog is used to optionally place text labels for the delta angle, drive station, the drive material and usage. The labels can be placed with the driveway graphics in the basemap design file, or labels can be placed independently in the sheet design file. The text size for all labels is automatically set according to the current MicroStation Annotation Scale value. To place labels, activate the check box to the left of the **Labeling** options as shown below.



Two fields are available to define the content of the drive label. The first field is used to define the drive material. The second field is used to define the drive usage. Three default options are available for each field, as shown below, or the user can key-in a text string to be used for the label placement.



The figure on the following page shows an example of placing the driveway and the labels in the basemap design file.



Place Labels

The **Place Labels** option is used to place only the drive labels in the current design file.

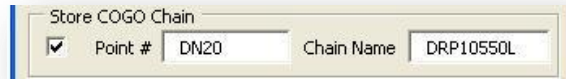
Tips:

The **Place Labels** option can be used in the Sheet design file to label driveways previously drawn in the Basemap design file.

To change the Annotation Scale, select **File > Models** from the MicroStation pull down menus to access the *Models* dialog box. Then select the **Edit Model Properties** icon.

1.1.6 Store COGO Chain

The **Store COGO Chain** portion of the *Drive Designs* dialog is used to optionally store a COGO chain for the drive centerline in the currently selected .gpk file, specified by the **Job Number**. To store a COGO chain, activate the check box to the left of the **Store COGO Chain** options.



Point

When the drive centerline is stored as a COGO chain, two COGO points will be created in the .gpk file to define the chain. This key-in field is used to specify the beginning point number. The field will automatically increment by 2 after the chain has been stored.

Chain Name

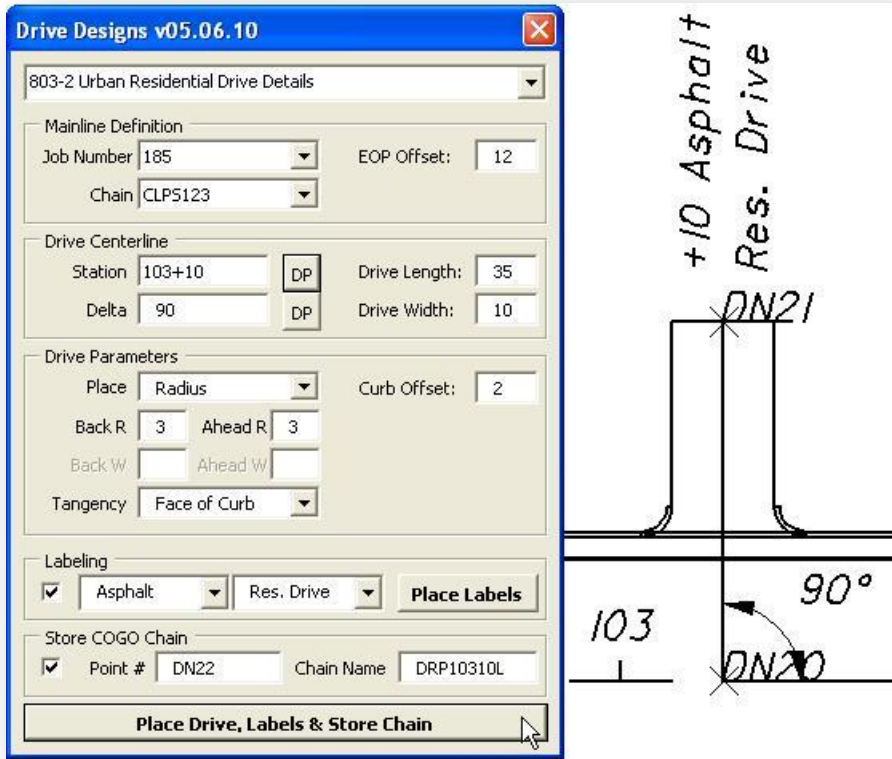
Use this field to key in the name of the driveway centerline chain.

If GEOPAK COGO is active with the Visualization option turned on when the drive is placed, and the **Store COGO Chain** option is toggled on, the COGO Points and the COGO chain will automatically be visualized in the design file as shown in the example on the following page.

Tips:

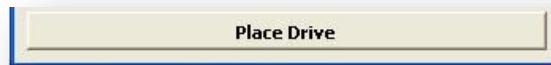
If the GEOPAK Redefine COGO Elements option is toggled on, and the Point # or Chain Name specified already exists in the currently selected .gpk file, the existing points and chain will be over written without prompting.

The [ODOT CADD Engineering Standards Manual](#), Section 306.2 GEOPAK COGO Element Names, provides guidelines for COGO element naming.



1.1.7 Place Drive

The **Place Drive** button is used to initiate placing the driveway in the design file.



If the **Labeling** option is toggled on, the **Place Drive** button dynamically changes as shown in the example below.



If the **Store COGO Chain** option is toggled on, the **Place Drive** button dynamically changes as shown in the example below.

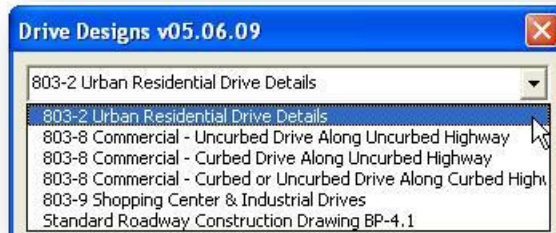
Labeling		
<input type="checkbox"/>	Asphalt	Res: Drive
		Place Labels
Store COGO Chain		
<input checked="" type="checkbox"/>	Point #	Chain Name
	DN20	DRP10550L
Place Drive & Store Chain		

If the **Labeling** and **Store COGO Chain** options are both toggled on, the **Place Drive** button dynamically changes as shown in the example below.

Labeling		
<input checked="" type="checkbox"/>	Asphalt	Res: Drive
		Place Labels
Store COGO Chain		
<input checked="" type="checkbox"/>	Point #	Chain Name
	DN20	DRP10550L
Place Drive, Labels & Store Chain		

1.2 Placing Drives

The drop down menu at the top of the dialog is used to select the type of drive that you wish to draw. Six options are available as shown below.

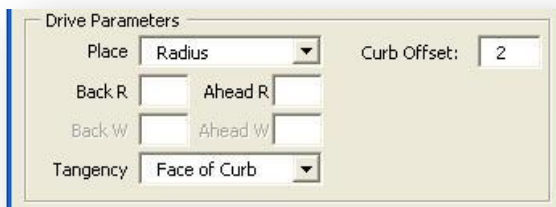


See the [Location and Design Manual Volume 1 – Roadway Design](#), Figures 803-2, 803-8, and 803-9. Standard Drawing BP-4.1, and the [State Highway Access Management Manual](#) for details on driveway configuration.

The following sections detail the **Drive Parameters** for each driveway type.

1.2.1 803-2 Urban Residential Drives

When the **803-2 Urban Residential Drives** option is selected, the **Drive Parameters** shown below are available.



Place

The **Place** option is used to select either a **Radius** or a **Chamfer** for the drive returns.

Back R, Ahead R

When the **Place** option is set to **Radius**, the **Back R** (Back Radius) and **Ahead R** (Ahead Radius) options are available to key-in the radii for the drive returns.

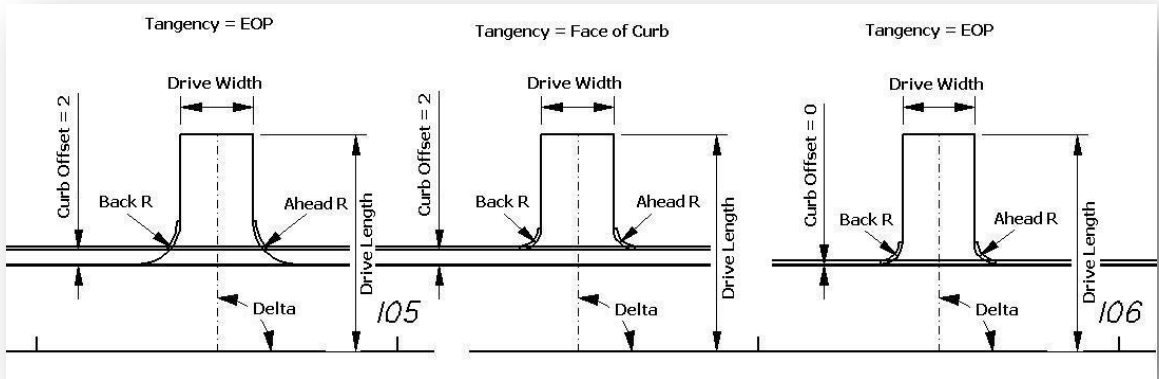
Tangency

The **Tangency** option is used to specify whether the radius returns are tangent to the **Face of Curb** or the **EOP** (Edge of Pavement). This option is not available when the **Place** option is set to **Chamfer**.

Curb Offset

This option is used to define the offset distance from the edge of pavement to the face of curb. When the **Tangency** option is set to **EOP**, this value is ignored.

Three examples of **803-2 Urban Residential Drives** using the **Radius** option are shown in the figure below.



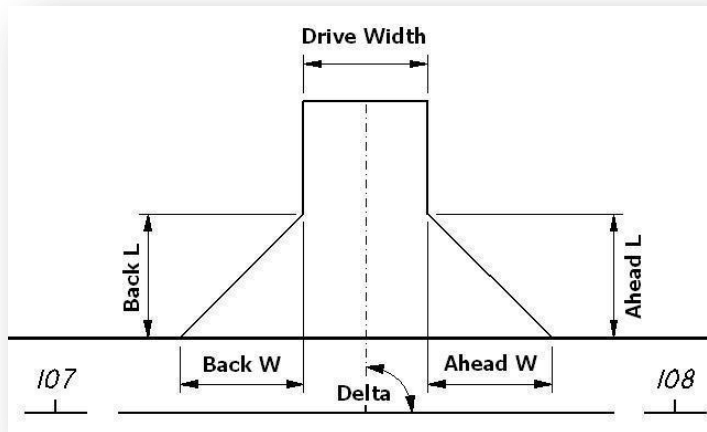
When the **Place** option is set to **Chamfer**, the **Drive Parameters** options appear as shown below.



Back L, Ahead L, Back W, Ahead W

These options are used to define the length (**Back L, Ahead L**) and the width (**Back W, Ahead W**) for the back and ahead drive chamfers.

An example using the **Chamfer** option is shown in the figure below.



1.2.2 803-8 Commercial – Uncurbed Drive Along Uncurbed Highway

When the **803-8 Commercial – Uncurbed Drive Along Uncurbed Highway** option is selected, the **Drive Parameters** shown below are available.

The screenshot shows the 'Drive Parameters' dialog box. The 'Place' dropdown is set to 'Radius'. The 'Curb Offset' is set to 2. The 'Back R' and 'Ahead R' fields are active and contain numerical values. The 'Back W' and 'Ahead W' fields are disabled. The 'Tangency' dropdown is set to 'Face of Curb'.

Place

The **Place** option is used to select either a **Radius** or a **Chamfer** for the drive returns.

Back R, Ahead R

When the **Place** option is set to **Radius**, the **Back R** (Back Radius) and **Ahead R** (Ahead Radius) options are available to key-in the radii for the drive returns.

The **Back W**, **Ahead W**, **Tangency**, and **Curb Offset**, parameters are not used when the **Radius** option is selected.

When the **Place** option is set to **Chamfer**, the **Drive Parameters** options appear as shown below.

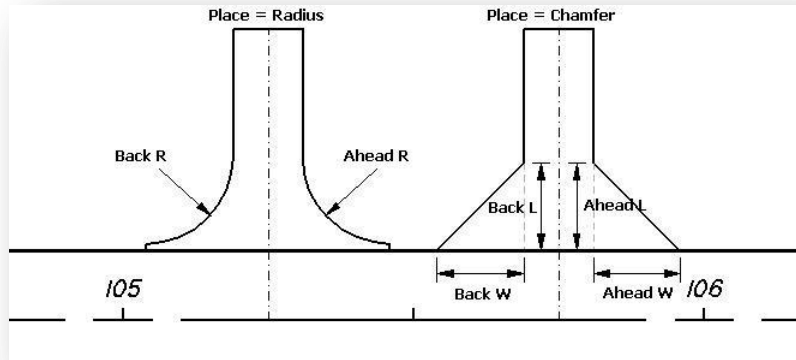
The screenshot shows the 'Drive Parameters' dialog box. The 'Place' dropdown is set to 'Chamfer'. The 'Curb Offset' is set to 2. The 'Back L' and 'Ahead L' fields are active and contain numerical values. The 'Back W' and 'Ahead W' fields are also active and contain numerical values. The 'Tangency' dropdown is set to 'Face of Curb'.

Back L, Ahead L, Back W, Ahead W

These options are used to define the length (**Back L**, **Ahead L**) and the width (**Back W**, **Ahead W**) for the back and ahead drive chamfers.

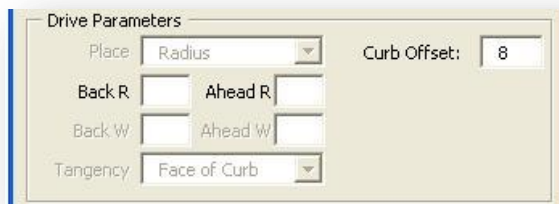
The **Tangency** and **Curb Offset**, parameters are not used when the **Chamfer** option is selected.

An example of the driveways placed using the **803-8 Commercial – Uncurbed Drive Along Uncurbed Highway** option is shown below.



1.2.3 803-8 Commercial – Curbed Drive Along Uncurbed Highway

When the **803-8 Commercial – Curbed Drive Along Uncurbed Highway** option is selected, the **Drive Parameters** shown below are available.



With the **803-8 Commercial – Curbed Drive Along Uncurbed Highway** option selected, the **Place** parameter is set to **Radius** and cannot be changed to place a chamfered drive.

Back R, Ahead R

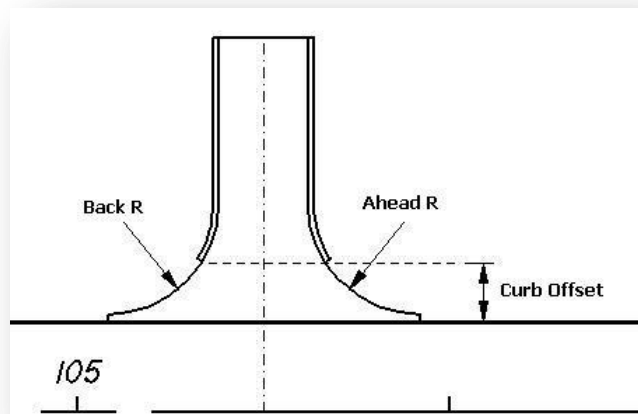
The **Back R** (Back Radius) and **Ahead R** (Ahead Radius) options are used to key-in the radii for the drive returns.

Curb Offset

This parameter is used define the distance from the edge of pavement to the point where the curb will end along the driveway. The default value is 8.

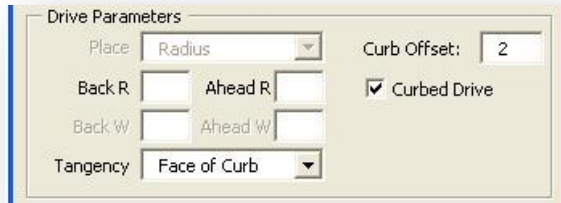
The remaining **Drive Parameters** are not used.

An example of a driveway placed using the **803-8 Commercial – Curbed Drive Along Uncurbed Highway** option is shown at right.



1.2.4 803-8 Commercial – Curbed or Uncurbed Drive Along Curbed Highway

When the **803-8 Commercial – Curbed or Uncurbed Drive Along Curbed Highway** option is selected, the **Drive Parameters** shown below are available.



With this option selected, the **Place** parameter is set to **Radius** and cannot be changed to place a chamfered drive.

Back R, Ahead R

When the **Place** option is set to **Radius**, the **Back R** (Back Radius) and **Ahead R** (Ahead Radius) options are available to key-in the radii for the drive returns.

Tangency

The **Tangency** option is used to specify whether the radius returns are tangent to the **Face of Curb** or the **EOP** (Edge of Pavement).

Curb Offset

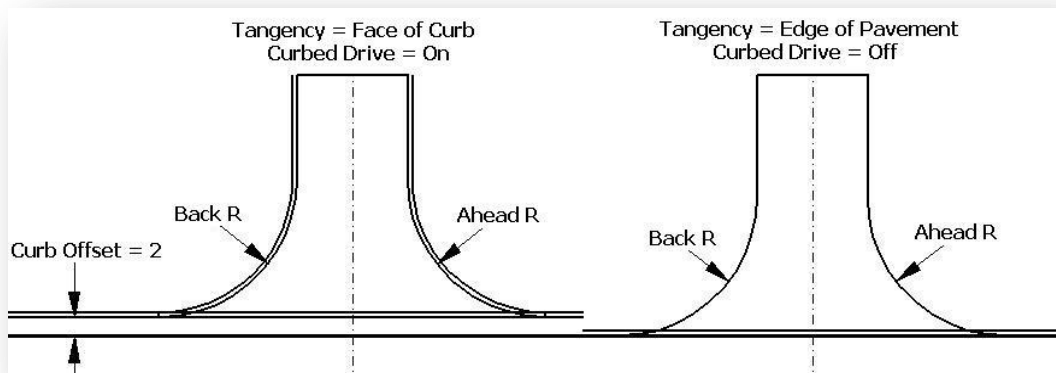
This option is used to define the offset distance from the edge of pavement to the face of curb. When the **Tangency** option is set to **EOP**, this value is ignored.

Curbed Drive

Check this option on to place curb along the entire length of the drive.

The remaining **Drive Parameters** are not used.

An example of the driveways placed using the **803-8 Commercial – Curbed or Uncurbed Drive Along Curbed Highway** option is shown below.



1.2.5 803-9 Shopping Center & Industrial Drives

When the **803-9 Shopping Center & Industrial Drives** option is selected, the **Drive Parameters** shown below are available.

Drive Parameters	
Place	Radius
Back R	
Ahead R	
Back W	
Ahead W	
Tangency	Face of Curb
Curb Offset:	8
<input type="checkbox"/> Divided Drive	
Lanes:	2
Median Width:	6

With the **803-9 Shopping Center & Industrial Drives** option selected, the **Place** parameter is set to **Radius** and cannot be changed to place a chamfered drive.

Back R, Ahead R

These fields are used to specify the **Back R** (Back Radius) and **Ahead R** (Ahead Radius) for the drive returns.

Curb Offset

This parameter is used to define the distance from the edge of pavement to the point where the curb will end along the driveway. The default value is 8.

Divided Drive

Check this option on to place a divided drive with a median.

Lanes

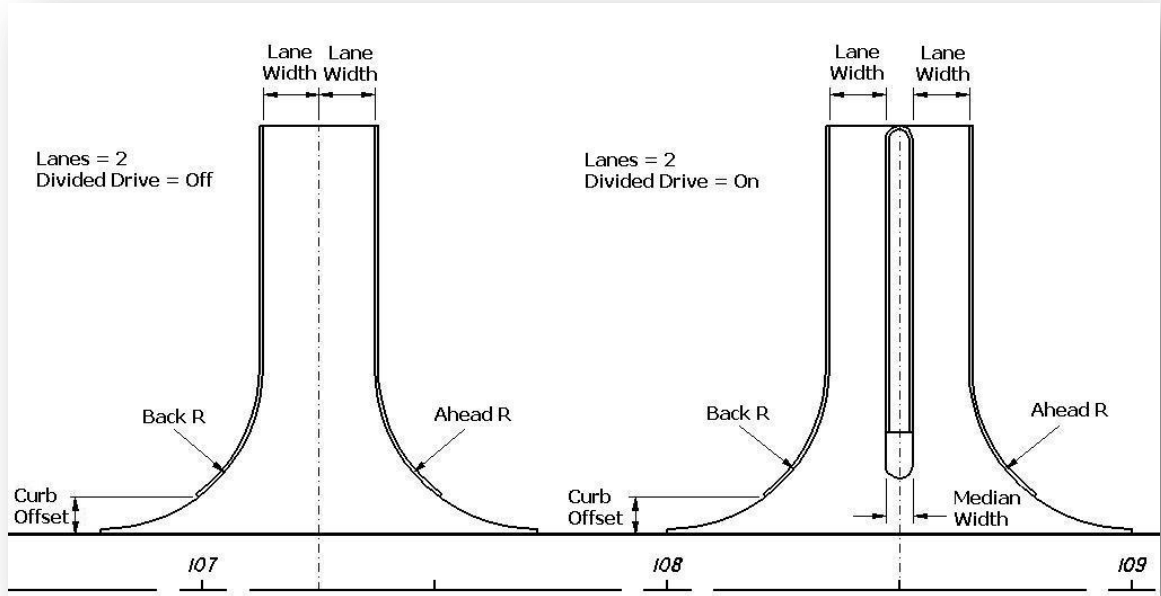
Key-in the number of **Lanes** for the driveway.

Median Width

Key-in the width for the drive median. This field is not available unless the **Divided Drive** option is toggled on.


The remaining **Drive Parameters** are not used when the **803-9 Shopping Center & Industrial Drives** option is selected.

An example of two driveways placed using the **803-9 Shopping Center & Industrial Drives** option is shown on the following page.



1.2.6 Standard Roadway Construction Drawing BP-4.1

When the **Standard Roadway Construction Drawing BP-4.1** option is selected, the **Drive Parameters** shown below are available.



Drive Parameters

Place: Radius

Back R: [] Ahead R: []

Back W: [] Ahead W: []

Tangency: EOP

Residential Drive (selected)

Commercial Drive

Mail Box Approach

Mail Boxes: 1

Place

The **Place** option is used to select either a **Radius** or a **Chamfer** for the drive returns.

Back R, Ahead R

When the **Place** option is set to **Radius**, the **Back R** (Back Radius) and **Ahead R** (Ahead Radius) options are available to key-in the radii for the drive returns.

Residential/Commercial Drive

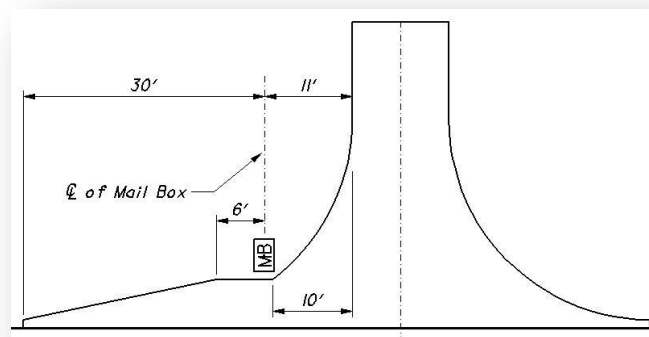
These options are used to select whether the drive will be placed using the appropriate symbology for a **Residential Drive** or **Commercial Drive**. See Section 1.2.1 Driveway Symbology for details.

Mail Box Approach

Toggle on the **Mail Box Approach** option on to include a standard mail box approach with the driveway. When this option is toggled on, the option to place one or more **Mail Boxes** is available. For each additional mail box placed, the length of the mail box approach will increase by three feet as per BP-4.1.

The **Back W**, **Ahead W**, and **Tangency** parameters are not used when the **Radius** option is selected.

An example of a drive placed using the **Radius** option and a **Mail Box Approach** with one mail box is shown below.



When the **Place** option is set to **Chamfer**, the **Drive Parameters** options appear as shown below.



Back L, Ahead L, Back W, Ahead W

These options are used to define the length (**Back L, Ahead L**) and the width (**Back W, Ahead W**) for the back and ahead drive chamfers.

Residential/Commercial Drive

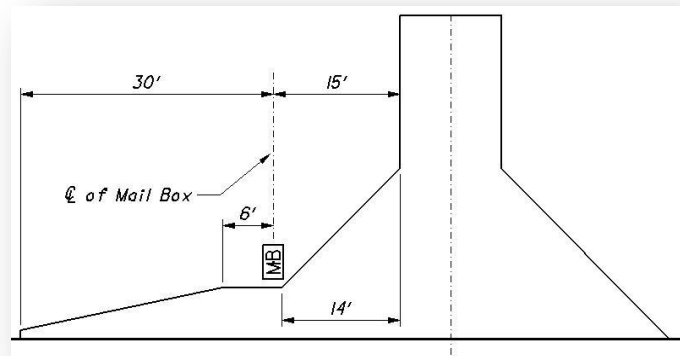
These options are used to select whether the drive will be placed using the appropriate symbology for a **Residential Drive** or a **Commercial Drive**.

Mail Box Approach

Toggle on the **Mail Box Approach** option on to include a standard mail box approach with the driveway. When this option is toggled on, the option to place one or more **Mail Boxes** is available. For each additional mail box placed, the length of the mail box approach will increase by three feet as per BP-4.1.

The **Tangency** parameter is not used when the **Chamfer** option is selected.

An example of a drive placed using the **Chamfer** and **Mail Box Approach** options, with one mail box, is shown below.



Contacts

If you have any questions, suggestions, or problems please contact the ODOT Office of CADD and Mapping Services CADD Support team or use the following form on the ODOT web site at:

<http://www.dot.state.oh.us/Divisions/Engineering/CADDMapping/CADD/Pages/suggestions.aspx>