

CDOT Typical Section Program Help



This document explains the basic functions of the CDOT Typical Section Program. This program writes graphical data to the typical section file at a scale of 1:10. All of the graphical properties such as the levels, patterns, text, and cells are set by default to the standard CDOT configuration.

Opening MicroStation and the Create Typical Sections Program

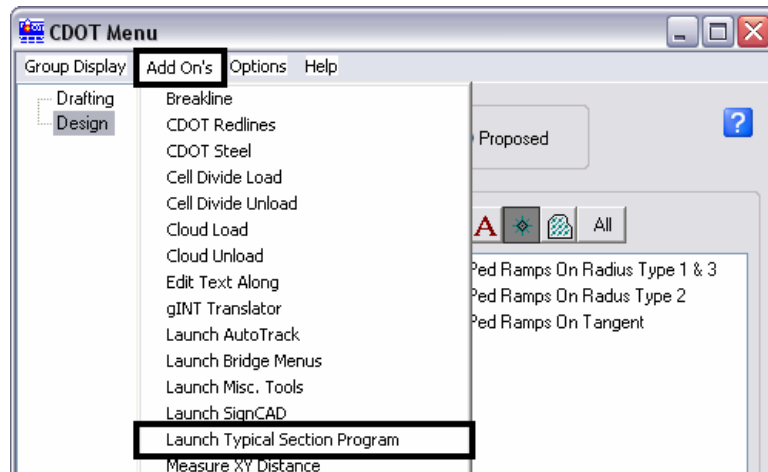
The typical section drawing is a project specific detail. The MicroStation dgn file used for typical sections is created with the project directory by the Create Project Directory Utility. The Create Typical Section program is accessed from the CDOT Menu.

1. Open the file JPC#TypicalSection###dgn under C:\Project\.....\Design\Drawings\.

Note: The 5 digit Job Project Code has replaced the 'JPC#' in the filename.

This will automatically open the CDOT Menu.

1. From the **CDOT Menu**, select **Add On's > Launch Typical Section Program**.



The **Typical Section Program** dialog box is displayed.

Options

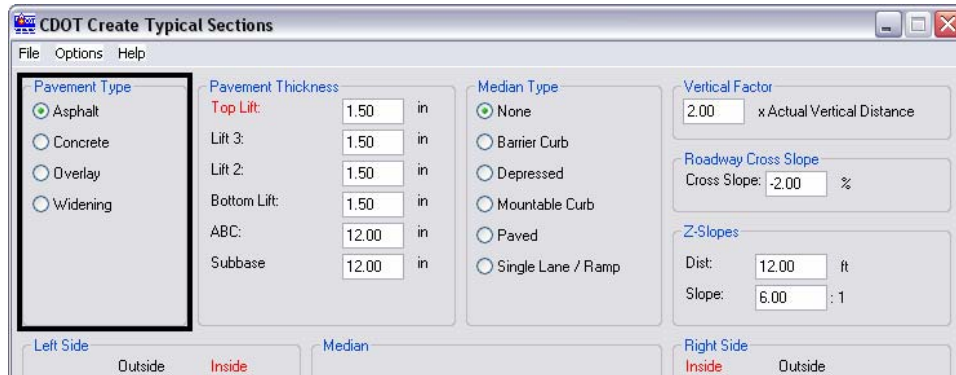
There are two items under **Options** on the menu bar. These are **Always On Top**, **Writelock**, and **Use Dimensions**.

2. The **Always On Top** option will place the **Create Typical Sections** dialog box on top of all other open programs so that it is always visible.
3. The **Writelock** option controls the graphics in the file. Select **Options > Writelock** to toggle it **On** or **Off**. If **Writelock** is **On**, permanent graphics will be generated in the file. When the **Writelock** toggle is set to **Off**, the graphics are temporary and will disappear when the view is changed or refreshed.



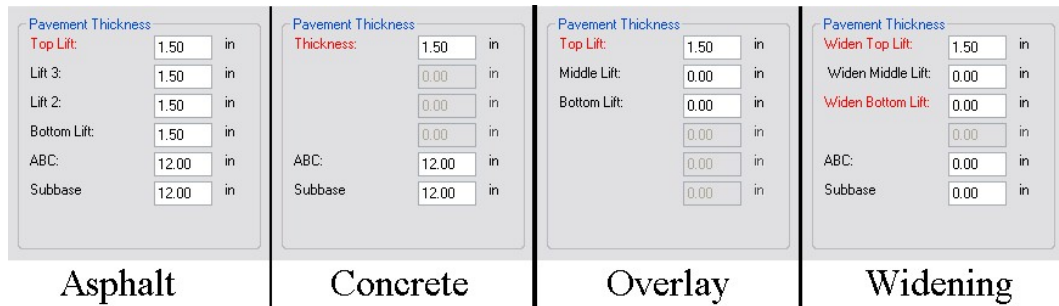
Creating A New Typical Section

- In the **Pavement Type** area, toggle on the desired option.



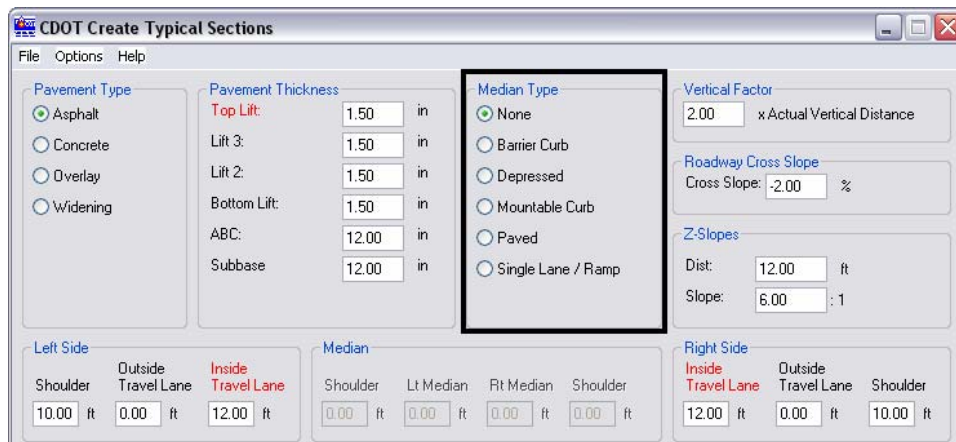
The option selected here will affect the available options in other areas of the dialog box.

- In the **Pavement Thickness** area, use the key in fields to define the desired Lift thicknesses. The options in this area change with the Pavement Type selected and are shown below:



Note: The fields with the red titles must have a value greater than zero entered.

- The **Median Type** area is used to specify the presence and type of median to be used on the typical. The **Median Type** selected will determine availability and type of fields displayed in the **Median** area of the dialog box. Toggle on the desired median type.



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7. The **Left Side** and **Right Side** areas are used to define the number and width of driving lanes and the presence and width of a shoulder. With all median types, except **Single Lane / Ramp**, the **Inside Travel Lane** must contain a value greater than zero. If the **Single Lane / Ramp** median type is selected, these fields are disabled.

The screenshot shows the configuration interface for a typical section. At the top, there are fields for 'ABC' (0.00 in) and 'Subbase' (0.00 in), along with radio buttons for 'Paved' and 'Single Lane / Ramp'. To the right, 'Z-Slopes' are set to 'Dist: 12.00 ft' and 'Slope: 6.00 : 1'. The 'Left Side' panel (highlighted) includes 'Shoulder' (10.00 ft), 'Outside Travel Lane' (0.00 ft), and 'Inside Travel Lane' (12.00 ft). The 'Right Side' panel (highlighted) includes 'Inside Travel Lane' (12.00 ft), 'Outside Travel Lane' (0.00 ft), and 'Shoulder' (10.00 ft). Below these are 'Left Curb' (None selected) and 'Right Curb' (None selected) sections, and an 'Existing Pavement' section with 'Lt Side' and 'Rt Side' (both 0.00 ft).

8. The **Left Curb** and **Right Curb** areas are used to define the presence and type of curb. If a curb is present, then a sidewalk can be specified. Turn on the desired toggle to the desired curb type. If **Barrier** or **Mountable** is selected a sidewalk can be defined by entering a width in the key in field.

This screenshot shows the same configuration interface as above, but with the 'Left Curb' and 'Right Curb' panels highlighted. The 'Left Curb' panel (highlighted) has 'None' selected, 'Barrier' selected, and 'Mountable' unselected, with a 'Sidewalk' width of 0.00 ft. The 'Right Curb' panel (highlighted) has 'None' selected, 'Barrier' unselected, and 'Mountable' unselected, with a 'Sidewalk' width of 0.00 ft. A red note at the bottom left reads 'Required Fields (Must be Greater than 0.0)'. At the bottom right are 'Apply' and 'Close' buttons.

Note: Unlike the **Left Side** and **Right Side** areas, **Left Curb** and **Right Curb** are enabled when the **Single Lane / Ramp** median type is selected.

Note: the Left and Right options for Side and Curb are independent of each other. Different settings can be used on each to define an asymmetrical template.

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9. The fields available in the **Median** area are determined by the settings made in the **Median Type** area. The options for each median type are shown below:

<p>Median</p> <p>Shoulder Lt Median Rt Median Shoulder</p> <p>0.00 ft 0.00 ft 0.00 ft 0.00 ft</p>	Barrier Curb, Mountable Curb, or Paved
<p>Median</p> <p>Shoulder Lt Median Rt Median Shoulder</p> <p>0.00 ft 0.00 ft 0.00 ft 0.00 ft</p>	Depressed
<p>Single Lane / Curve</p> <p>Shoulder Travel Lane Travel Lane Shoulder</p> <p>0.00 ft 0.00 ft 0.00 ft 0.00 ft</p>	Single Lane / Ramp

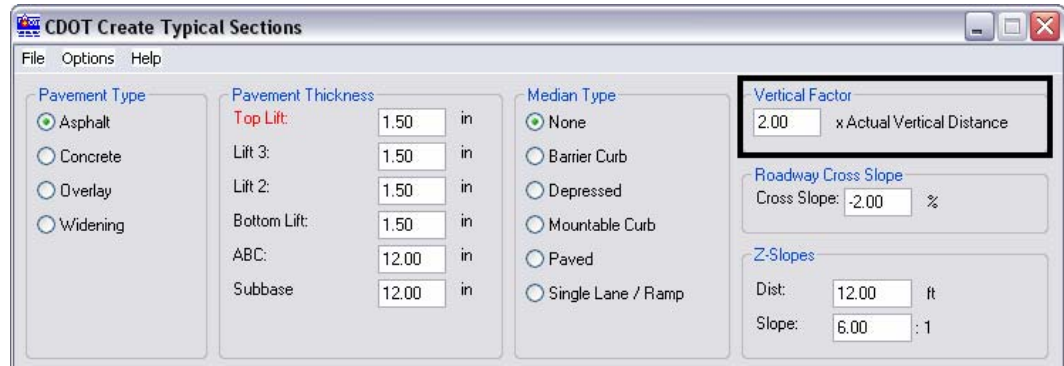
The **Lt. Median** and **Rt. Median** fields require data with a value greater than zero when present as does one **Travel Lane** field for **Single Lane / Ramp** typical sections.

10. The **Existing Pavement** area is enabled only when the **Widening** is selected for the **Pavement Type**. Both the **Lt. Side** and **Rt. Side** require data with a value greater than zero.

11. A **Bench** is the backfilled area behind a curb. The bench will be placed outside of a sidewalk if one is defined. The **Bench** area is only enabled when either the **Left Curb** and/or the **Right Curb** toggle is set to **Barrier** or **Mountable**. If only one side has a curb specified then only that side's Bench data field will be enabled. By default, a Bench has a 2% slope either towards the road. Toggle on the Slope Away From Road option if desired.

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12. The **Vertical Factor** is used to increase the vertical scale. This is done to better illustrate the different slopes and layers that make up the typical section. Use the key in field to enter the desired exaggeration factor.



CDOT Create Typical Sections

File Options Help

Pavement Type

- Asphalt
- Concrete
- Overlay
- Widening

Pavement Thickness

Top Lift: 1.50 in

Lift 3: 1.50 in

Lift 2: 1.50 in

Bottom Lift: 1.50 in

ABC: 12.00 in

Subbase: 12.00 in

Median Type

- None
- Barrier Curb
- Depressed
- Mountable Curb
- Paved
- Single Lane / Ramp

Vertical Factor

2.00 x Actual Vertical Distance

Roadway Cross Slope

Cross Slope: -2.00 %

Z-Slopes

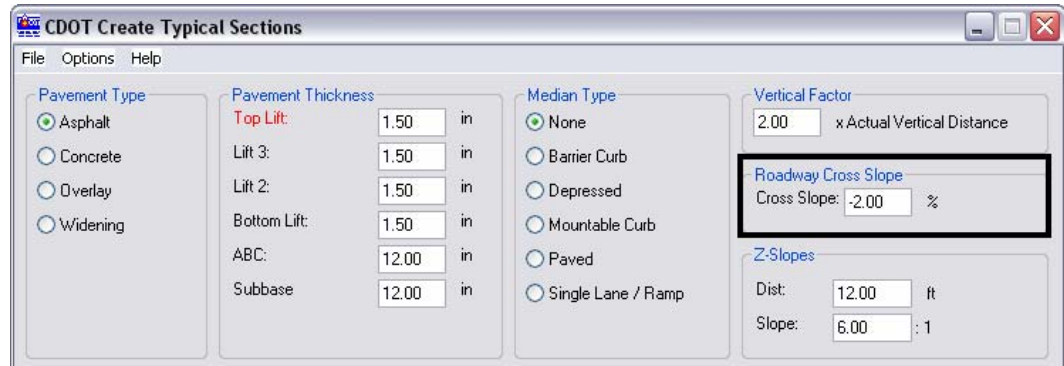
Dist: 12.00 ft

Slope: 6.00 : 1

13. The **Roadway Cross Slope** determines the percent of slope used on travel lanes and shoulders. This is measured from the center of the typical section out to the end of the shoulder. A negative slope drops down from the center of the typical section and a positive number rises above the center point.

Roadway Cross Slope works differently when **Single Lane / Ramp** is selected as the **Median Type**. This is because a constant slope is used from pavement edge to pavement edge. When creating a **Single Lane / Ramp** typical section, a positive **Roadway Cross Slope** slopes up from right to left and a negative **Roadway Cross Slope** slopes down from right to left.

14. Use the key in field to enter the desired **Roadway Cross Slope**.



CDOT Create Typical Sections

File Options Help

Pavement Type

- Asphalt
- Concrete
- Overlay
- Widening

Pavement Thickness

Top Lift: 1.50 in

Lift 3: 1.50 in

Lift 2: 1.50 in

Bottom Lift: 1.50 in

ABC: 12.00 in

Subbase: 12.00 in

Median Type

- None
- Barrier Curb
- Depressed
- Mountable Curb
- Paved
- Single Lane / Ramp

Vertical Factor

2.00 x Actual Vertical Distance

Roadway Cross Slope

Cross Slope: -2.00 %

Z-Slopes

Dist: 12.00 ft

Slope: 6.00 : 1

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15. **Z-Slopes** are located between the edge of pavement (or the end of the **Bench** when curb is used) and the POSS. The length and slope of the **Z-Slopes** are user defined. To specify the length, use the **Dist** key in field. The slope of this segment is defined with a run over rise ratio. The **Slope** field is used to specify the run portion of the ratio.

The screenshot shows the 'CDOT Create Typical Sections' software window. The 'Z-Slopes' field is highlighted with a black box. The window contains several sections for configuration:

- Pavement Type:** Radio buttons for Asphalt (selected), Concrete, Overlay, and Widening.
- Pavement Thickness:** Input fields for Top Lift (1.50 in), Lift 3 (1.50 in), Lift 2 (1.50 in), Bottom Lift (1.50 in), ABC (12.00 in), and Subbase (12.00 in).
- Median Type:** Radio buttons for None (selected), Barrier Curb, Depressed, Mountable Curb, Paved, and Single Lane / Ramp.
- Vertical Factor:** Input field for 2.00 x Actual Vertical Distance.
- Roadway Cross Slope:** Input field for -2.00 %.
- Z-Slopes (highlighted):** Input fields for Dist (12.00 ft) and Slope (6.00 : 1).

16. After all the desired settings have been entered, select the **Apply** icon to begin placement of the typical section.

The screenshot shows the 'CDOT Create Typical Sections' software window with the 'Apply' button highlighted. The window contains several sections for configuration:

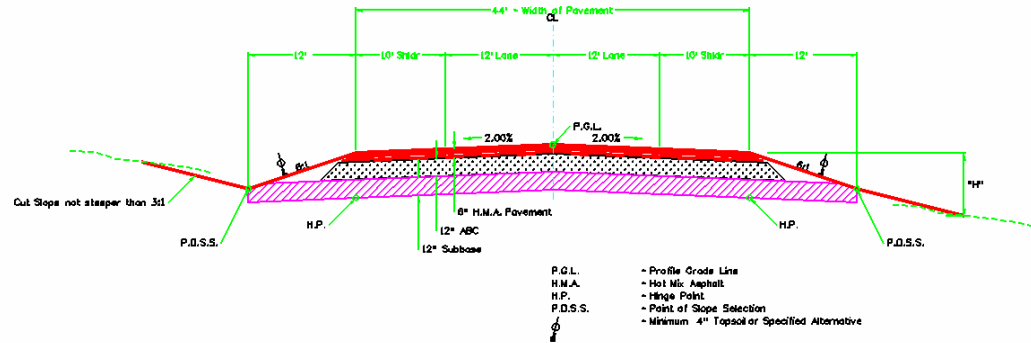
- Pavement Type:** Radio buttons for Asphalt (selected), Concrete, Overlay, and Widening.
- Pavement Thickness:** Input fields for Top Lift (1.50 in), Lift 3 (1.50 in), Lift 2 (1.50 in), Bottom Lift (1.50 in), ABC (12.00 in), and Subbase (12.00 in).
- Median Type:** Radio buttons for None (selected), Barrier Curb, Depressed, Mountable Curb, Paved, and Single Lane / Ramp.
- Vertical Factor:** Input field for 2.00 x Actual Vertical Distance.
- Roadway Cross Slope:** Input field for -2.00 %.
- Z-Slopes:** Input fields for Dist (12.00 ft) and Slope (6.00 : 1).
- Left Side:** Input fields for Shoulder (10.00 ft), Outside Travel Lane (0.00 ft), and Inside Travel Lane (12.00 ft).
- Median:** Input fields for Shoulder (0.00 ft), Lt Median (0.00 ft), Rt Median (0.00 ft), and Shoulder (0.00 ft).
- Right Side:** Input fields for Inside Travel Lane (12.00 ft), Outside Travel Lane (0.00 ft), and Shoulder (10.00 ft).
- Left Curb:** Radio buttons for None (selected), Barrier, and Mountable. Sidewalk input field for 0.00 ft.
- Existing Pavement:** Input fields for Lt Side (0.00 ft) and Rt Side (0.00 ft).
- Bench:** Input fields for Lt Side (0.00 ft) and Rt Side (0.00 ft). Checkboxes for Slope Away from Road (Lt and Rt sides).
- Right Curb:** Radio buttons for None (selected), Barrier, and Mountable. Sidewalk input field for 0.00 ft.
- Buttons:** 'Apply' and 'Close' buttons at the bottom right.

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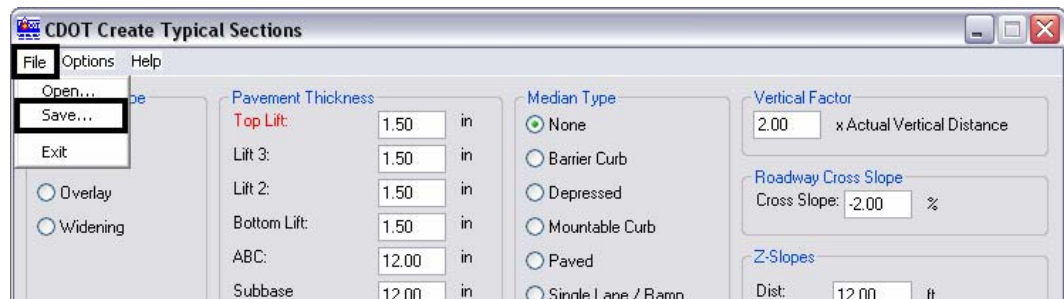
17. The **Create Typical Sections** dialog box minimizes and the following message is displayed:

Locate the Profile Grade point for the section

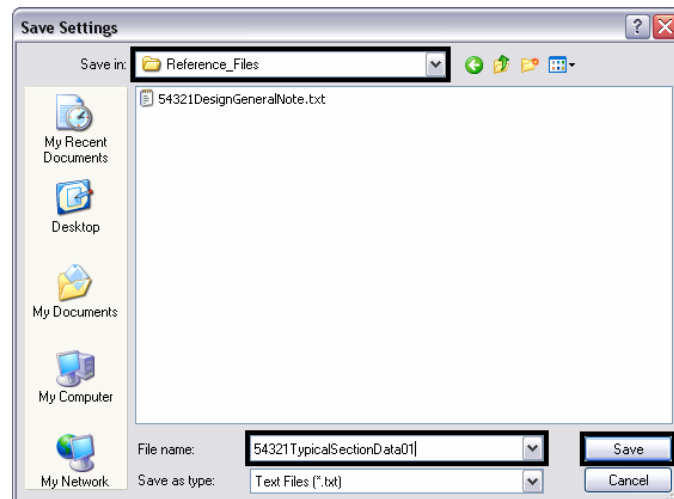
18. **<D>** on the desired location and the typical section is displayed. Below is an example of a completed typical section.



19. When the display of the typical section is complete, the dialog box maximizes. The data entered to create the typical section can be saved to a text file for later use. To make the text file Select **File > Save**. The **Save Settings** dialog box is displayed.

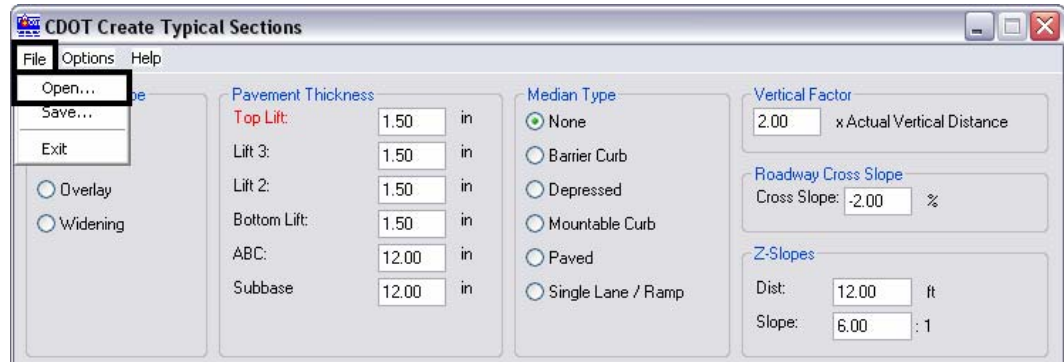


20. In the **Save Settings** dialog box, select the desired directory from the **Save in** drop down menu.
21. Key in the desired file name in the **File Name** field.
22. Select the **Save** icon. The file is placed in the selected directory and the **Save Settings** dialog box is dismissed.



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23. An existing data file can be loaded into the program for repeated use or modification. To load a file, select **File > Open**. The **Load Settings** dialog box is displayed.



24. In the **Load Settings** dialog box, select the directory that contains the data file from the **Look in** drop down menu.
25. Select the desired file from the list then select the **Open** icon. The **Load Settings** dialog box is dismissed and the data from the file is populated into the **Create Typical Sections** dialog box. The data can be edited, deleted, or added to as desired.

