

# SE\_TABLE1.X – version 07.04.10

## DESCRIPTION

SE\_TABLE1.X is used to draw an ODOT Standard superelevation table for undivided highways where a constant cross slope is maintained across all pavement lanes from the centerline to the edge of pavement. This Three Port Criteria file is run from cross section mode and places the the superelevation table in the plan view design file specified by the user. A partial clip of the completed superelevation table as drawn by the criteria is show below.

SUPERELEVATION TABLE												REMARKS
LEFT SIDE					CENTERLINE CONTROL		RIGHT SIDE					
EDGE ELEVATION <sup>(7)</sup>	TRANSITION RATE <sup>(6)</sup>	ELEVATION CORRECTION <sup>(5)</sup>	CROSS SLOPE <sup>(4)</sup>	WIDTH <sup>(3)</sup>	STATION <sup>(1)</sup>	PROFILE GRADE <sup>(2)</sup>	WIDTH <sup>(3)</sup>	CROSS SLOPE <sup>(4)</sup>	ELEVATION CORRECTION <sup>(5)</sup>	TRANSITION RATE <sup>(6)</sup>	EDGE ELEVATION <sup>(7)</sup>	
982.40		-0.19	-0.0156	12.00	59+50.00 R I	982.59	12.00	-0.0156	-0.19		982.40	
981.79		-0.19	-0.0156	12.00	59+91.96 R I	981.98	12.00	-0.0156	-0.19		981.79	
981.69		-0.19	-0.0156	12.00	60+00.00 R I	981.88	12.00	-0.0124	-0.15		981.73	
981.43		-0.19	-0.0156	12.00	60+25.00 R I	981.62	12.00	-0.0025	-0.03		981.59	
981.37		-0.19	-0.0156	12.00	60+31.43 R I	981.56	12.00	0.0000	0.00		981.56	
981.23		-0.19	-0.0156	12.00	60+50.00 R I	981.42	12.00	0.0074	0.09		981.50	
981.10		-0.19	-0.0156	12.00	60+70.90 R I	981.29	12.00	0.0156	0.19		981.48	
981.07		-0.21	-0.0172	12.00	60+75.00 R I	981.27	12.00	0.0172	0.21		981.48	
980.87		-0.33	-0.0271	12.00	61+00.00 R I	981.19	12.00	0.0271	0.32		981.52	

The values in the superelevation table are derived as described below:

- ① **STATION** Each **STATION** entry in the superelevation table is determined by the stations where the cross section pattern lines are drawn.
- ② **PROFILE GRADE** The **PROFILE GRADE** elevation value is read from the pavement shape at the PGL location. It is assumed that the PGL location is at the centerline (TIE = 0).
- ③ **WIDTH** The **WIDTH** is measured from the centerline to the edge of the outermost pavement shape on each side of the centerline.
- ④ **CROSS SLOPE** The **CROSS SLOPE** value is calculated using the equation  $(y_1 - y_2)/(x_1 - x_2)$ , where point  $(x_1, y_1)$  is located at the centerline and point  $(x_2, y_2)$  is located at the edge of the outermost pavement shape. In the case of multiple pavement shapes representing multiple lanes, it is assumed that there is a constant slope from the centerline to the edge of the outermost shape.
- ⑤ **ELEVATION CORRECTION** The **ELEVATION CORRECTION** is calculated for each side by subtracting the **EDGE ELEVATION** from the **PROFILE GRADE** elevation.
- ⑥ **TRANSITION RATE** The **TRANSITION RATE** is not computed by the criteria.
- ⑦ **EDGE ELEVATION** The **EDGE ELEVATION** is read from the outermost pavement shape on each side of the centerline.

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### INCLUSION SEQUENCE

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The ODOT Standard criteria file **DEFINE.X** contains default definitions for some of the Define Variables used by ODOT's criteria files. **DEFINE.X** must always be included first in any criteria run.

It is recommended that you run **SE\_TABLE1.X** in a separate criteria run without any other criteria files except for **DEFINE.X** which must be included first.

### DEFINE VARIABLES

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There is only one variable associated with **SE\_TABLE1.X** as described below.

#### “PROPOSED DGN FILE NAME”

This variable is used by the DEFINE\_DGN variables to identify the base map MicroStation design file that contains the proposed plan view graphics. The default value for the variable has been defined using a relative path as follows:

```
define "PROPOSED DGN FILE NAME" ..\roadway\basemaps\nnnnnBP###.dgn
```

By default GEOPAK will look for design files in the Working Directory assigned for the project. Using the directory structure defined in the **ODOT CADD Engineering Standards Manual**, Section 302, Project Directory Structure, the GEOPAK Working Directory should be defined as the `geopak` folder.

The “..” syntax will instruct GEOPAK to look for the proposed design file by starting in the Working Directory, and then go up the project folder path one directory. From there, go into the `\roadway\basemaps` folder to find the file.

The name of the design file, `nnnnnBP###.dgn`, must be edited to reflect the name of the plan view design file for your project. See the **ODOT CADD Engineering Standards Manual**, Section 304 File Naming Conventions for design file names.

### DEFINE DGN VARIABLES

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The following DEFINE\_DGN variables are used by the criteria to locate the MicroStation elements that **SE\_TABLE1.X** will search for in order to draw the superelevation table.

These variables have been defined with the values listed below in accordance with ODOT standards and should never be redefined by the user.

Additionally, these variables have been defined as “hidden” variables and will not show up in the DEFINE\_DGN Variables portion of the Proposed Cross Sections dialog box when preparing a criteria run.

#### “~edge of pavement”

This variable is used to define the symbology of the proposed edge of pavement lines. The variable has been defined as follows:

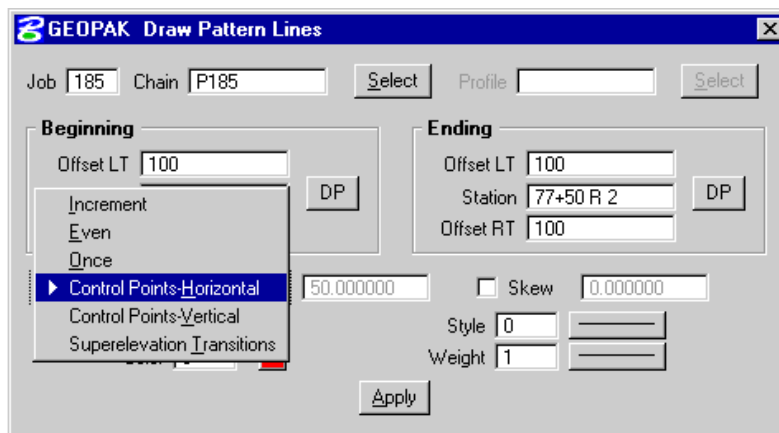
```
define_dgn “~edge of pavement” \  
dgn = “proposed dgn file name” \  
lvrname = PV_P_EOP \  
wt = 2, byLevel \  
co = 0, byLevel \  
lc = 0, byLevel
```

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### PROCESSING NOTES

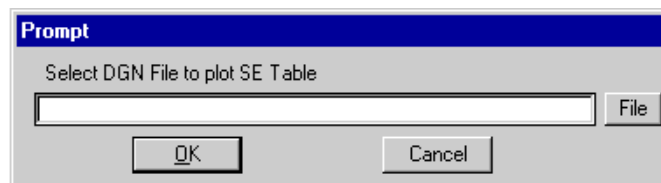
Each **STATION** entry in the superelevation table is generated from the location of the cross section pattern lines. The proposed cross sections are normally generated at 50 foot intervals for a set of roadway construction plans. Typically you will need a **STATION** entry in the superelevation table at 25 foot intervals, at the key points along the alignment (PC, PT, SC, ST, etc...), and at the superelevation transition stations. In order to include these extra stations in the superelevation table, it is necessary to place additional pattern lines at the desired locations. We recommend drawing the additional pattern lines in the same file as the patterns for the final plan cross sections using a different symbology.

GEOPAK has features in its *Draw Pattern Lines* dialog that may be used to assist the user in drawing pattern lines at the horizontal alignment key points and at the superelevation transition stations as shown below.



After the pattern lines have been drawn at the desired stations, the next step is to extract existing ground cross sections for the new pattern lines. Be sure to create a new design file for these cross sections since they will only be used to generate the superelevation table.

When the criteria run is processed, the user will be prompted to select the design file where the superelevation table is to be plotted as shown below. This file must be previously created as the criteria will not create a new DGN file. The design file name can be typed in manually or selected by using the **File** button. If you key in the name of the design file, be sure to include the full path for the file.



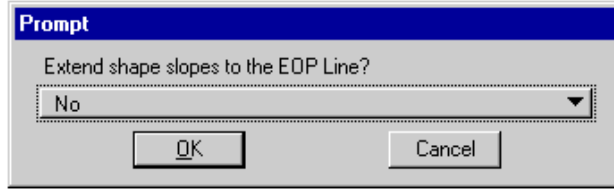
Select **OK** after the design file has been selected. Select **Cancel** to exit.

The superelevation table is placed using the cell **SUPEL** from the ODOT standard cell library **ODOT\_Sheets.CEL**. If **ODOT\_Sheets.CEL** is not attached to the selected MicroStation design file, the MicroStation Configuration Variable **MS\_CELLLIST** is used to search for the cell library.

The cell is placed at the coordinates 1000,1000 in the design file specified by the user.

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Next, the user is prompted whether the edge of pavement elevations should be read from the edge of the outermost shape, or at the location of the pavement lines drawn in the plan view DGN file.

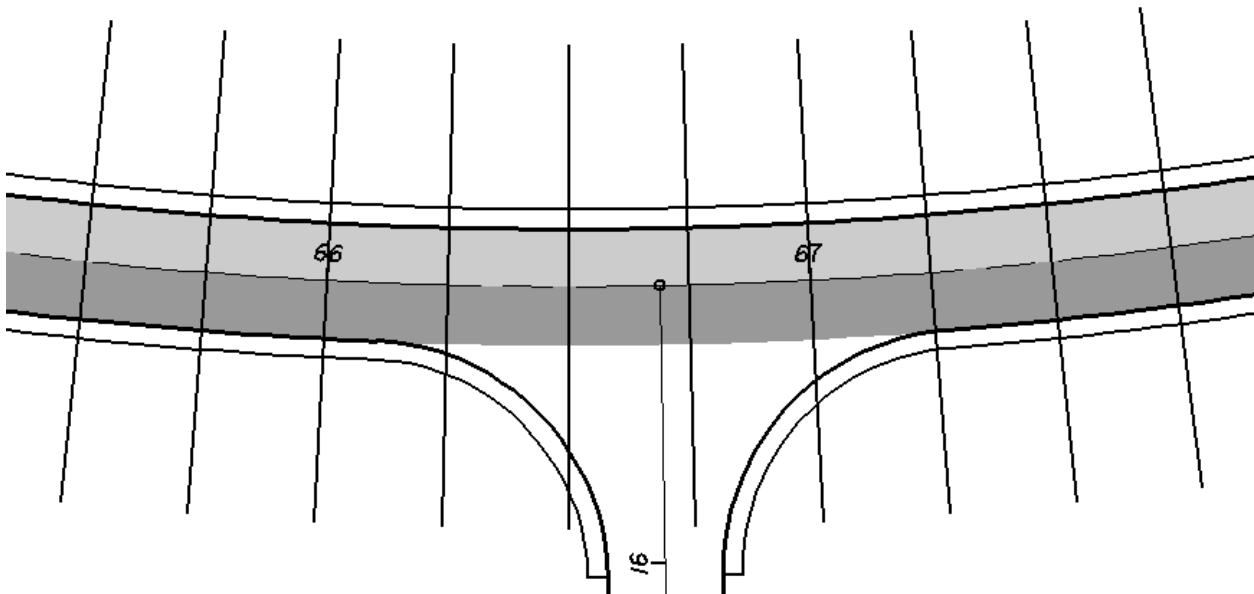


When processing superelevation with ODOT criteria file, we recommend generating a pavement shape for each lane of the proposed roadway for the full width of the pavement. However, it is not mandatory that the pavement shapes extend the full width of the proposed pavement. In this event, the user may elect to have the criteria extend the slope of the outermost pavement shape to meet the width of the pavement as defined in the plan view design file containing the proposed graphics. Select **Yes** to extend the slopes of the pavement shape to meet the graphic edge of pavement.

Select **No** if you do not want the criteria to extend the superelevation shape slopes to meet the proposed edge of pavement line.

Select **OK** to continue processing. Select **Cancel** to exit.

An example of where you do not want the criteria to extend the shape slope to meet a graphic edge of pavement line is shown below. The criteria will extend the shape slope to the edge of pavement lines for the radius returns on the side road if the *Extend Shape Slope* option is toggled to **Yes**. In this case, *Extend Shape Slopes* should be toggled to **No**.



As each cross section is processed, the values for the superelevation table are written to the design file selected by the user. A maximum of 100 stations will be placed on the superelevation table (50 on each side). In the event that there are more than 100 stations to be processed, a new table is started below the first one. There is no limit to the number of stations that can be processed. Each subsequent superelevation table is placed below the previous one.