

Bent Sections Exercise

1. Open the MicroStation file t:\de-proj\Cole\J5P0100\data\rte50_pattern_shape.dgn

2. In the project **j5p0100.prj**, copy the working alignment **Route50** to **50-Bent**, and select this working alignment.

3. In the 50-bent working alignment, under the Pattern section, change the **Lv Name** to **Geopak-Pattern line 2**, and the **Color** to **6**.

Under the **Shapes** section, change **Color** to **1,3,4,5,6,7**

In the **Cross Section View – Existing Ground**, make sure the **Search** and **Placement** criteria match.

Close the working alignment definition box.

4. Set the MicroStation symbology to:

Lv Name	=	Geopak-Pattern line 2
Color	=	6
Weight	=	1
Style	=	0

5. Use the **Place Smartline tool** in MicroStation to draw a line along the center of the shown culvert. Draw the line from the left to the right.

Use the **Extend Line tool** in MicroStation to extend the ends of the line a few feet.

6. Open the MicroStation file t:\de-proj\Cole\J5P0100\data\ xs_bent_sections.dgn.

7. From Project Manager select Existing Ground Cross Sections. Copy the **MoDOT** run to **50-Bent**.

8. **Verify** the settings on the **XS Cells** and **Surfaces tabs**.

9. Cut the existing ground cross sections.

10. In the **50-Bent** working alignment, under the Cross Section View section, change the XS DGN File to **xs_bent_sections.dgn**. Close the working alignment definition box.

11. Select the Proposed Cross Sections button from the Project Manager dialog. **Copy the MoDOT run to 50-Bent**, and enter the run.

12. Setup the Shape Clusters as follows.

```
shape cluster baseline = RAMP1
shape cluster profile  = RAMP1PR
shape cluster tie      = 0.000
side slope LT
  include t:\gpk_std\criteria\Setup.x
  include t:\gpk_std\criteria\pvmt_layers.x
  include t:\gpk_std\criteria\shldr_a_c.x
  include t:\gpk_std\criteria\sideslope.x
```

```
side slope RT
  include t:\gpk_std\criteria\Setup.x
  include t:\gpk_std\criteria\pvmt_layers.x
  include t:\gpk_std\criteria\shldr_a_c.x
  include t:\gpk_std\criteria\median_ditch.x
```

```
shape cluster baseline = ROUTE50
shape cluster profile  = ROUTE50PR
shape cluster tie      = -30.000
side slope LTRT
  include t:\gpk_std\criteria\Setup.x
  include t:\gpk_std\criteria\pvmt_layers.x
  include t:\gpk_std\criteria\shldr_a_c.x
  include t:\gpk_std\criteria\median_ditch.x
```

```
shape cluster baseline = ROUTE50
shape cluster profile  = ROUTE50PR
shape cluster tie      = 30.000
side slope LTRT
  include t:\gpk_std\criteria\Setup.x
  include t:\gpk_std\criteria\pvmt_layers.x
  include t:\gpk_std\criteria\shldr_a_c.x
  include t:\gpk_std\criteria\median_ditch.x
```

13. (continued)

```
shape cluster baseline = RAMP2
shape cluster profile = RAMP2PR
shape cluster tie      = 0.000
side slope LT
    include t:\gpk_std\criteria\Setup.x
    include t:\gpk_std\criteria\pvmt_layers.x
    include t:\gpk_std\criteria\shldr_a_c.x
    include t:\gpk_std\criteria\median_ditch.x

side slope RT
    include t:\gpk_std\criteria\Setup.x
    include t:\gpk_std\criteria\pvmt_layers.x
    include t:\gpk_std\criteria\shldr_a_c.x
    include t:\gpk_std\criteria\sideslope.x
```

13. In the **Define Variables** set the following values for the given variables:

```
"NAME OF PLAN FILE" rte50_plan.dgn
"NAME OF CROSS-SECTION FILE" xs_bent_sections.dgn
"NAME OF SHAPE/PATTERN FILE" rte50_pattern_shape.dgn
"NAME OF BASELINE" route50
"PAVEMENT LAYER 1 THICKNESS (MM OR IN)" 12
"AGGREGATE LAYER 1 THICKNESS (MM OR IN)" 4
```

Leave the remaining variables set to the defaults.

14. Process the cross sections.

15. What items that Correct within this Cross Section?

- a. Distances – all distances are measured along the bent line
- b. Pavement slopes, elevations – these values are pulled from the shape
- c. * Do not place bends within a shape
- c. Slopes are correct in non-bent areas and some median situations.
- d. Pacing bends in flat bottom ditches work best.