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## Chapter 15

# Roadway Designer Overlay/Widening

15.1 Group Exercise: Bighorn Widening.....	15-1
15.1.1 Roadway Widening with Overlay.....	15-4
15.1.2 Roadway Widening with Slope Correction Overlay and Leveling .....	15-10
15.1.3 Roadway Widening with no Overlay.....	15-16



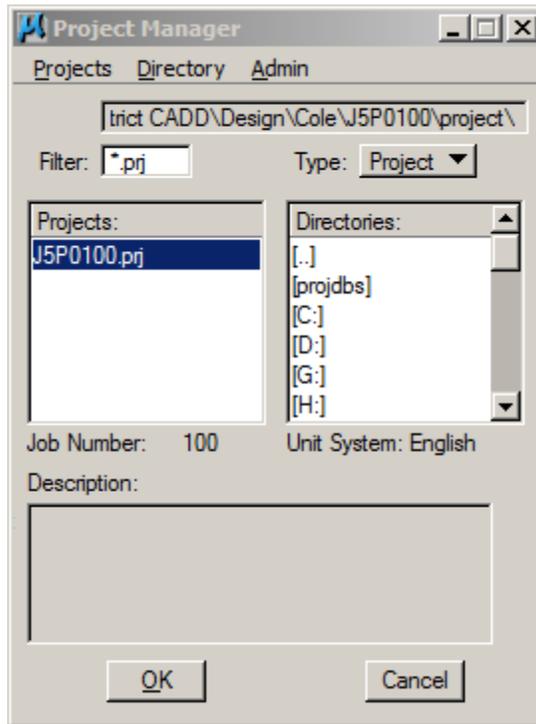
### 15.1 Group Exercise: Bighorn Widening

1) Open the **topo.dgn**.

Review the plan graphics for the widening of **Bighorn Drive**.

2) Using Project Manager open the following project:

pw:\District CADD\Design\Randolph\J5P0100\project\J5P0100.prj

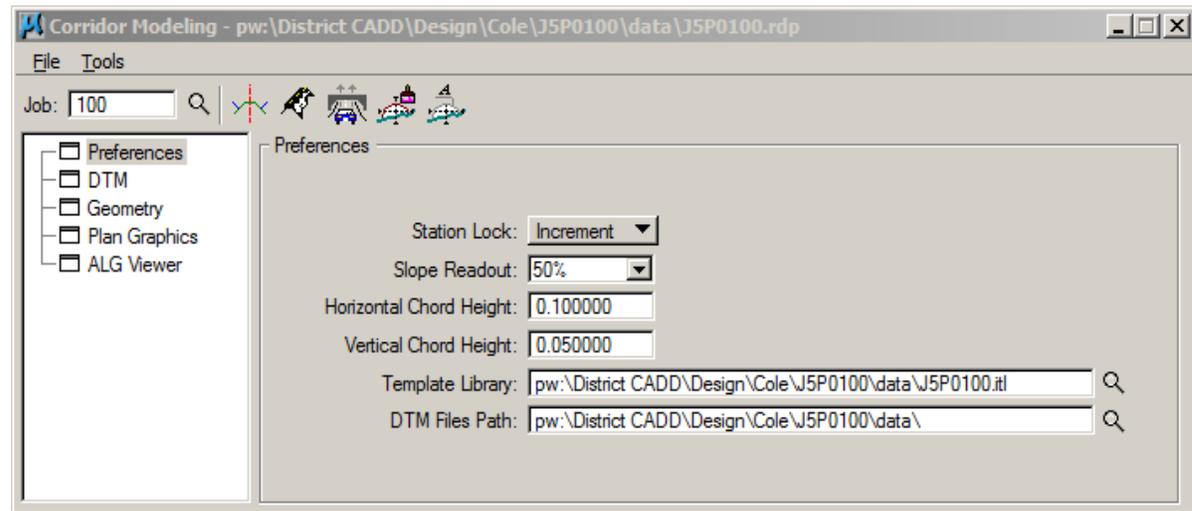


3) Select **ClsUser** as the project user.

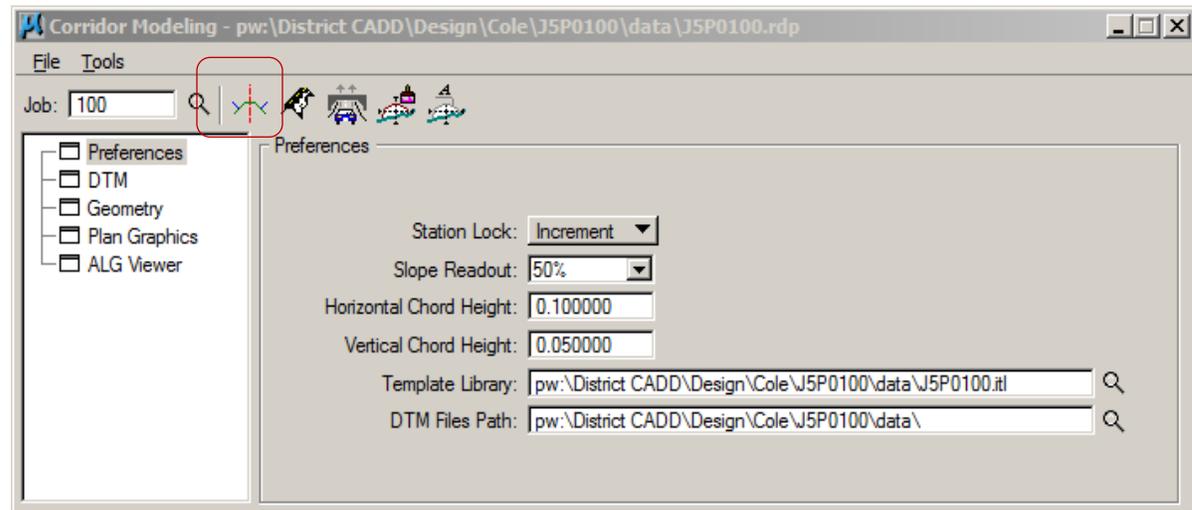
4) From the GeoPak Road Tool Palette, select **Corridor Modeling**:



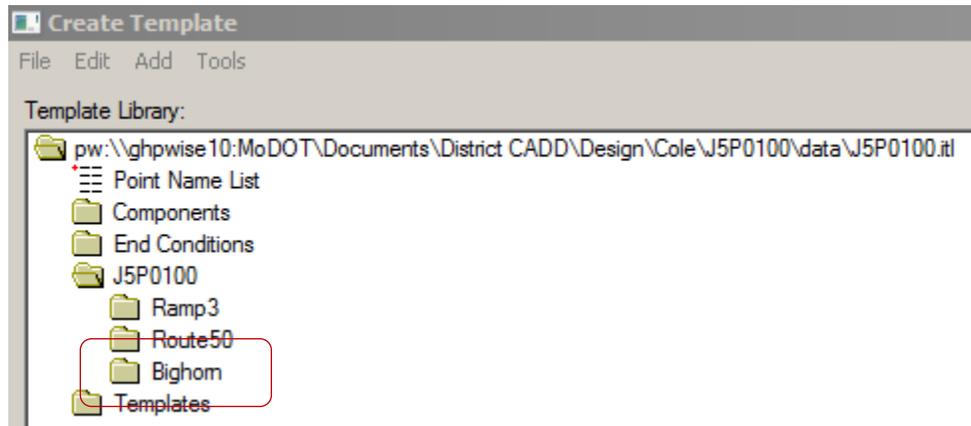
- 5) Load the **J5P0100.rdp** file and verify the settings in the **Preference** section:



- 6) In the first few steps we are going to create a template that will be used for widening Bighorn Drive. Select the **Open Create Template** icon.



- 7) In **Create Template** dialog under the **J5P0100** folder select “**File > New > Folder**” and create a folder called “**Bighorn**”.



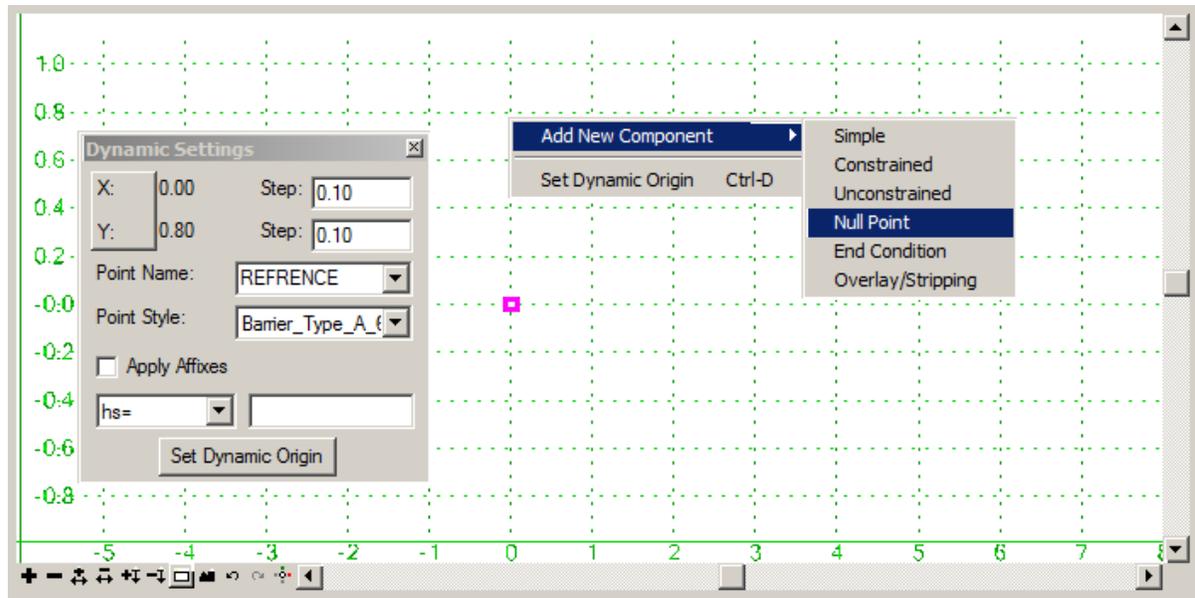
- 8) In this exercise we are going to create three different templates for the widening along Bighorn.

**Roadway Widening with Overlay**  
**Roadway Widening with Slope Correction Overlay and Leveling**  
**Roadway Widening with no Overlay**

## 15.1.1 Roadway Widening with Overlay

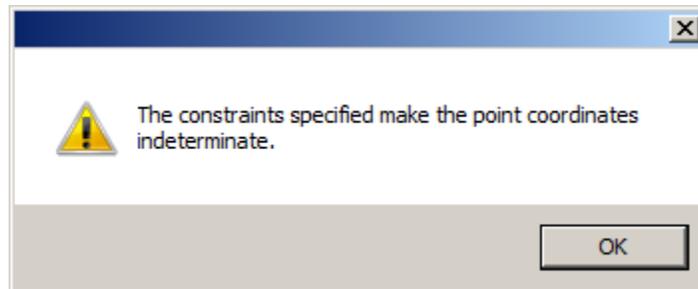
- 9) Within the Bighorn folder right click and select **New > Template**. Name the template “**Roadway Widening with Overlay**”

For the first point right click in the edit window and select **Add New Component > Null Point**.



Place the Null Point dynamically 2-3ft above the magenta origin point. Call the Null Point “**Reference**”.

Note) In this exercise if we don't use a Reference Point the User would get the following error:



# indeterminate

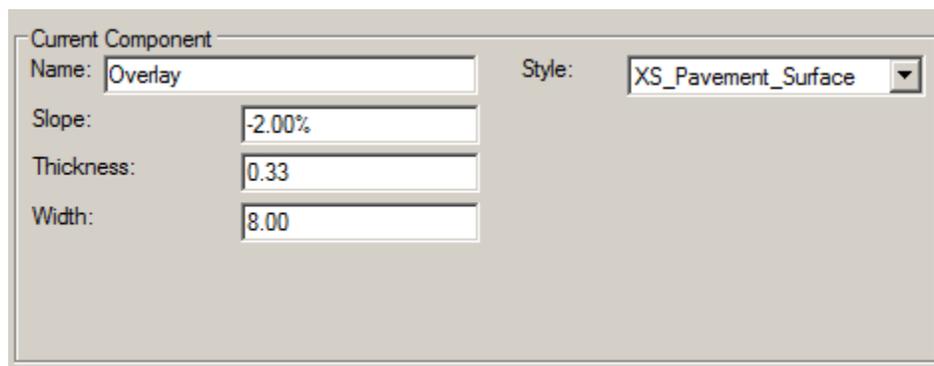
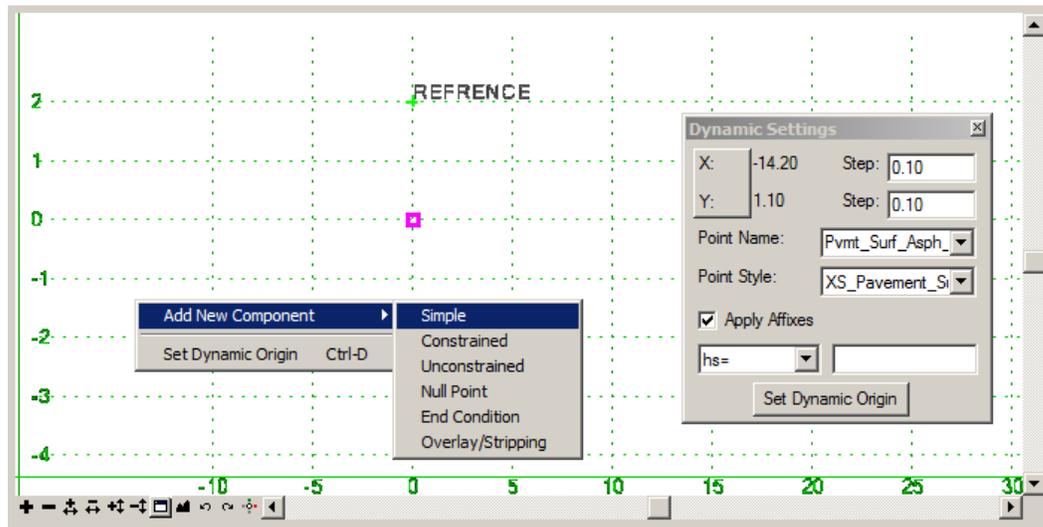
 Listen  See in Thesaurus  See in a sentence

*adjective*

1. not determinate; specif.,
  - a. inexact in its limits, nature, etc.; indefinite; uncertain; vague: *an indeterminate amount*
  - b. not yet settled, concluded, or known; doubtful or inconclusive

10) Right Click in the edit window and add in a simple component to both side of the roadway with the Crown Point being at the template origin.

Use the point name of **Pvmt\_Surf\_Asph\_T** in the **Dynamic Setting Dialog** with **Apply Affixes** turned on



11) Right Click in the edit window and select “**Delete Constraints from All Points**”.

12) Constrain the points as follows:

<u>Point Name</u>	<u>Constraint</u>	<u>Parent</u>	<u>Value</u>
Pvmt_Surf_Asph_T	Horizontal	Reference	0.00
<b>Pvmt_Surf_Asph_T</b>	<b>Project to Surface</b>	<b>Any Direction</b>	<b>Blank</b>
Pvmt_Surf_Asph_T1	Horizontal	Reference	0.00
Pvmt_Surf_Asph_T1	Vertical	Pvmt_Surf_Asph_T	4/12
Pvmt_Surf_Asph_T_R	Horizontal	Reference	8.00
<b>Pvmt_Surf_Asph_T_R</b>	<b>Project to Surface</b>	<b>Any Direction</b>	<b>Blank</b>
Pvmt_Surf_Asph_T1_R	Horizontal	Pvmt_Surf_Asph_T_R	0.00
Pvmt_Surf_Asph_T1_R	Vertical	Pvmt_Surf_Asph_T_R	4/12
Pvmt_Surf_Asph_T_L	Horizontal	Reference	-8.00
<b>Pvmt_Surf_Asph_T_L</b>	<b>Project to Surface</b>	<b>Any Direction</b>	<b>Blank</b>
Pvmt_Surf_Asph_T2_L	Horizontal	Pvmt_Surf_Asph_T_L	0.00
Pvmt_Surf_Asph_T2_L	Vertical	Pvmt_Surf_Asph_T_L	4/12

13) Right Click on the vertical line between the left and right overlay component select “Merge Components” and remove the vertical line.

14) Finish the **Overlay template** with the following **Components** and **End Conditions**:

**Components:**

**Left Side**

---

Pavement Combined Concrete  
Shoulder Combined Concrete

**Right Side**

---

Pavement Combined Concrete  
Shoulder Combined Concrete

**End Conditions:**

**Left Side**

---

Fill Slope Combined  
Ditch 1

**Right Side**

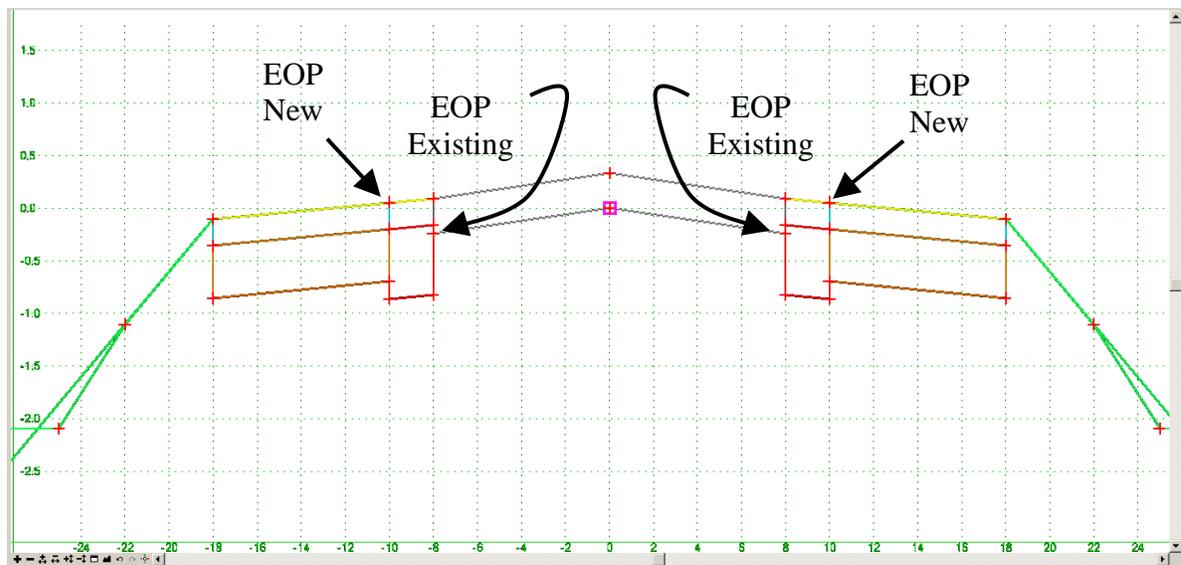
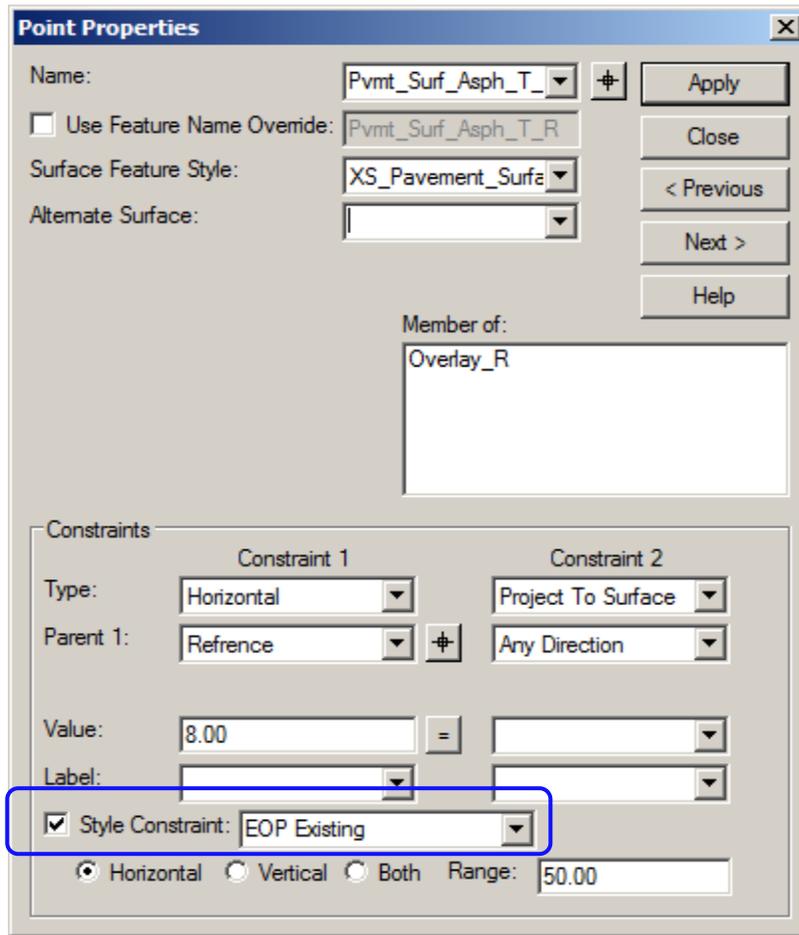
---

Fill Slope Combined  
Ditch 1

\*Notes

- a) Delete the three bottom pavement and shoulder layers.
- b) Modify the Widening (Pavement) Width to 2’
- c) Pavement & Shoulder Slope = 3.125%
- d) Check Priorities on End Conditions
- e) Save Template Library

15) Use **Style Constraints** to control the horizontal location of the widening:

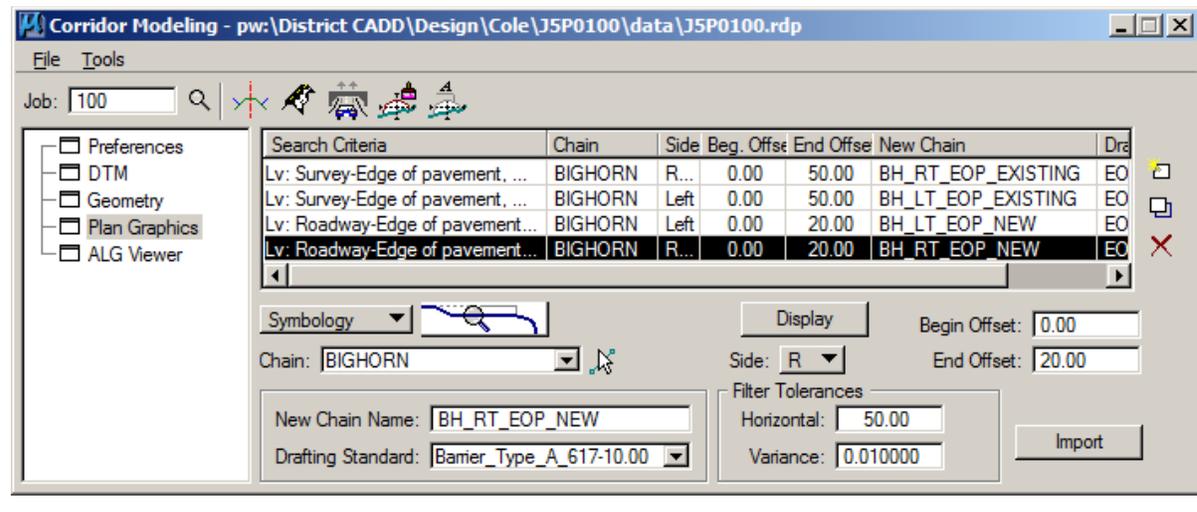


Save and close the **J5P0100.itl**

16) In **Corridor Modeling** import the following **Bighorn** plan graphics:

- Remember in order to import plan graphics you have to be in the file that contains the plan geometry. Existing items are located in the topo.dgn, proposed items are located in the Plan.dgn.

<u>Plan Graphic</u>	<u>New Chain Name</u>	<u>Drafting Standard</u>
Right Existing EOP	BH_RT_EOP_EXISTING	EOP Existing
Left Existing EOP	BH_LT_EOP_EXISTING	EOP Existing
Right New EOP	BH_RT_EOP_NEW	EOP New
Left New EOP	BH_LT_EOP_NEW	EOP New



17) Open **Roadway Designer** and open the **J5P0100.ird**.

18) In the **Roadway Designer** dialog, **create** and **select** the **Bighorn** corridor. Use **BIGHORNEX** as the **Vertical Alignment Profile**.

19) In **Roadway Designer** apply the “**Roadway Widening with Overlay**” template to the Bighorn corridor. To do this select **Corridor > Template Drops**:

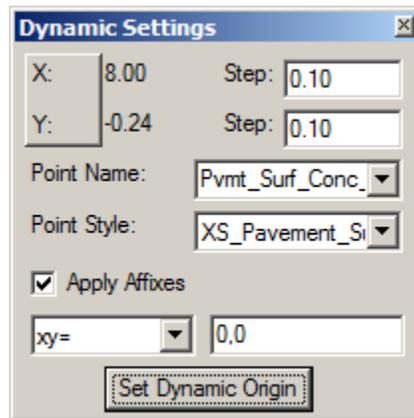
Corridor: **Bighorn**  
 Station: **0+97.77**  
 Interval: **50**  
 Template: **Roadway Widening with Overlay**

20) In **Roadway Designer** review the sections.

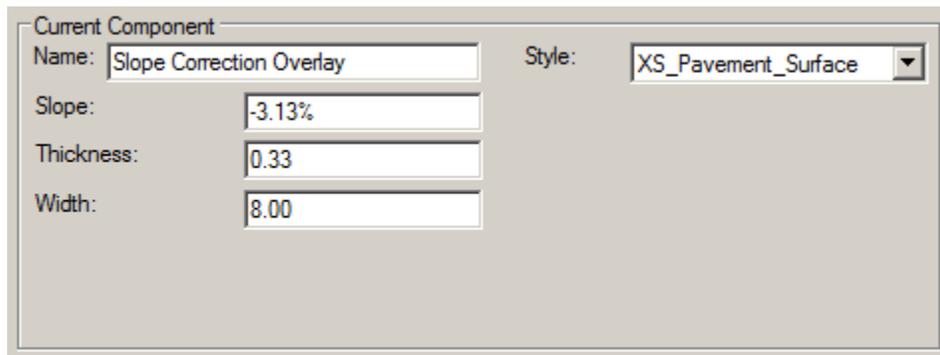
## 15.1.2 Roadway Widening with Slope Correction Overlay and Leveling

21) Within the **J5P0100 Template Library** navigate to the Bighorn folder, right click and select **New > Template**. Name the template “**Roadway Widening with Slope Correction Overlay and Leveling**”

22) Right Click in the edit window and add in a **Simple Component** to both side of the roadway with the Crown Point being at the template origin.

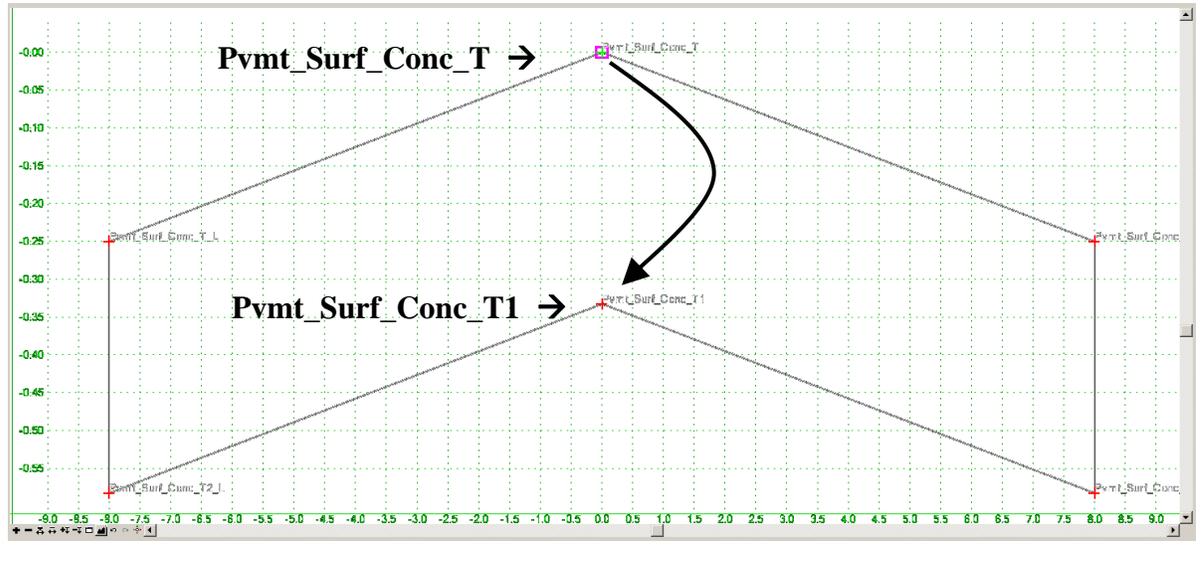


Use the point name of **Pvmt\_Surf\_Conc\_T** in the **Dynamic Setting Dialog** with the Step set to 0.10 and **Apply Affixes** turned **On**.



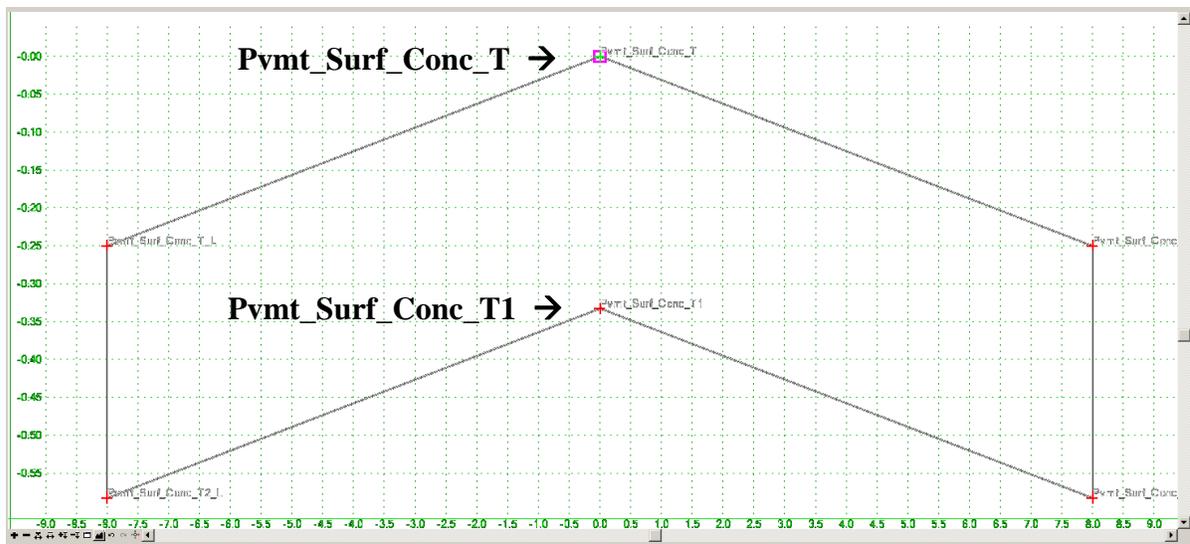
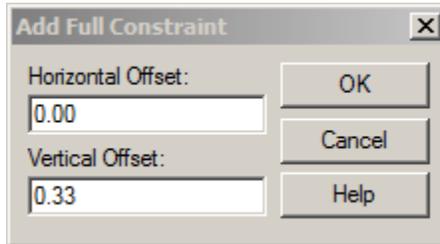
Once component is placed merge vertical line.

23) Move origin point to bottom of pavement by right clicking on **Pvmt\_Surf\_Conc\_T1** point and selecting “**Change Template Origin**”



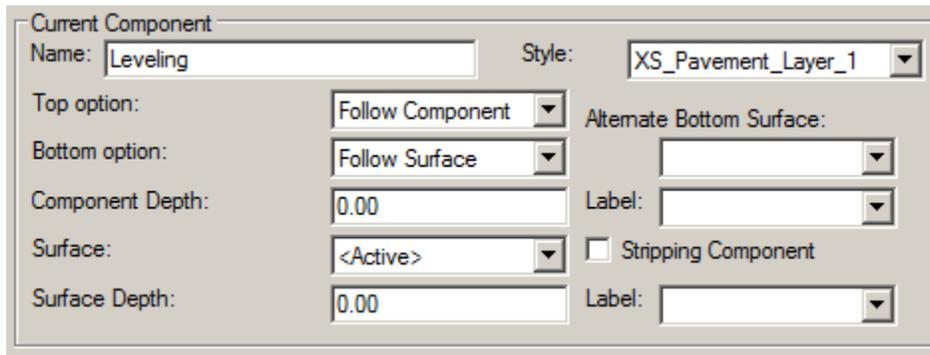
24) Remove / Delete both constraints from the **Pvmt\_Surf\_Conc\_T1** point.

Add full constraint to the Crown Point called **Pvmt\_Surf\_Conc\_T** by right clicking on point and selecting **Add Constraint > Full Constraint** and selecting the **Pvmt\_Surf\_Conc\_T1** point as the parent.



25) Right Click in the edit window and select **Add New Component > Overlay/Stripping** place along bottom of the pavement layer using the setting listed below.

Also use the **Dynamic Setting Dialog** with the Step set to 0.10



26) Finish the **Slope Correction Overlay and Leveling** template with the following **Components** and **End Conditions**:

**Components:**

**Left Side**

---

Pavement Combined Concrete  
Shoulder Combined Concrete

**Right Side**

---

Pavement Combined Concrete  
Shoulder Combined Concrete

**End Conditions:**

**Left Side**

---

Fill Slope Combined  
Ditch 1

**Right Side**

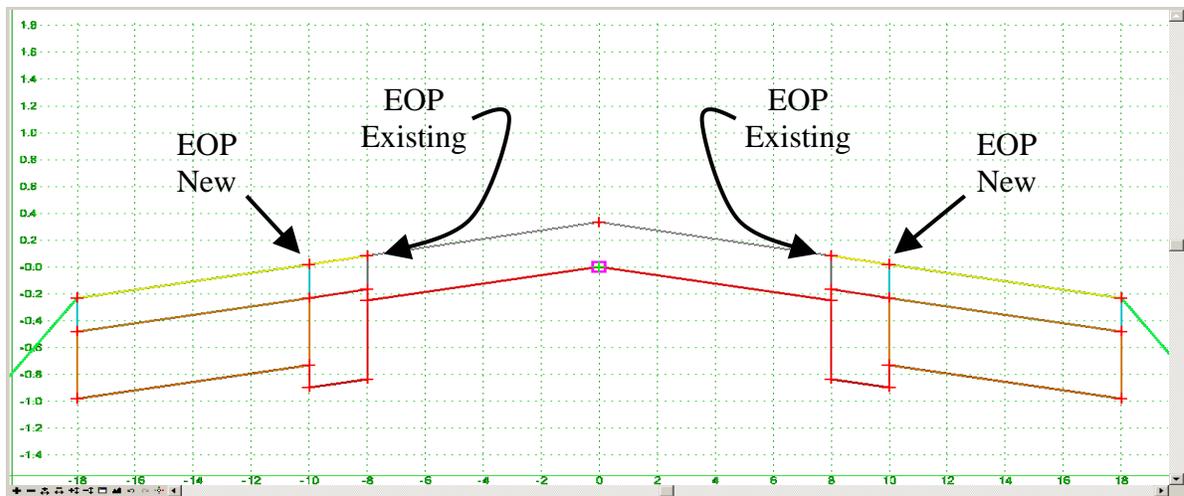
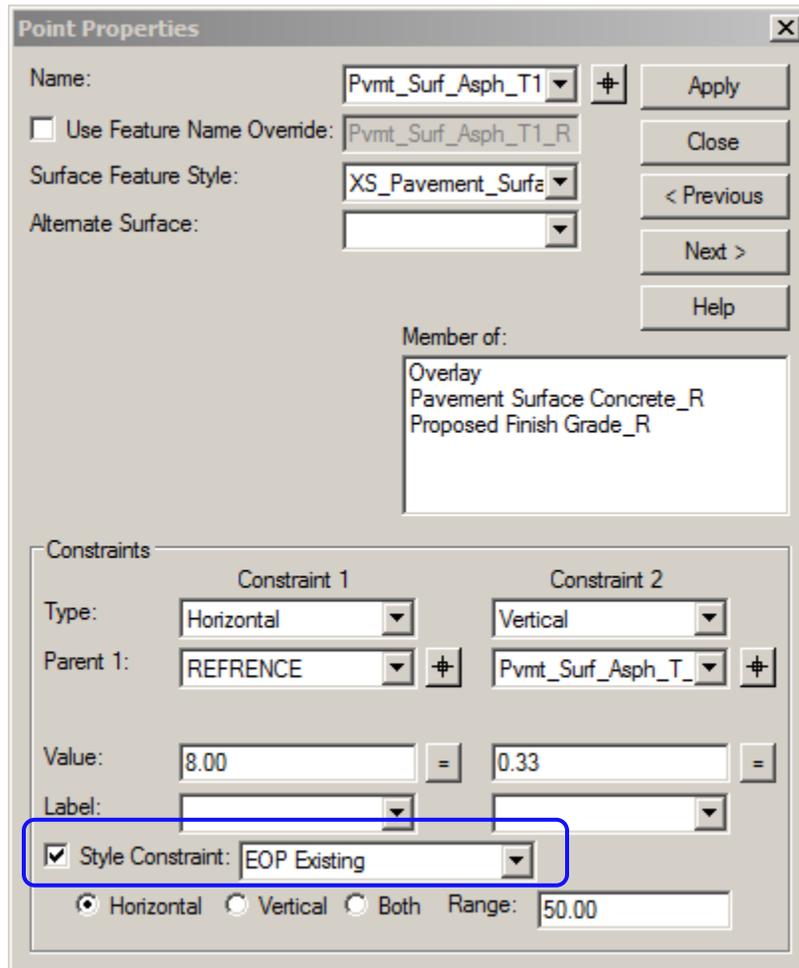
---

Fill Slope Combined  
Ditch 1

\*Notes

- a) Delete the three bottom pavement and shoulder layers.
- b) Modify the Widening (Pavement) Width to 2'
- c) Pavement & Shoulder Slope = 3.125%
- d) Check Priorities on End Conditions
- e) Save Template Library

27) Use **Style Constraints** to control the horizontal location of the widening:



Save and close the **J5P0100.itl**

28) Open **Roadway Designer** and open the **J5P0100.ird**.

Verify the corridor is **Bighorn** and the Surface is **J5P0100**

29) In **Roadway Designer** apply the “**Slope Correction Overlay and Leveling**” template to the Bighorn corridor. To do this select **Corridor > Template Drops**:

Corridor:	<b>Bighorn</b>
Station:	<b>0+97.77</b>
Interval:	<b>50</b>
Template:	<b>Slope Correction Overlay and Leveling</b>

30) In **Roadway Designer** review the sections.

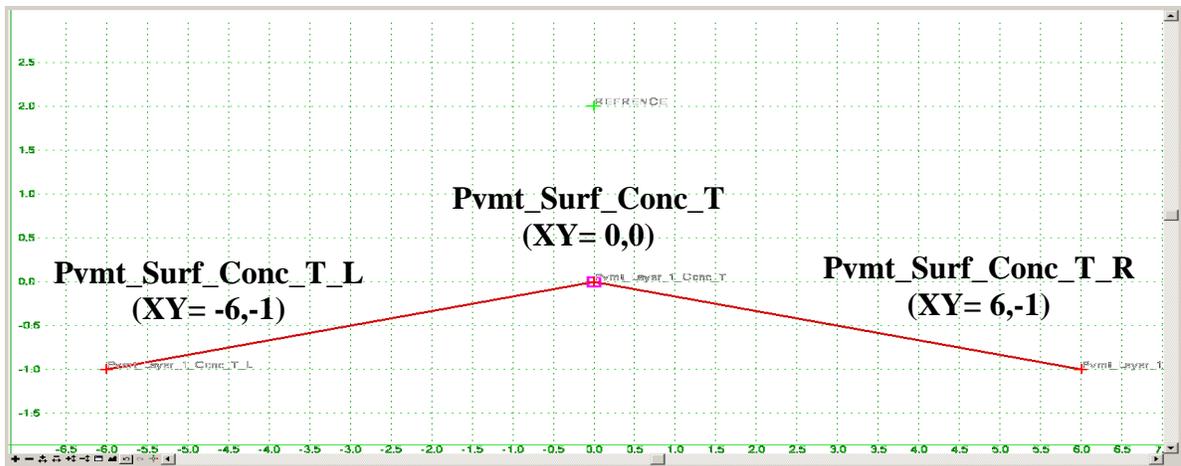
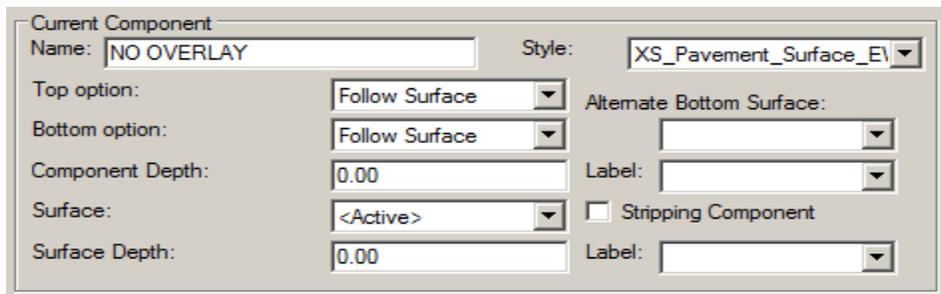
15.1.3 Roadway Widening with no Overlay

31) Within the **J5P0100 Template Library** navigate to the Bighorn folder, right click and select **New > Template**. Name the template **“Roadway Widening with no Overlay”**

32) Right Click in the edit window and select **Add New Component > Overlay/Stripping** place as indicated in diagram below.

Use the **Dynamic Setting Dialog** with a name of **Pvmt\_Surf\_Conc\_T**, Step set to 0.10 and **Apply Affixes** turned **On**.

Style = **XS\_Pavement\_Surface\_EW**



Constrain the points as follows:

<u>Point Name</u>	<u>Constraint</u>	<u>Parent</u>	<u>Value</u>
Pvmt_Surf_Conc_T_L	Horizontal	Reference	-6.00
Pvmt_Surf_Conc_T_L	Project to Surface	Any Direction	Blank
Pvmt_Surf_Conc_T_R	Horizontal	Reference	6.00
Pvmt_Surf_Conc_T_R	Project to Surface	Any Direction	Blank

33) If the center point has any constraints remove them now. Outside points are to be constrained fully to the center point.

34) Finish the **Slope Roadway Widening with no Overlay** template with the following **Components and End Conditions:**

**Components:**

**Left Side**

Pavement Combined Concrete  
Shoulder Combined Concrete

**Right Side**

Pavement Combined Concrete  
Shoulder Combined Concrete

**End Conditions:**

**Left Side**

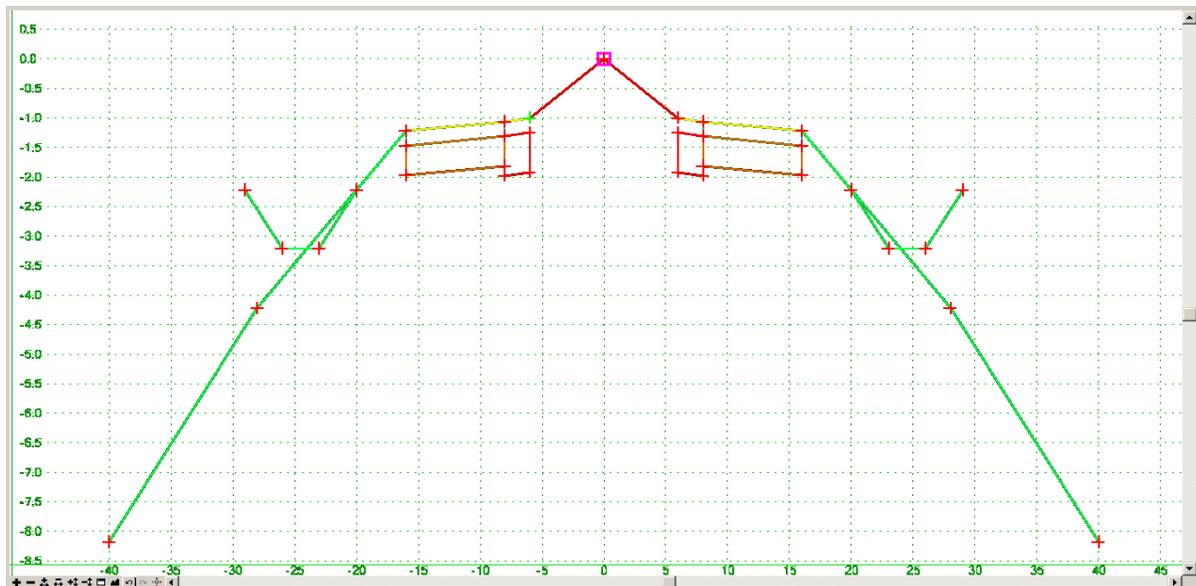
Fill Slope Combined  
Ditch 1

**Right Side**

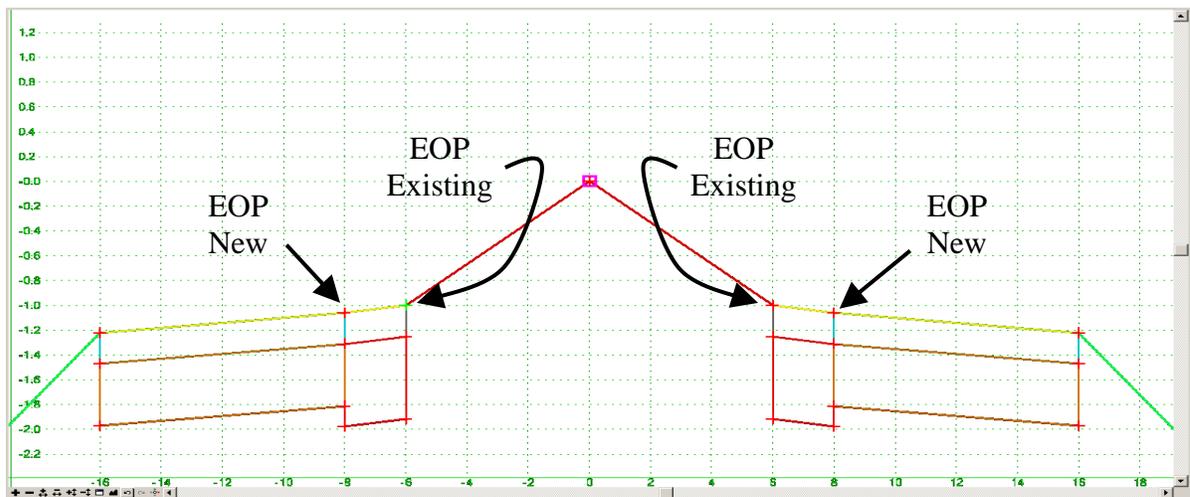
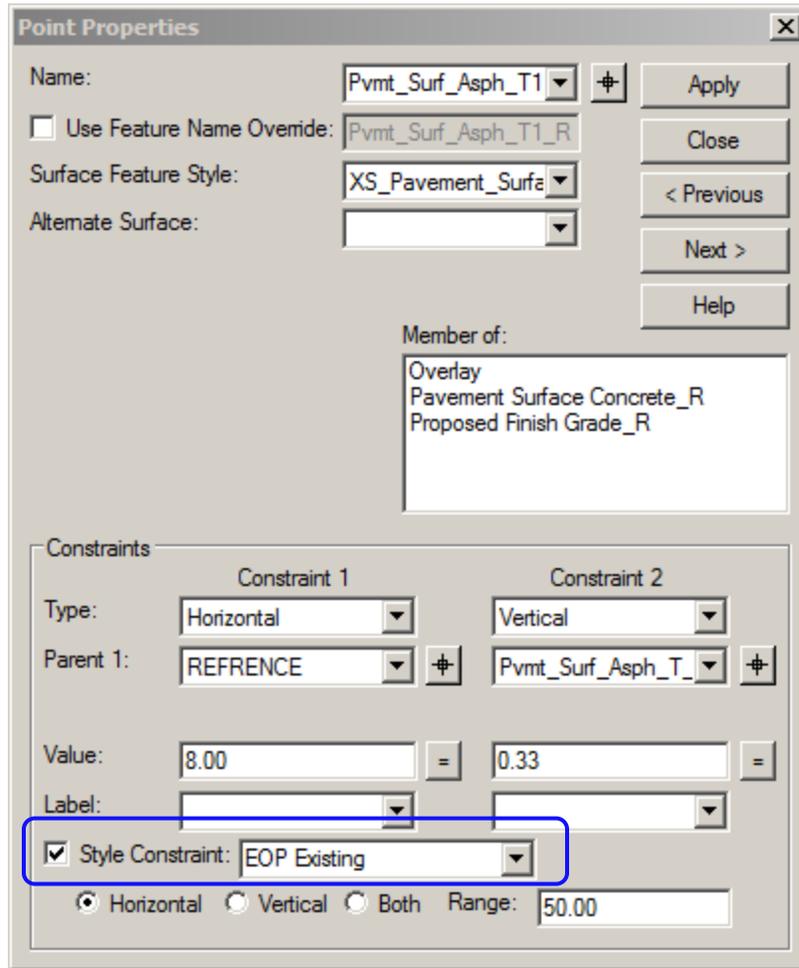
Fill Slope Combined  
Ditch 1

\*Notes

- f) Delete the three bottom pavement and shoulder layers.
- g) Modify the Widening (Pavement) Width to 2'
- h) Pavement & Shoulder Slope = 3.125%
- i) Check Priorities on End Conditions
- j) Save Template Library



35) Use **Style Constraints** to control the horizontal location of the widening:



Save and close the **J5P0100.itl**

36) Open **Roadway Designer** and open the **J5P0100.ird**.

Verify the corridor is **Bighorn** and the Surface is **J5P0100**

37) In **Roadway Designer** apply the “**Roadway Widening with no Overlay**” template to the Bighorn corridor. To do this select **Corridor > Template Drops**:

Corridor:           **Bighorn**

Station:           **0+97.77**

Interval:           **50**

Template:           **Roadway Widening with no Overlay**

38) In **Roadway Designer** review the sections.

39) Save Roadway Designer ird file and exit.