## LAB 25 - Variable Median Ditch

When a divided highway has separate horizontal and vertical controls for each driving surface, the median can not have a fixed width. In this lab, an end condition section is developed for a variable width median.

## **Chapter Objectives:**

- Build components for each median situation.
- Assemble the components into a single section.
- Add Display Rules to turn components on and off.
- Add the median ditch section to a template.
- Update a corridor to use the template and examine its behavior.

The Following files are used in this lab:

- C:\Projects\12345\Design\Drawings\Reference\_Files\12345DES\_Model\_Median-Ditch.dgn
- C:\Projects\12345\Design\InRoads\12345DES\_Median-Lab.alg
- C:\Projects\12345\Design\InRoads\12345DES\_Templates\_Median-Ditch.itl
- C:\Projects\12345\Design\InRoads\12345DES\_Median-Ditch.ird
- C:\Projects\12345\Design\InRoads\12345DES\_Northbound.dtm
- C:\Projects\12345\DesignROW\_Survey\InRoads\DTM\12345SURV\_Existing\_Ground\_VM D.dtm

## Lab 25.1 - Create Median Ditch Components

The median section attaches to the right side of the southbound template. There are four different situations that have to be accounted for on the median ditch. These are:

- ♦ 6:1 / 6:1 "V" Ditch This option is used when the inside EOP points are less than 24' apart.
- ♦ 6:1 10:1 / 6:1 10:1 Compound Ditch This option is used when the inside EOP points are greater than 24' apart.
- 6:1 10:1 / 6:1 Compound Ditch This option is used when the southbound lanes are higher than the northbound lanes and the left 10:1 slope intercepts the right 6:1 slope.
- 6:1 / 6:1 10:1 Compound Ditch This option is used when the northbound lanes are higher than the southbound lanes and the right 10:1 slope intercepts the left 6:1 slope.

A separate component will be built for each situation and tested to be sure it works.

- 1. Open MicroStation and InRoads using the C:\Projects\12345\Design\Drawings\ Reference\_Files\12345DES\_Model\_Median-Ditch.dgn file.
- 2. Load the following files into InRoads:
  - C:\Projects\12345\Design\InRoads\12345DES\_Median-Lab.alg
  - C:\Projects\12345\ROW\_Survey\InRoads\DTM\12345SURV\_Existing\_Ground\_VMD.dtm

- C:\Projects\12345\Design\InRoads\12345DES\_Templates\_Median-Ditch.itl
- C:\Projects\12345\Design\InRoads\12345DES\_Median-Ditch.ird
- C:\Projects\12345\Design\InRoads\12345DES\_Northbound.dtm
- 3. Verify that the C:\Workspace\Workspace-CDOT\_XM\Standards-Global\ InRoads\ Preferences\CDOT\_Civil.xin file is loaded.
- 4. From the InRoads menu bar, select **Modeler > Create Template**.
- 5. Expand the **4 Components** folder of the template library.
- 6. **<R>** on the **4 Components** folder and select **New > Folder** from the right click menu.

🕌 Create Template				
File Edit Add Tools				
Template Library:		Current Template Name: Compound_Ditch4 Description:		
4 - Components				
4 - Components	New		Folder	
Aggregate Ba	New Cut	Ctrl-X	Folder Template	
A components     Aggregate Be     Barriers & Mis     Curb & Gutter     End Condition     Pavements     Sidewalks & I	New Cut Copy Paste	Ctrl-X Ctrl-C Ctrl-V	Folder Template	

- 7. Key in *Variable Median Ditch* for the folder name.
- 8. **<R>** on the **Variable Median Ditch** folder and select **New > Template** from the right click menu.
- 9. Key in *6:1/6:1\_V\_Ditch* for the template name. The new template is automatically opened for editing.
- 10. Display the **Dynamic Settings** dialog box.
- 11. Set both the *X Step* and *Y Step* to *O. 10*.

le Edit Add Tools			
emplate Library: Template Lib	rary Organizer	1	Dis
C:\Projects\12 Apply Feature	e Name Override	1	۲
Point Nam Options			
1 - Templa	inas	1	
2 - Section - Byndrine Sections			
4 - Components			
Aggregate Bases			
Barriers & Misc Components	4		
Curb & Gutter Components			
End Conditions	3		
Pavements	2	Dynamic Setti	ngs 🛛 🛛
Sidewalks & Bike Paths	-	X· 33.66	Step: 0.10
Subbases	1		
Compound_Ditch I		Y: 0.04	Step: 0.10
Compound_Ditch3	0	Point Name:	
Compound Ditch4			
V and Compound Median		Point Style:	<b></b>
🔁 Variable Median Ditch		Apply Affixe	es
6:1/6:1_V_Ditch	-2		
		hs=	· •
	-3	Set [	Vnamic Origin
	1	Jerr	Synamic Origin

12. Verify that **Apply Affixes** is toggled off.

- 13. **<R>** in the template view and select **Add New Component > End Condition** from the right click menu.
- 14. In the *Current Component* area, key in *Ditch\_Width* for the *Name*.
- 15. Set the *Style* to **Breakline**.
- 16. Set the *Target Type* to Feature XYZ.
- 17. Set the *Surface* to **12345DES\_Northbound**.
- 18. Set the *Feature* to Northbound-Conc\_EOP-Top.



19. In the *Dynamic Settings* dialog box, select **EOP** for the *Point Name*.

Dynar	nic Setting	IS	8		
X:	0.00	Step: 0.10			
Y:	0.00	Step: 0.10			
Point Name: EOP -					
Point	Style:	D_EOP	•		
A	pply Affixes				
hs=					
	Set Dynamic Origin				

- 20. Move the cursor to the template origin (0.00, 0.00) and **<D>** to place the point.
- 21. In the *Dynamic Settings* dialog box, key in *NB\_EOP* for the *Point Name*.
- 22. Toggle on End Condition is Infinite and Do Not Construct.
- 23. Set the key in mode to **hs=**.
- 24. Key in *48,0* in the precision key in field and press *Enter*.



25. **<R>** and select **Finish** from the right click menu.

This end condition is used to determine the width of the median. Each of the four components used for this median ditch will contain this end condition. Next, the ditch component is added.

- 26. **<R>** in the template view and select **Add New Component > Unconstrained** from the right click menu.
- 27. In the *Current Component* area, key in *V\_Ditch* for the *Name*.
- 28. Set the *Style* to **D\_Median**.

╪╼╧╧╪╧╔╗╗╔╔┊╡		
Current Component	-	
Name: V_Ditch	Style:	D_MEDIAN -
	-	

29. **<D>** on the **EOP** point to start the component at the origin.

- **Note:** When the "+" symbol turns white, the cursor is snapped to the point and the points automatically merge.
- 30. In the *Dynamic Settings* dialog box, key in *Median\_Ditch-Bottom* in the *Point Name* field.
- 31. Select **D\_DITCH-Bottom** for the *Point Style*.

Dyna	mic Setting	ļs		×	
X:	35.70	Step:	0.10		
Y:	-5.40	Step:	0.10		
Poin	t Name:	Median_	Ditch-Bo	·	
Poin	t Style:	D_DITC	H-Bottom	-	
E A	oply Affixes				
hs=	hs=				
	Set Dy	namic Orig	in		

- 32. **<D>** between and below the *EOP* and *NB\_EOP* points.
- 33. **<D>** on the **NB\_EOP** point.
- 34. **<R>** in an open area. Verify that **Closed Shape** is toggled off, then select **Finish**.



- 35. **<D> <D>** on the **Median\_Ditch-Bottom** point to display the *Point Properties* dialog box.
- 36. In the *Point Properties* dialog box, set both constraints to **Slope**.
- 37. Set the *Parent 1* for *Constraint 1* to EOP.
- 38. Set the *Parent 1* for *Constraint 2* to NB\_EOP.
- 39. Key in -16.67% for the Value of Constraint 1.
- 40. Key in 16.67% for the Value of Constraint 2.

Name:	Median_Ditch-Bottom	<ul> <li>+</li> <li>+</li> </ul>	Apply
Feature Name Override:	Median_Ditch-Bottom		Close
Surface Feature Style:	D_DITCH-Bottom		< Previous
Alternate Surface:		- i	Nexts
			INEXL >
	Member of:	l	Help
	V_Ditch		
Constraints			
Constraints Constra	sint 1 Co	onstraint 2	
Constraints Constra Type: Slope	aint 1 Co	onstraint 2	-
Constraints Constra Type: Slope Parent 1: EOP	sint 1 Cc ▼ Slope ▼ + NB_EI	onstraint 2 OP	<b>-</b>
Constraints Type: Constra Type: Slope Parent 1: EOP Parent 2: Rollov	aint 1 Co Slope + NB_EI ver Values) [[] [ F	onstraint 2 OP Rollover Va	▼ ▼ +
Constraints Type: Slope Parent 1: EOP Parent 2: Rollov Value: -16.67%	aint 1 Co Slope Ver Values	OP Rollover Va	▼ ▼ .+ alues
Constraints Type: Slope Parent 1: EOP Parent 2: Rollov Value: -16.67% Label:	aint 1 Co Slope ver Values F 16.67	onstraint 2 OP Rollover Va	▼ ▼ + alues)
Constraints Type: Slope Parent 1: EOP Parent 2: Rollov Value: -16.67% Label: Style Constraint:	aint 1 Co Slope ver Values) C F 16.673	onstraint 2 OP Rollover Va	▼ ▼ + alues) ▼
Constraints Type: Slope Parent 1: EOP Parent 2: Rollov Value: -16.67% Label: Style Constraint: @ Horizontal	aint 1 Cc Slope ver Values) Vertical Vertical Control Control Slope S	onstraint 2 OP Rollover Va %	▼ ■ alues) ▼

41. **<D> Apply** then **<D> Close** to dismiss the *Point Properties* dialog box.

This component will now construct a "V" ditch with 6:1 slopes on each side. Now it must be restricted to display only when the EOP and NB\_EOP points are within 24' horizontally of each other. This is accomplished using a Display Rule.

- 42. **<D> <D>** on the line forming the ditch to display the *Component Properties* for the *V\_Ditch* component.
- In the *Component Properties* dialog box, <D> the Edit button. This displays the *Component Display Conditional Expression* dialog box.

K Component Prop	erties		<b>X</b>
Name:	V_Ditch	+	Apply
Description:			Close
Style:	D_MEDIAN   Close Shape		Previous
Parent Component:	<b>+</b>		
Display Rules:		Edit	Next >
Exclude from triangu	lation		Help

- 44. In the *Component Display Conditional Expression* dialog box, **<D>** the **Add** button. This displays the *Display Rule* dialog box.
- 45. In the *Display Rule* dialog box, key in *V\_DitchWidth* for the *Name*.
- 46. Key in **Sets maximum width for the V ditch** for the **Description**.
- 47. Set the *Type* to Absolute Horizontal.
- 48. Set *Between* to EOP.
- 49. Set *And* to **NB\_EOP**.

50. Set the operator to < and key in **24.00** for the value. The dialog box with completed entries is illustrated below:

🕍 Display R	ule		<b>X</b>
Name:	V_DitchWidth		ОК
Description:	Sets maximum width for the V ditch		Cancel
Туре:	Absolute Horizontal		Help
Between:	EOP 🔹	+	
And:	NB_EOP	+	
	< ▼ 24.00		

- 51. **<D> OK**. This dismisses the *Display Rule* dialog box.
- 52. In the *Component Display Conditional Expression* dialog box, highlight **V\_DitchWidth** in the *Template Display Rules* area.
- 53. **<D>** the **Selected Rule** button.
- 54. **<D> OK**. This dismisses the *Component Display Conditional Expression* dialog box and adds the rule to the component properties of *V\_Ditch*.

Conditional Expr	ession for V_Ditch Componer	nt				OK
V_DitchWidth				-		Cance
AND OF	R NOT (	) Selected Rule		Ŧ		
mplate Display I lame	Rules Type	Expression	Test	Value	Result	]
DitchWidth	Absolute Horizontal	EOP - NB_EOP	<	24.00	False	1
(					•	

55. In the Component Properties dialog box, <D> Apply then <D> Close to dismiss the dialog box.

🐂 Component Prop	erties		×
Name:	V_Ditch	+	Apply
Description:			Close
Style:	D_MEDIAN   Close Shape		< Previous
Parent Component:	<b>+</b>		Nett
Display Rules:	V_DitchWidth	Edit	
Exclude from triang	ulation		Help

If the V\_Ditch does not disappear right away, it will when you click in the template view. This is because the Display Rule returned a false value (EOP and NB\_EOP are more than 24 feet apart). Because an end condition controls the NB\_EOP point, the template can be tested to see if it works properly.

- 56. **<D>** the **Test** button.
- 57. In the *Test End Conditions* dialog box, **<D>** the **Draw** button.
- 58. Move the cursor slowly from right to left in the dialog box. Notice that once the cursor is moved left of the 25 grid line, the template displays.
- 59. **<D> Close** to dismiss the *Test End Conditions* dialog box.
- 60. Select **File > Save** from the *Create Template* menu bar.

The next component to build is the 6:1 - 10:1 / 6:1 - 10:1 Compound Ditch. This component has a 12 foot 6:1 slope extending from each pavement edge. The slope changes to 10:1 at this point to form the ditch bottom.

- 61. Create a new template in the *Variable Median Ditch* folder as described in steps 6 through 9 above. Name the template *Standard Compound Ditch*.
- 62. **<R>** in the template view and select **Add New Component > End Condition** from the right click menu.
- 63. In the *Current Component* area, key in *Ditch\_Width* for the *Name*.
- 64. Set the *Style* to **Breakline**.
- 65. Set the *Target Type* to Feature XYZ.
- 66. Set the *Surface* to **12345DES\_Northbound**.
- 67. Set the *Feature* to Northbound-Conc\_EOP-Top.
- 68. In the Dynamic Settings dialog box, select EOP for the Point Name.
- 69. Move the cursor to the template origin (0.00, 0.00) and **<D>** to place the point.
- 70. In the *Dynamic Settings* dialog box, key in *NB\_EOP* for the *Point Name*.
- 71. Toggle on End Condition is Infinite and Do Not Construct.

- 72. Set the key in mode to **hs=**.
- 73. Key in *48,0* in the precision key in field and press *Enter*.
- 74. **<R>** and select **Finish** from the right click menu.
- 75. **<R>** in the template view and select **Add New Component > Unconstrained** from the right click menu.
- 76. In the *Current Component* area, key in *Std\_Compound\_Ditch* for the *Name*.
- 77. Set the *Style* to **D\_Top-of-Cut**. Using a different style for each ditch component will make it easier to troubleshoot the template if there is a problem
- 78. **<D>** on the **EOP** point to start the component at the origin.
- 79. In the Dynamic Settings dialog box, select POSS for the Point Name. Then key in SB\_POSS for the Point Name. Selecting POSS first automatically sets the Point Style, then "SB\_" can be appended to the name.
- 80. In the precision key in field, type 12,-0.1667 and press Enter.

Dynar	nic Setting	5		
X:	58.20	Step: 0.10		
Y:	7.30	Step: 0.10		
Point	Name:	SB_POSS	Ŧ	
Point	Style:	D_POSS	-	
A	Apply Affixes			
hs=	hs=			
	Set Dyr	namic Origin		

- 81. In the *Dynamic Settings* dialog box, key in *Median\_Ditch-Bottom* in the *Point Name* field.
- 82. Select **D\_DITCH-Bottom** for the *Point Style*.
- 83. In the precision key in field, type 12,-0.100 and press Enter.

Dynamic Setting	IS 🔛				
X: 56.50	Step: 0.10				
Y: 7.20	Step: 0.10				
Point Name:	Median_Ditch-Bo 👻				
Point Style:	D_DITCH-Bottom -				
Apply Affixes	Apply Affixes				
hs= ▼	12,-0.100				
Set Dy	namic Origin				

84. In the *Dynamic Settings* dialog box, select **POSS** for the *Point Name*. Then key in *NB\_POSS* for the *Point Name*.

85. In the precision key in field, type 12,0.100 and press Enter.



- 86. **<D>** on the **NB\_EOP** point.
- 87. **<R>** and select **Finish** from the right click menu. The illustration below shows the component as it appears at this point.



The points on the component form the proper shape. Now they must be constrained to maintain that shape.

- 88. **<D> <D>** on the **SB\_POSS** point.
- 89. In the Point Properties dialog box, set the Constraint 1 Type to Horizontal.
- 90. Set the *Constraint 2 Type* to **Slope**.
- 91. Set the *Parent 1* for both constraints to EOP.

## 92. **<D> Apply**.

Name:	SB_POSS		• +	Apply
Feature Name Override:	SB_POSS			Close
Surface Feature Style:	D_POSS		•	< Previous
Alternate Surface:			-	
				Next >
				Help
	S	eniberor: itd. Compoi	ind Ditch	
	Ĭ	.u_oompot		
	L			
Constraints				
Constraints Constra	int 1		Constraint	2
Constraints Constra Type: Horizontal	int 1	Slop	Constraint ie	2
Constraints Constra Type: Horizontal Parent 1: EOP	int 1 •	Slop	Constraint e	2 • •
Constraints Constra Type: Horizontal Parent 1: EOP	int 1 	Slop + EOF	Constraint e	2 • •
Constraints Type: Horizontal Parent 1: EOP	int 1 	Slop + EOF	Constraint e Rollover	2 • • Values
Constraints Type: Horizontal Parent 1: EOP Value: 12.00	int 1	Slop + EOF	Constraint e Rollover	2 values
Constraints Type: Horizontal Parent 1: EOP Value: 12.00 Label:	int 1	Slop	Constraint e Rollover 67%	2 values
Constraints Type: Horizontal Parent 1: EOP Value: 12.00 Label: Style Constraint:	int 1	Slop + EOF -16.0	Constraint e Rollover 57%	2 Values
Constraints Type: Horizontal Parent 1: EOP Value: 12.00 Label: Style Constraint:	int 1	Slop EOF -16.	Constraint e Rollover 67%	2 Values)
Constraints Type: Horizontal Parent 1: EOP Value: 12.00 Label: Style Constraint: (a) Horizontal	int 1	+ EOF	Constraint e Rollover 67%	2 Values

- 93. **<D>** the **Next** button to select **Median\_Ditch-Bottom**.
- 94. Set the *Type* of both constraints to **Slope**.
- 95. Set the *Parent 1* of *Constraint 1* to **SB\_POSS**.
- 96. Set the *Parent 1* of *Constraint 2* to NB\_POSS.

#### 97. **<D> Apply**.

Point Properties		×
Name:	Median_Ditch-Bottom 👻 📑	+ Apply
Feature Name Override:	Median_Ditch-Bottom	Close
Surface Feature Style:	D_DITCH-Bottom -	< Previous
Alternate Surface:		Next >
	Member of: Std_Compound_Ditv	Help
Constraints Constra Type: Slope Parent 1: SB POSS	int 1 Constrai	int 2 ▼ ▼
Parent 2: Rollov	rer Values Rollov	er Values
Value: -10.00%	10.00%	
Label:	•	•
Style Constraint:	<b></b>	
Horizontal Range: 0.00	Vertical O Both	

- 98. **<D>** the **Next** button to select **NB\_POSS**.
- 99. Set the *Constraint 1 Type* to Horizontal.
- 100.Set the *Constraint 2 Type* to Slope.
- 101.Set the *Parent 1* for both constraints to NB\_EOP.
- 102.<D> Apply then <D> Close to dismiss the Point Properties dialog box.

There are three situations where this component will not work correctly. These are 1) when the median is less than 24 feet wide 2) when the NB\_POSS drops below the 10:1 slope from the SB\_POSS and 3) when the Median\_Ditch-Bottom is left of the SB\_POSS (this can occur when the NB\_EOP is higher than the SB\_EOP). Display rules are used to test for each of these situations.

- 103.<D> <D> on the line forming the ditch to display the Component Properties for the Std\_Compound\_Ditch component.
- 104.In the *Component Properties* dialog box, **<D>** the **Edit** button. This displays the *Component Display Conditional Expression* dialog box.
- 105.In the Component Display Conditional Expression dialog box, <D> the Add button. This displays the Display Rule dialog box.
- 106.In the *Display Rule* dialog box, key in *Std\_Compound\_DitchWidth* for the *Name*.
- 107.Key in *Sets minimum width for the standard compound ditch* for the *Description*.

108.Set the *Type* to Horizontal.

109.Set *Between* to SB\_POSS.

110.Set *And* to NB\_POSS.

111.Set the operator to < and key in **0.00** for the value. The dialog box with completed entries is illustrated below:

🐂 Display R	ule		×
Name:	Std_Compound_DitchWidth		ОК
Description:	Sets minimum width for the standard compound ditch		Cancel
Type:	Horizontal		Help
Between:	SB_POSS	+	<u> </u>
And:	NB_POSS	÷	
	<  .00		

- 112.< D> OK. This dismisses the *Display Rule* dialog box.
- 113.In the *Component Display Conditional Expression* dialog box, **<D>** the **Add** button.
- 114.In the Display Rule dialog box, key in Std\_Compound\_DitchVertical1 for the Name.
- 115.Key in **Sets minimum height for the standard compound ditch** for the **Description**.
- 116.Set the *Type* to **Vertical**.
- 117.Set *Between* to NB\_POSS.
- 118.Set And to Median\_Ditch-Bottom.
- 119.Set the operator to < and key in **0.00** for the value. The dialog box with completed entries is illustrated below:

🕌 Display R	ule		<b>X</b>
Name:	Std_Compound_DitchVertical1		ОК
Description:	Sets minimum height for the standard compound ditch		Cancel
Type:	Vertical 🗸		Help
Between:	NB_POSS	+	
And:	Median_Ditch-Bottom	+	
	> • 0.00		

- 120.<D> OK. This dismisses the *Display Rule* dialog box.
- 121.In the *Component Display Conditional Expression* dialog box, **<D>** the **Add** button.
- 122.In the *Display Rule* dialog box, key in *Std\_Compound\_DitchVertical2* for the *Name*.
- 123.Key in **Sets maximum height for the standard compound ditch** for the **Description**.

124.Set the *Type* to Horizontal.

125.Set *Between* to SB\_POSS.

#### 126.Set *And* to **Median\_Ditch-Bottom.**

127.Set the operator to < and key in *0.00* for the value. The dialog box with completed entries is illustrated below:

🕌 Display R	ule		×
Name:	Std_Compound_DitchVertical2		ОК
Description:	Sets maximum height for the standard compound ditch		Cancel
Type:	Horizontal 🗸		Help
Between:	SB_POSS	+	
And:	Median_Ditch-Bottom 🗸	+	
	< ▼ 0.00		

- 128.**<D> OK** to accept the entries and dismiss the dialog box.
- 129.In the *Component Display Conditional Expression* dialog box, highlight **Std\_Compound\_DitchWidth** in the *Template Display Rules* area.
- 130. **<D>** the **Selected Rule** button.
- 131.**<D>** the **AND** button.
- 132.Highlight Std\_Compound\_DitchVertical1 in the Template Display Rules area.
- 133.<D> the Selected Rule button.
- 134.**<D>** the **AND** button.
- 135.Highlight Std\_Compound\_DitchVertical2 in the Template Display Rules area.
- 136.<D> the Selected Rule button. The dialog box with completed entries is illustrated below:

🕌 Component Display Conditi	onal Expression				- • •
Conditional Expression for Std_C StandardCompoundDitch AND	iompound_Ditch Component Std_Compound_Ditch Vertical 1 AND Std_Compound_Dit	chVertical2	^ 		OK Cancel Help
AND OR NOT Template Display Rules Name Type	( ) Selected Rule	Test	Value	Result	
StandardCoHorizontal Std_CompoVertical Std_CompoHorizontal	SB_POSS - NB_POSS NB_POSS - Median_Ditch-Bottom SB_POSS - Median_Ditch-Bottom	<	0.00 0.00 0.00	True True True	
		Add	Edit	Delete	

- 137.<D> OK. This dismisses the *Component Display Conditional Expression* dialog box and adds the rule to the component properties of *Std\_Compound\_Ditch*.
- 138.<D> the Apply button then <D> the Close button to dismiss the Component Properties dialog box.

Using the three display rules with the AND operator means that all of the rules must return a True result in order for the component to be displayed.

139.**<D>** the **Test** button.

- 140.In the *Test End Conditions* dialog box, **<D>** the **Draw** button.
- 141.Move the cursor slowly from right to left and up and down in the dialog box. Notice the different situations that cause the template to disappear.
- 142.<D> Close to dismiss the Test End Conditions dialog box.

143.Select File > Save from the *Create Template* menu bar.

Two of the four components required for this template have been completed. The final two components define the ditch where the 10:1 slope from one side of the ditch intercepts the 6:1 slope on the other side.

- 144.Create a new template in the *Variable Median Ditch* folder as described in steps 6 through 9 above. Name the template *Compound Ditch NB\_EOP High*.
- 145.<**R**> in the template view and select **Add New Component** > **End Condition** from the right click menu.
- 146.In the *Current Component* area, key in *Ditch\_Width* for the *Name*.
- 147.Set the *Style* to **Breakline**.
- 148.Set the *Target Type* to Feature XYZ.

149.Set the *Surface* to **12345DES\_Northbound**.

150.Set the *Feature* to Northbound-Conc\_EOP-Top.

151.In the Dynamic Settings dialog box, select EOP for the Point Name.

152. Move the cursor to the template origin (0.00, 0.00) and **<D>** to place the point.

153.In the *Dynamic Settings* dialog box, key in *NB\_EOP* for the *Point Name*.

154.Toggle on End Condition is Infinite and Do Not Construct.

155.Set the key in mode to **hs=**.

156.Key in **48,0** in the precision key in field and press **Enter**.

157.**<R>** and select **Finish** from the right click menu.

158.Add a new unconstrained component.

159.Key in *NB\_EOP-High* for the *Name*.

- 160.Select **D\_CONC\_Sw** for the *Style*.
- 161.**<D>** on the **EOP** point to start the component at the origin.
- 162.In the *Dynamic Settings* dialog box, key in *Median\_Ditch-Bottom* in the *Point Name* field.
- 163.Select **D\_DITCH-Bottom** for the *Point Style*.
- 164.**<D>** between and below the *EOP* and *NB\_EOP* points.
- 165.In the Dynamic Settings dialog box, key in NB\_POSS in the Point Name field.
- 166.Select **D\_POSS** for the *Point Style*.
- 167.<D> to the right and above *Median\_Ditch-Bottom* and to the left and below *NB\_EOP*.
- 168.**<D>** on the **NB\_EOP** point.
- 169.<**R>** and select **Finish** from the right click menu. The illustration below shows the component as it appears at this point.



170.<D> <D> on the Median\_Ditch-Bottom point.

171. In the *Point Properties* dialog box, set the *Type* to **Slope** on both constraints.

172.Set the *Parent 1* for *Constraint 1* to EOP.

173.Set the *Parent 1* for *Constraint 2* to NB\_POSS.

174.Key in the -0.1667 for the Value of Constraint 1.

175.Key in the *O. 1000* for the *Value* of *Constraint 2*.

176.<D> Apply.

177.<D> Next to select the NB\_POSS point.

178.Set the *Constraint 1 Type* to Horizontal.

179.Set the *Constraint 2 Type* to **Slope**.

180.Set the *Parent 1* for both constraints to NB\_EOP.

- 181.Key in the *12.00* for the *Value* of *Constraint 1*.
- 182.Key in the *0.1667* for the *Value* of *Constraint 2*.
- 183.**<D> Apply** then **<D> Close** to dismiss the dialog box.

The shape of the ditch is now fixed. Now display Rules must be added to control when this component is displayed.

- 184.<D> <D> on the line forming the ditch to display the *Component Properties* for the *NB\_EOP\_HIGH* component.
- 185.In the Component Properties dialog box, <D> the Edit button. This displays the Component Display Conditional Expression dialog box.
- 186.In the Component Display Conditional Expression dialog box, <D> the Add button. This displays the Display Rule dialog box.
- 187.In the *Display Rule* dialog box, key in *NB\_EOP\_HIGHWidth* for the *Name*.
- 188.Key in *Sets width for ditch* for the *Description*.
- 189.Set the *Type* to Absolute Horizontal.
- 190.Set *Between* to EOP.
- 191.Set And to Median\_Ditch-Bottom.
- 192.Set the operator to < and key in **12.00** for the value. The dialog box with completed entries is illustrated below:

🖮 Display R	ule		X
Name:	Compound_NB_EOP-HighWidth		ОК
Description:	Sets the width of the ditch		Cancel
Type:	Absolute Horizontal		Help
Between:	EOP 🗸	+	
And:	Median_Ditch-Bottom	+	
	<  12.00		

193.<D> OK. This dismisses the *Display Rule* dialog box.

194.In the *Component Display Conditional Expression* dialog box, **<D>** the **Add** button.

195.In the *Display Rule* dialog box, key in *NB\_EOP\_HIGHVertical* for the *Name*.

196.Key in *Sets height for the ditch* for the *Description*.

197.Set the *Type* to **Vertical**.

198.Set *Between* to NB\_POSS.

199.Set And to Median\_Ditch-Bottom.

200.Set the operator to < and key in *0.00* for the value. The dialog box with completed entries is illustrated below:

🖮 Display R	ule		X
Name:	Compound_NB_EOP-HighVertical		ОК
Description:	Sets the minimum ditch height		Cancel
Type:	Vertical		Help
Between:	NB_POSS	÷	
And:	Median_Ditch-Bottom	ŧ	
	> • 0.00		

- 201.<D> OK. This dismisses the *Display Rule* dialog box.
- 202.In the *Component Display Conditional Expression* dialog box, highlight NB\_EOP\_HIGHWidth in the *Template Display Rules* area.
- 203. **<D>** the **Selected Rule** button.
- 204.**<D>** the **AND** button.
- 205.Highlight NB\_EOP\_HIGHVerfical in the Template Display Rules area.
- 206.<D> the Selected Rule button. The dialog box with completed entries is illustrated below:

Compone	ent Display Conditional Express	sion				- • •
Conditional Compound	Expression for NB_EOP-High Com NB_EOP-HighWidth AND Compo	ponent uund_NB_EOP-HighVertical				OK Cancel Help
AND ( Template Disp	OR NOT (	) Selected Rule	Test	Value	Poer it	]
Compound	.Vertical .Absolute Horizontal	NB_POSS - Median_Ditch-Bottom EOP - Median_Ditch-Bottom	, csi	0.00	True False	
			Add	Edit	Delete	

- 207.<D> OK. This dismisses the *Component Display Conditional Expression* dialog box and adds the rule to the component properties of *NB\_EOP High*.
- 208.<D> the Apply button then <D> the Close button to dismiss the Component Properties dialog box.

This completes the *Compound Ditch NB\_EOP High* component. Next the final component is built.

- 209.Create a new template in the *Variable Median Ditch* folder as described in steps 6 through 9 above. Name the template *Compound Ditch SB\_EOP High*.
- 210.<**R>** in the template view and select **Add New Component > End Condition** from the right click menu.
- 211.In the *Current Component* area, key in *Ditch\_Width* for the *Name*.
- 212.Set the *Style* to **Breakline**.
- 213.Set the *Target Type* to Feature XYZ.
- 214.Set the *Surface* to **12345DES\_Northbound**.
- 215.Set the *Feature* to Northbound-Conc\_EOP-Top.
- 216.In the Dynamic Settings dialog box, select EOP for the Point Name.
- 217. Move the cursor to the template origin (0.00, 0.00) and **<D>** to place the point.
- 218.In the *Dynamic Settings* dialog box, key in *NB\_EOP* for the *Point Name*.
- 219.Toggle on End Condition is Infinite and Do Not Construct.
- 220.Set the key in mode to **hs=**.
- 221.Key in 48,0 in the precision key in field and press Enter.
- 222.<**R>** and select **Finish** from the right click menu.
- 223.Add a new unconstrained component.
- 224.Key in **SB\_EOP-High** for the Name.
- 225.Select **D\_Shoulder** for the *Style*.
- 226.**<D>** on the **EOP** point to start the component at the origin.
- 227. In the Dynamic Settings dialog box, key in SB\_POSS in the Point Name field.
- 228.Select **D\_POSS** for the *Point Style*.
- 229.<**D**> between and below the *EOP* and *NB\_EOP* points.
- 230.In the *Dynamic Settings* dialog box, key in *Median\_Ditch-Bottom* in the *Point Name* field.
- 231.Select **D\_DITCH-Bottom** for the *Point Style*.
- 232.<D> between and below the *SB\_POSS* and *NB\_EOP* points.
- 233.**<D>** on the **NB\_EOP** point.

234.<**R>** and select **Finish** from the right click menu. The illustration below shows the component as it appears at this point.



235.<D> <D> the **SB\_POSS** point.

236.Set the *Constraint 1 Type* to Horizontal.

237.Set the *Constraint 2 Type* to Slope.

238.Set the *Parent 1* for both constraints to EOP.

239.Key in the *12.00* for the *Value* of *Constraint 1*.

240.Key in the -0.1667 for the Value of Constraint 2.

241.**<D> Apply** to accept the changes.

242.<D> Next to select the Median\_Ditch-Bottom point.

243.In the *Point Properties* dialog box, set the *Type* to **Slope** on both constraints.

244.Set the *Parent 1* for *Constraint 1* to **SB\_POSS**.

245.Set the *Parent 1* for *Constraint 2* to NB\_EOP.

246.Key in the -0. 1000 for the Value of Constraint 1.

247.Key in the *0.1667* for the *Value* of *Constraint 2*.

248.<D> Apply.

The shape of the ditch is now fixed. Now display Rules must be added to control when this component is displayed.

- 249.<D> <D> on the line forming the ditch to display the *Component Properties* for the *SB\_EOP-High* component.
- 250.In the *Component Properties* dialog box, **<D>** the **Edit** button. This displays the *Component Display Conditional Expression* dialog box.
- 251.In the *Component Display Conditional Expression* dialog box, **<D>** the **Add** button. This displays the *Display Rule* dialog box.

252.In the *Display Rule* dialog box, key in *SB\_EOP\_HIGHWidth-Max* for the *Name*.

253.Key in Sets maximum width for ditch for the Description.

254.Set the *Type* to Absolute Horizontal.

- 255.Set Between to Median\_Ditch-Bottom.
- 256.Set And to NB\_EOP.
- 257.Set the operator to < and key in **12.00** for the value. The dialog box with completed entries is illustrated below:

🐂 Display Ri	ule		×
Name:	SB_EOP_HIGHWidth-Max		ОК
Description:	Sets maximum width for ditch		Cancel
Type:	Absolute Horizontal		Help
Between:	Median_Ditch-Bottom	+	<u> </u>
And:	NB_EOP	+	
	< ▼ 12.00		

258.<D> OK. This dismisses the *Display Rule* dialog box.

259.In the Component Display Conditional Expression dialog box, <D> the Add button.

260.In the Display Rule dialog box, key in SB\_EOP\_HIGHWidth-Min for the Name.

261.Key in Sets minimum width for ditch for the Description.

262.Set the *Type* to Horizontal.

263.Set *Between* to **SB\_POSS**.

264.Set And to Median\_Ditch-Bottom.

265.Set the operator to < and key in **0.00** for the value. The dialog box with completed entries is illustrated below:

🔚 Display R	ule		<b>X</b>
Name:	SB_EOP_HIGHWidth-Min		ОК
Description:	Sets minimum width for ditch		Cancel
Туре:	Horizontal		Help
Between:	SB_POSS 🗸	+	
And:	Median_Ditch-Bottom 👻	+	
	<  .00		

266.<D> OK. This dismisses the *Display Rule* dialog box.

- 267.In the *Component Display Conditional Expression* dialog box, highlight **SB\_EOP\_HIGHWidth-Max** in the *Template Display Rules* area.
- 268. **<D>** the **Selected Rule** button.

269.**<D>** the **AND** button.

270.Highlight SB\_EOP\_HIGHWidth-Min in the Template Display Rules area.

271.<D> the Selected Rule button. The dialog box with completed entries is illustrated below:

Komponent Display Conditional E	rpression				- • •
Conditional Expression for SB_EOP-Hig	h Component				OK
SB_EOP_HIGHWidth-Max AND SB_E0	DP_HIGHWidth-Min		-	[]	Cancel Help
AND OR NOT (	) Selected Rule				
Name Type	Expression	Test	Value	Result	
SB_EOP_HAbsolute Horizontal	Median_Ditch-Bottom - NB_EOP	<	12.00	False	
SB_EOP_HHorizontal	SB_POSS - Median_Ditch-Bottom	<	0.00	True	
		Add	Edit	Delete	]

- 272.<D> OK. This dismisses the *Component Display Conditional Expression* dialog box and adds the rule to the component properties of *SB\_EOP High*.
- 273.<D> the Apply button the <D> the Close button to dismiss the Component Properties dialog box.

This completes the *Compound Ditch SB\_EOP High* component. All of the variable median ditch components can be placed into a single section.

## Section Summary:

- The components use an end condition to find the edge of the northbound pavement. This is so that the component can be tested before it is added to the template. The same results can be accomplished with a null point and a point control.
- Display rules are used to define when a component will be used.
- Different Styles are used for the ditch line in each component. This is done to facilitate troubleshooting. Once the components are assembled into a section and it is working properly, the styles will be set to match for each component.

## Lab 25.2 - Assemble the Components into a Section

Now that the individual components for the variable median ditch are built, they can be assembled into a section.

## Section Objectives:

- Create a new folder for the variable median ditch section.
- Create a new template for the variable median ditch section.
- Add the components to the section.

- Delete the redundant end condition components.
- Add additional display rules so that only one component is displayed at a time.

The first step is to create the folder and template for the variable median ditch section.

- 1. Expand the **3** Sections End Conditions folder of the template library.
- 2. **<R>** on the **3 Sections End Conditions** folder and select **New > Folder** from the right click menu.
- 3. Key in *Variable Median Ditch* for the folder name.
- 4. **<R>** on the **Variable Median Ditch** folder and select **New > Template** from the right click menu.
- 5. Key in *Variable Median Ditch* for the template name. The new template is automatically opened for editing.

Now the components can be placed into the new template.

- 6. **<D>** on the **6:1/6:1\_V\_Ditch** component so that it is displayed in the preview window.
- 7. Drag the component by its origin (the green dot in the upper left corner) and drop it on the origin in the template view.



8. Repeat steps 6 and 7 with the Compound Ditch NB\_EOP High, Compound Ditch NB\_EOP High, and Standard Compound Ditch.

Because each component has the same end condition in it, the Variable Median Ditch section now has four identical end conditions. Three of these end conditions are deleted to remove redundancies in the template. Because the same point names are used in each component, deleting the extra end conditions will not affect how the individual components operate.

- 9. **<D>** the **Active Template** tab at the bottom of the Template Library tree view.
- 10. Expand the **Components** folder.
- 11. **<R>** on **Ditch\_Width1** and select **Delete** from the right click menu.



12. **<D> Yes** on the delete warning message box.



13. Repeat steps 10 through 12 for Ditch\_Width2 and Ditch\_Width3.

Next, test the section and see how each of the components behave.

- 14. **<D>** the **Test** button.
- 15. In the *Test End Conditions* dialog box, **<D>** the **Draw** button.

16. Move the cursor around slowly in the view area. Notice that there are two instances when two components are displayed at the same time. These occur when the horizontal distance between the EOP and NB\_EOP is less than 24' and there is an elevation difference between the points.



This is fixed by adding two more display rules to the V\_Ditch component.

- 17. **<D> Close** to dismiss the *Test End Conditions* dialog box.
- In the *Create Templates* dialog box, <D> <D> on the V\_Ditch component in the *Active Template* tree view. This opens the *Component Properties* dialog box.



- <D> the Edit button to display the *Component Display Conditional Expression* dialog box.
- In the *Component Display Conditional Expression* dialog box, <D> the Add button to display the *Display Rule* dialog box.
- 21. In the Display Rule dialog box, key in NB\_EOP-High-Displayed for the Name.
- 22. Key in **NB\_EOP-High is displayed** for the **Description**.
- 23. Set the *Type* to Component is Displayed.
- 24. Set the *Component* to NB\_EOP-High. The dialog box with completed entries is illustrated below:

🐂 Display R	ule		×
Name:	NB_EOP-High-Displayed		ОК
Description:	NB_EOP-High is displayed		Cancel
Type:	Component is Displayed 🗸		Help
Component:	NB_EOP-High	+	

25. **<D>** the **OK** button. This dismisses the *Display Rule* dialog box and adds the new rule to the Template Display Rules list on the *Component Display Conditional Expression* dialog box.

**Note:** The Template Display Rules list contains all of the rules created thus far in the lab.

- In the *Component Display Conditional Expression* dialog box, <D> the Add button to display the *Display Rule* dialog box.
- 27. In the *Display Rule* dialog box, key in *SB\_EOP-High-Displayed* for the *Name*.
- 28. Key in **SB\_EOP-High is displayed** for the **Description**.
- 29. Set the *Type* to **Component is Displayed**.
- 30. Set the *Component* to **SB\_EOP-High**. The dialog box with completed entries is illustrated below:

🔚 Display R	ule	×
Name:	SB_EOP-High-Displayed	ОК
Description:	SB_EOP-High is displayed	Cancel
Туре:	Component is Displayed 🔹	Help
Component:	SB_EOP-High	

31. **<D>** the **OK** button.

32. In the *Component Display Conditional Expression* dialog box, **<D>** in the *Conditional Expression for V\_Ditch* area to the right of the *V\_DitchWidth* entry.

Compon	ent Display Conditional Exp	pression					•
Conditional	Expression for V_Ditch Compo	onent					эк
V_DitchWi	dth   🔫	<pre> <d> Here</d></pre>		* *			inci lelp
AND Femplate Dis	OR NOT (	) Selected Rule					
Name	Туре	Expression	Test	Value	Result	<u> </u>	
Compound_	Vertical	NB_POSS - Median_Ditch-Bottom1	>	0.00	True		
Compound_	Absolute Horizontal	EOP - Median_Ditch-Bottom1	<	12.00	False		
NB_EOP-Hi	Component is Displayed	NB_EOP-High			True	=	
SB EOP H	Absolute Horizontal	Median_Ditch-Bottom2 - NB_EOP	<	12.00	False		
SB_EOP_H	Horizontal	SB_POSS - Median_Ditch-Bottom2	<	0.00	True		
SB_EOP-Hi.	Component is Displayed	SB_EOP-High			False		
StandardCo.	Horizontal	SB_POSS1 - NB_POSS1	<	0.00	True		
Std_Compo.	. Vertical	NB_POSS1 - Median_Ditch-Bottom3	>	0.00	True	-	
•						P.	
•		m	Add	Edit	De	▶ lete	

- 33. **<D>** the **AND** button.
- 34. **<D>** the **NOT** button.
- 35. Highlight the NB\_EOP-High-Displayed rule in the *Template Display Rules* list.
- 36. **<D>** the Selected Rule button.
- 37. **<D>** the **AND** button.
- 38. **<D>** the **NOT** button.
- 39. Highlight the SB\_EOP-High-Displayed rule in the Template Display Rules list.

40. **<D>** the **Selected Rule** button. The dialog box with completed entries is illustrated below:

	ression					- 0
Conditional Expression for V_Ditch Compo	nent				(	0
V_DitchWidth AND NOT NB_EOP-High-I	Displayed AND NOT SB_EOP-High-Displayed		* *			Cano Hel
AND OR NOT (	Selected Rule					
Name Type	Expression	Test	Value	Result	*	
Name Type CompoundVertical	Expression NB_POSS - Median_Ditch-Bottom1	Test	Value 0.00	Result True	-	
Name Type CompoundVertical CompoundAbsolute Horizontal	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1	Test > <	Value 0.00 12.00	Result True False		
Name Type CompoundVetical CompoundAbsolute Horizontal NB_EOP.HiComponent is Displayed	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High	Test > <	Value 0.00 12.00	Result True False True	E	
Name Type CompoundVertical CompoundAbsolute Horizontal NB_EOP-HComponent is Displayed SB_EOP_HAbsolute Horizontal	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High Median_Ditch-Bottom2 - NB_EOP	Test > <	Value 0.00 12.00 12.00	Result True False True False	E	
Name         Type           CompoundVertical         CompoundAbsolute Horizontal           NB_EOP-HiComponent is Displayed         SB_EOP.HAbsolute Horizontal           SB_EOP.HHorizontal         SB_EOP.HHorizontal	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High Median_Dtch-Bottom2 - NB_EOP SB_POSS - Median_Ditch-Bottom2	Test < < < < < < </ </td	Value 0.00 12.00 12.00 0.00	Result True False True False True	E	
Name         Type           CompoundVertical         CompoundAbsolute Horizontal           NB_EOP-HiComponent is Displayed         SB_EOP_HAbsolute Horizontal           SB_EOP_HAbsolute Horizontal         SB_EOP_HBorizontal           SB_EOP.HComponent is Displayed         SB_EOP_HComponent is Displayed	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High Median_Ditch-Bottom2 - NB_EOP SB_POSS - Median_Ditch-Bottom2 SB_EOP-High	Test > < < < < < </ </td	Value 0.00 12.00 12.00 0.00	Result True False True False True False	E	
Name         Type           CompoundVertical         CompoundAbsolute Horizontal           NB_EOP-HiComponent is Displayed         SB_EOP_HAbsolute Horizontal           SB_EOP_HHorizontal         SB_EOP_HBosinate           SB_EOP_HComponent is Displayed         StandardCoHorizontal	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High Median_Ditch-Bottom2 - NB_EOP SB_POSS - Median_Ditch-Bottom2 SB_EOP-High SB_POSS1 - NB_POSS1	Test > < < < < < < < < < < < < < < < < < <	Value 0.00 12.00 12.00 0.00 0.00	Result True False True False True False True	E	
Name         Type           CompoundVertical         CompoundAbsolute Horizontal           NB_EOP-HiComponent is Displayed         SB_EOP_HAbsolute Horizontal           SB_EOP_HHorizontal         SB_EOP_HIGomponent is Displayed           StandardCoHorizontal         StandardCoHorizontal           Std_CompoVertical         Std_Compo	Expression NB_POSS - Median_Ditch-Bottom1 EOP - Median_Ditch-Bottom1 NB_EOP-High Median_Ditch-Bottom2 - NB_EOP SB_POSS - Median_Ditch-Bottom2 SB_EOP-High SB_POSS1 - NB_POSS1 NB_POSS1 - Median_Ditch-Bottom3	Test	Value 0.00 12.00 12.00 0.00 0.00 0.00	Result True False True False True False True True	E	

- 41. **<D>** the **OK** button to accept the changes and dismiss the dialog box.
- 42. On the Component Properties dialog box, **<D> Apply** then **<D> Close**.

Component Prop	erties		×
Name:	V_Ditch	+	Apply
Description:			Close
Style:	D_MEDIAN   Close Shape		< Previous
Parent Component:	+		Next >
Display Rules:	V_DitchWidth AND NOT NB_EOP-High-Disp	Edit	
Exclude from triang	ulation		Help

- 43. Test the section again. Notice that only one component at a time is displayed.
- 44. **<D> Close** on the *Test End Conditions* dialog box.
- 45. Select **File > Save** from the *Create Template* menu bar.

The Variable Median Ditch section is ready to be used on a template.

## Section Summary:

- As components were added to the section, common points were merged but common components (like the end conditions) are not.
- Use the Active Template tree view to access components that are not displayed.
- Additional display rules can be used to turn off a component when two are displayed at the same time.

# Lab 25.3 - Adding the Section to a Template and Reviewing the Corridor

The variable median ditch section can now be added to the template and used in the design corridor.

## Section Objectives:

- Add the variable median ditch to the southbound backbone template.
- Update the corridor to use the modified template.
- Examine the results in the Roadway Designer dialog box.
- 1. **<D>** the **Library** tab to show the *Template Library* tree view.
- 2. Expand the **1 Templates** folder.
- 3. **<D> <D>** on the **Southbound** template to make it active.



- 4. **<D>** on the **Variable Median Ditch** section (in the *3 Sections End Conditions > Variable Median Ditch*) to display it in the Preview area.
- 5. In the Preview area, **<D> and hold** on the *Variable Median Ditch* origin.



6. Drag the section into the template view and Drop it on the SB RT EOP point.

- 7. Select **File > Save** from the *Create Template* menu bar.
- 8. **<D> Close** on the *Create Template* dialog box.

The template is now ready to use in the corridor.

- 9. From the InRoads main menu bar, select **Modeler > Roadway Designer**. This displays the *Roadway Designer* dialog box.
- 10. In the *Roadway Designer* dialog box, verify that the Southbound corridor is active.

+-44+		+_0	<b>4</b>		
Corridor:	Southbound 👻	Station:	<u>k</u> <	1360+19.10	≥ ≥ ≠
Active Surface:	12345SURV_Existing_Ground_	Interval:		25.00	
		Template:		SB CONC with LT Cut/F	

- 11. Select **Corridor > Template Drops** from the Roadway Designer menu bar.
- 12. Highlight the entry in the Current Template Drops list.
- 13. **<D>** the **Synchronize with Library** button.

	late Drop	os			- 0 🔀
Corridor:	Southb	ound			Add
Station:	1397+0	0.00		+	Close
Interval:	25.00			+	Change
Library Te	mplates:				
	← CONO ← CONO ← HMA ← HMA ← HMA ← HMA ← North	C_Divided_Type/ C_Ramp _Crowned_B10 _Divided_TypeA _Full_Depth_Wid _Urban_4Lane bound	A_4 ▲ _4L =		Help
	South	bound Powenet	ν. Ε	1	
Current Te	South	Props:	+	/	
Current Te Station	emplate D	bound Props: Template	Revi	Library	ts\12345\D

14. <D> Close to dismiss the Template Drops dialog box.

- 15. Scroll through the stations watching the template view. Notice the changes in the median ditch (especially around stations 1407+25 and 1415+75,). The different styles used on the median ditch components make it easy to spot when the component changes.
- 16. On the Roadway Designer menu bar, select **File > Save** to save the modified ird file.
- 17. **<D> Close** on the *Roadway Designer* dialog box.
- 18. Close InRoads and MicroStation.

### Section Summary:

- The variable median ditch requires no further editing to be used in the template.
- Always check the Template Drops after editing templates.
- After examining the corridor, go back and change the styles of the median ditch components so they match.

## Chapter Summary:

- Build complex sections in smaller components that can be tested prior to assembling the whole thing.
- Use display rules to select a single component when more than one can be displayed.
- Use different styles to facilitate trouble shooting.