LAB 26 - Using Walls in a Corridor Run

Walls Are used to reduce the width of sideslopes in areas restricted by right of way, roads or other structures, or natural obstacles. Other labs in this series describe the design of independent walls. In this lab, walls are used as part of the template in a corridor run.

Chapter Objectives:

- Modify an existing wall component for a specific situation.
- Add the modified wall component to a template.
- Construct a new wall component that targets a surface feature.

The Following files are used in this lab:

- C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Walls-Lab.dgn
- C:\Projects\12345\Design\InRoads\12345DES_Walls-Lab.alg
- C:\Projects\12345\Design\InRoads\12345DES_Walls-Lab.ird
- C:\Workspace\Workspace-CDOT_XM\Standards-Global\InRoads\Templates\ CDOT_Template-Library.itl
- C:\Projects\12345\DesignROW_Survey\InRoads\DTM\12345 Walls-Lab.dtm

Each of these walls are applied to the same corridor. The wall component that is currently in the library is used on the right side of the template. The new wall component, that is built as part of the lab, is used on the left side.

Lab 26.1 - Add an Existing Wall Component to a Template

The existing wall component has the basic layout needed for this project. It just needs a couple of minor alterations to make it fit into the location where it is used. In this exercise, the wall component is added to the template and the minor changes are made.

- 1. Open MicroStation and InRoads using the C:\Projects\12345\Design\Drawings\ Reference_Files\12345DES_Walls-Lab.dgn file.
- 2. Load the following files into InRoads:
 - C:\Projects\12345\Design\InRoads\12345DES_Walls-Lab.alg
 - C:\Projects\12345\Design\InRoads\12345DES_Walls-Lab.ird
 - C:\Projects\12345\ROW_Survey\InRoads\DTM\12345 Walls-Lab.dtm
 - C:\Workspace\Workspace-CDOT_XM\Standards-Global\InRoads\ Templates\CDOT_Template-Library.itl
- 3. Verify that the C:\Workspace\Workspace-CDOT_XM\Standards-Global\ InRoads\ Preferences\CDOT_Civil.xin file is loaded.
- 4. In the InRoads explorer, **<D>** the **Template** tab.

5. **<R>** on the **CDOT_Template-Library** and select **Save As** from the right click menu.



- 6. In the **Save As** dialog box, verify that the **C:\Projects\12345\Design\InRoads**\ directory is selected.
- 7. In the *File name* field, key in *DES12345_Walls-Lab*.
- 8. **<D> Save** then **<D> Cancel**.
- 9. From the InRoads menu bar, select **Modeler > Create Template**.
- 10. In the *Create Template* dialog box, expand the C:\Projects\12345\Design\ InRoads\DES12345_Walls-Lab > 1 - Templates folder.
- 11. **<R>** on the **CONC_Ramp** template and select **Copy** from the right click menu.

2				
Create Template				
File Edit Add Tools				
Template Library: \Projects\12345\Design\InRo Point Name List 1 - Templates	Roads\DES A_4Lane Set Acti	Current Template Name: Description:		
HMA_Divided_Typ	Cut	Cut		
HMA_Full_Depth_	Сору		Ctrl-C	
2 - Sections - Pavemen	Paste		Ctrl-V	
3 - Sections - End Conc 4 - Components	Delete		Del	
	Rename	2	F2	
	Templa	te Documentation Link		
	Display.			

12. **<R>** on the **1** - **Templates** folder and select **Paste** from the right click menu. This creates the *CONC_Ramp1* template.



- 13. **<R>** on the **CONC_Ramp1** template and select **Rename** from the right click menu.
- 14. Key in *CONC_Ramp_with_Walls* for the name.
- 15. <D> <D> on the CONC_Ramp_with_Walls template to make it active. Display the *Dynamic Settings* dialog box.
- 16. In the Dynamic Settings dialog box, set the Steps to O. 10.
- 17. Toggle on **Apply Affixes**.

Dynamic Settings	;
X: -35.47	Step: 0.10
Y: -22.48	Step: 0.10
Point Name:	
Point Style:	
Apply Affixes	
hs= 🔻	
Set Dyna	amic Origin

18. Delete the POSS and end condition components from the right side of the template. The illustration below shows the template with the components deleted.



Next, the RT_SubBase_EOP-Top point is moved to line up under the RT_ABC_EOP-Top point. This is so that it will not overlap into the wall base.

- <D> <D> on the RT_SubBase_EOP-Top point to display the *Point Properties* dialog box.
- 20. Change the *Constraint 1 Type* from *Slope* to Horizontal.

- 21. Key in **0.00** for the Value.
- 22. **<D>** the **Apply** button then **<D> Close** to dismiss the dialog box.

Point Properties		X
Name:	Charles Charles 1.1	
Name.	Change Constraint 1	▼ <u>+</u> Apply
Feature Name Override:	RT_SubBase_EOP-Top	Close
Surface Feature Style:	D_EOP	Previous
Alternate Surface:		
		Next >
	Member of:	Help
	ABC Lane-La	aver
		-5
Constraints		
Constra	int 1 C	ionstraint 2
Type: Horizontal	▼ Vector	or-Offset 🔹
Parent 1: RT_ABC_E	OP-Top 👻 🕂 SubB	ase_Laneline-1 🔻 🛨
Parent 2:	RT_S	SubBase_Hinge 👻 🕂
Value: 0.00	0.00	
Label:		
Style Constraint:		-
Horizontal	Vertical 💿 Both	
Range: 0.00		
0.00		

Now the wall component can be added to the template.

- 23. In the Template Library explorer, expand the folders to show the contents of the C:\Projects\12345\Design\InRoads\DE\$12345_Walls-Lab.itl > 4 Components > Barriers & Misc Components > Walls folder.
- 24. **<D>** on the **WingWall_Cast-in-Place-Fixed-Base** component to display it in the *Preview* window.
- 25. **<D> and hold** on the wall component's origin (the far left point).



26. Drag and drop it onto the *RT_Conc_EOP-Top* point.

Currently, the wall is set 4 feet from the pavement edge. If the wall is extended to its full height, the footer of the wall will expand into the ABC material of the ramp. To correct this problem, the wall is moved 1 foot to the right.

- 27. **<D> <D>** on the **RT_Wall_Top-Back** point to display the *Point Properties* dialog box.
- 28. In the *Point Properties* dialog box, Change the *Value* of *Constraint 2* (the Horizontal constraint) to *5.83*.

29. **<D> Apply** then **<D> Close** to dismiss the dialog box.

Point Properties		×
Name:	RT_Wall_Top-Back 👻 🖶	Apply
Feature Name Override:	RT_Wall_Top-Back	Close
Surface Feature Style:	D_Wall-Wing ▼	Desidente
Alternate Surface:		Frevious
		Next >
	Member of:	Help
	RT_Fill RT_WingWall+10 RT_WingWall+11 RT_WingWall+12 RT_WingWall+13 RT_WingWall+14	* III +
Constraints		
Type: Slope	Horizontal	•
Parent 1: RT_Height	_Determir - + RT_Conc_EOP-Top	
Parent 2: Rollov	ver Values	
Value: 50.00%	5.83	
Label:	•	Ŧ
Style Constraint:	· · · · · · · · · · · · · · · · · · ·	
Horizontal	Vertical 🔘 Both	
Range: 0.00		

This has moved the wall 1 foot to the right. It has also left a gap between the wall and the segment that connects the wall to the rest of the template. Next this gap is closed and a shallow "V" ditch is created between the wall and pavement edge.

- 30. **<D> <D>** on the **RT_SwaleToe** point.
- 31. In the *Point Properties* dialog box, Set the *Constraint 2 Type* to Vector-Offset.
- 32. Set the *Constraint 2 Parent 1* to **RT_Wall_Top-Front**.
- 33. Set the *Constraint 2 Parent 2* to **RT_Wall_Base-Front**.
- 34. Key in **0.00** for the Constraint 2 Value.

17.08		
M Point Properties		×
Name:	RT_SwaleToe 👻 🕈	Apply
Feature Name Override:	RT_SwaleToe	Close
Surface Feature Style:	D_Top-of-Cut 🔻	
Alternate Surface:		< Previous
		Next >
	Marsharaf	Help
	Member or:	0.1.1
	RI_Base_Elevation	Control
Constraints		
Constra	int 1 Constrair	nt 2
Type: Slope	▼ Vector-Offse	t 🔻
Parent 1: RT_Conc_	EOP-Top 🔻 🕂 RT_Wall_To	p-Front 🔻 🕂
Parent 2: 🔲 Rollov	rer Values RT_Wall_Ba	se-Fron 🔻 🕂
Value: 0.00%	0.00	
Label:		_
Style Constraint:		
	· · · · · · · · · · · · · · · · · · ·	
O Horizontal	Vertical OBoth	
Range: 0.00		
0.00		

35. **<D> Apply** then **<D> Close** to dismiss the dialog box.

36. **<R>** on the **RT_Base_Elevation_Control** component (the line that connects the Wall with the pavement edge) and select **Insert Point** from the right click menu.

RT Conc EC	P-Top	RT SwaleToe	RT
	Add New	Component	+
	Template	Documentation Lin	k
RT_ABC_Him	Check Poi	int Connectivity	
RT. SubBase	Delete Co	mponents	
	Change T	emplate Origin	
· · · · · · · · · · · · · · · · · · ·	Delete Co	nstraints from All Po	oints
·····	Edit Com	ponent	
	Insert poir	nt	
	Add Point	:	
	Unmerge	Component Points	
	Set Comp	onent Display Rules	
0 32 34	Delete Co	mponent	
	Set Dynan	nic Origin	Ctrl-D

- RT_VEBILVOIDE FormBack Place the new point here RT_Conc_EOP-Top RT_SwaleToe RT_ABC_HHIGEABOP_EOP-VEBIT RT_ABC_HHIGEABOP_EOP-VEBIT RT_SubBatchkliggecToestraint 1 RT_SubBatchkliggecToestraint 1 RT_Wall_Toe-Bottow(all_Heel_Bottom
- 37. Place the point between and below the RT_Conc_EOP-Top and RT_SwaleToe points.

- 38. **<D> <D>** on the new point to display the *Point Properties* dialog box.
- 39. In the *Point Properties* dialog box *Name* field, key in **RT_Ditch-Bottom**.
- 40. Set the *Surface Feature Style* to **D_Ditch-Bottom**.
- 41. Set the *Type* for both constraints to **Slope**.
- 42. Set the *Parent 1* for *Constraint 1* to **RT_Conc_EOP-Top**.
- 43. Set the *Parent 1* for *Constraint 2* to **RT_SwaleToe**.
- 44. Key in -8.33% for the Value of Constraint 1.
- 45. Key in 8.33% for the Value of Constraint 2.

46. **<D> Apply** then **<D> Close** to dismiss the dialog box. The illustration below shows the dialog box as completed

Point Prope	erties				X
Name:		RT_Ditch-	Bottom	+	Apply
Feature Name (Override:				Close
Surface Feature	e Style:	D_DITCH	-Bottom	•	< Previous
Alternate Su	iface:			-	Next
					Help
			Member	r of:	
			КІ_Ва	se_Lievation_(Lontroi
Constraints	Constrai	int 1		Constraint	2
			_		-
Type: SI	оре		-	Slope	-
Type: SI Parent 1: R	ope T_Conc_l	EOP-Top	•	Slope RT_SwaleToe	 →+
Type: SI Parent 1: R Parent 2:	ope T_Conc_I Rollov	EOP-Top	• • •	Slope RT_SwaleToe	▼ ▼ + Values
Type: SI Parent 1: R Parent 2: Value: -8	ope T_Conc_f Rollov .33%	EOP-Top • er Values	• +	Slope RT_SwaleToe Rollover 8.33%	▼ ▼ Values
Type: SI Parent 1: R Parent 2: Value: -8 Label:	ope T_Conc_[Rollov .33%	EOP-Top	• +	Slope RT_Swale Toe Rollover 8.33%	Values
Type: Si Parent 1: R Parent 2: Value: -8 Label: Style Cons	ope T_Conc_[Rollov .33% traint:	EOP-Top	• +	Slope RT_Swale Toe Rollover 8.33%	Values
Type: Si Parent 1: R Parent 2: Value: -8 Label: Style Cons	ope T_Conc_f Rollov .33% traint: (ontal (EOP-Top er Values Vertical	•	Slope RT_SwaleToe Rollover 8.33% Both	Values
Type: Si Parent 1: R Parent 2: Value:	ope T_Conc_I Rollov .33% traint: (ontal (0.00	EOP-Top er Values	•	Slope RT_SwaleToe Rollover 8.33% Both	Values

This completes the edits to the template.

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

48. **<D>** the **Close** button on the *Create Template* dialog box to dismiss it.

Now, examine how the template behaves in Roadway Designer.

- 49. Select **Modeler > Roadway Designer** from the InRoads menu bar.
- 50. From the *Roadway Designer* menu bar, select Corridor > Template Drops.
- 51. In the Template Drops dialog box, highlight the entry in the Current Template Drops area.
- 52. Expand the Template library folder to show the contents of the *1 Templates* folder.
- 53. Highlight the CONC_Ramp_with_Walls template from the Library Templates list.



54. **<D> Change** then **<D> Close** to dismiss the dialog box.

- 55. Scroll through the template drops in the Cross Section view of the Roadway Designer dialog box.
- 56. Verify that the wall is expanding and contracting to meet the existing ground.
- 57. Select File > Save from the *Roadway Designer* dialog box.
- 58. **<D> Close** to dismiss the dialog box.

Section Summary:

- The Wall_Top-Back point is the controlling point for the wall component's shape. Change its horizontal constraint to move the wall away from or closer to the template origin.
- Adjust the horizontal constraint on the Height Control Point to change the width of the Fill component that extends from the back of the wall to the existing ground.
- Aside from the Wall_Top-Back, SwaleToe, and Height _Control_Point try not to edit other points on the wall component as these can change the shape of the visible component but not the hidden components.

Lab 26.2 - Creating a Custom Wall

There are cases where the wall components in the template library are not suited for the situation under design. In the exercise below, a wall is required on the left side of the template from station 1+50 to the end of the project. The height of the wall is determined by running a 10 to 1 slope from a target feature in the existing ground dtm up to the base of the wall.

Section Objectives:

- Make a copy of the CONC_Ramp_with_Walls template.
- Add an end condition that seeks a surface feature.
- Build the slope component from the targeted feature to the base of the wall.
- Build the wall components.
- Update the corridor to use the templates.

First, a copy of the CONC_Ramp_with_Walls template is made. This template is used for the first 150' of the project.

- 1. From the InRoads menu bar, select **Modeler > Create Template**.
- In the Create Template dialog box, expand the C:\Projects\12345\Design\ InRoads\DE\$12345_Templates-Overlay.itl > 1 - Templates folder.
- 3. **<R>** on the **CONC_Ramp_with_Walls** template and select **Copy** from the right click menu.
- 4. **<R>** on the **1 Templates** folder and select **Paste** from the right click menu. This creates the *CONC_Ramp_with_Walls1* template.
- 5. **<R>** on the **CONC_Ramp_with_Walls1** template and select **Rename** from the right click menu.
- 6. Key in *CONC_Ramp_with_Wall-Rt* for the name.

The CONC_Ramp_with_Wall-Rt template is used for the first 150' of the project. The CONC_Ramp_with_Walls template will be modified with a wall on the left side and is used on the remainder of the project.

7. Verify that the **CONC_Ramp_with_Walls** template is active.

8. Delete the POSS and end condition components from the left side of the template. The illustration below shows the template with the left end conditions deleted:



- 9. Display the *Dynamic Settings* dialog box.
- 10. In the *Dynamic Settings* dialog box, verify that the *Steps* are set to *0.10*.
- 11. Verify that **Apply Affixes** is toggled on.
- 12. **<R>** in a blank area of the template view and select **Add New Component > End Condition** from the right click menu.
- 13. In the *Current Component* area, key in *10:1 Fill* for the *Name*.
- 14. Set the *Style* to **D_Toe-of-Fill**.
- 15. Set the *Target Type* to Feature XYZ.
- 16. Set the *Surface* to **12345_Walls-Lab**.
- 17. Select **03101311** for the *Feature*.

+ +	မ်ားမေးလ•တဲ့ ∢		
Name: 10:1 Fill		Style: D_Toe	⊷of-Fill 🔻
Target Type:	Feature XYZ 🔹	Priority:	1
Surface		Benching Count:	0
Feature: 🗸 03101311		From Datum:	0.00
Horizo	ntal Vertical	Step Elevation:	0.00
Offsets: 0.00	0.00	Rounding Length	0.00

- 18. **<D>** on the **HMA_GRAIL-Top** point.
- 19. In the *Dynamic Settings* dialog box, toggle on **End Condition is Infinite** and **Do Not Construct**.

20. Select **Toe-of-Fill** for the **Point Name**.

Dynamic Sett	ngs					
X: 0.90	Step:	0.10				
Y: 1.10	Step:	0.10				
Check for	Interception					
V Place Poir	nt at Intercept	tion				
End Cond	tion is Infinite					
Do Not Co	instruct					
Point Name:	Toe-of-F	ill 🔻				
Point Style: D_Toe-of-Fill						
Apply Affixes						
hs=	•					
Set	Dynamic Orig	in				

- 21. **<D>** below and to the left of the **HMA_GRAIL-Top** point.
- 22. **<R>** and select **Finish** from the right click menu. The only thing that is displayed is a single point (LT_Toe-of-Fill).



This component is only used to locate the feature. The slope and wall will be built back from this point to the rest of the template.

Next, the ABC component is modified on the left side and the Wall component is added.

- 23. **<D> <D> the LT_SubBase_EOP-Top** point to display the *Point Properties* dialog box.
- 24. In the *Point Properties* dialog box, change the *Slope* constraint to a **Horizontal** constraint (Constraint 1 in this example).

25. Key in *0.00* for the *Value* of the *Horizontal* constraint. This moves the point out of the way of the wall.

Maint Properties			×
Name:	LT_SubBase_EO	P-Top 👻 💠	Apply
Feature Name Override:	LT_SubBase_EO	P-Top	Close
Surface Feature Style:	D_EOP	-	< Previous
Alternate Surface:		-	Next
	Membe	r of:	Help
	ABC_I	ane-Layer	
Constraints			
Constra	int 1	Constraint	2
Type: Horizontal	-	Vector-Offset	•
Parent 1: LT_ABC_E	OP-Top ▼ +	SubBase_Lan	eline-1 🔻 🕂
Parent 2:		SubBase_Sho	ulder- 👻 🕂
Value: 0.00		-0.00	
Label:	•		•
Style Constraint:		-	
e Horizontal	Vertical	Both	
Range: 0.00			

- 26. **<D> Apply** then **<D> Close** to dismiss the dialog box.
- 27. **<R>** in a blank area of the template view and select **Add New Component > Unconstrained** from the right click menu.
- 28. In the *Current Component* area, key in *Fill Slope* for the *Name*.
- 29. **<D>** on the **LT_Toe-of-Fill** point.
- 30. In the *Dynamic Settings* dialog box, key in *Toe-at-Wall* for the *Point Name*.
- 31. Verify that the *Style* is set to **D_Toe-of-Fill**.

32. **<D>** just to the left and below the guardrail asphalt component as shown in the illustration below:

0.4 Second point 0.2 for Fill Slope	HMA_GRAIL_TPConc_EOP-Top SubBase_GRAIL_TOBE_GRAIL-Top1	Conc_Shoulder-Top	
-0:2 -0:4 -0:6	T_Toe-al-Wall		
-0.8 -1.0	LT_ABC_EORE CPHinge-Top	ABC_Shoulder-Top	
-1:4	LT_SubBase_EOP-Top	SubBase, Shoulder-Top	
-1:6 -1:8			

- 33. **<R>** and select **Finish** from the right click menu. Constraints will be added to the *LT_Toe-at-Wall* point after the wall component is added.
- 34. **<R>** in a blank area of the template view and select **Add New Component > Unconstrained** from the right click menu.
- 35. In the *Current Component* area, key in *Wall* for the *Name*.
- 36. Select **D_Wall-Retaining** for the *Style*.
- 37. **<D>** on the **HMA_GRAIL-Top** point.
- 38. In the *Dynamic Settings* dialog box, key in *Wall_Base-Back* for the *Point Name*.
- 39. Set the *Style* set to **D_Wall-Retaining**.
- 40. **<D>** directly below the **HMA_GRAIL-Top** point about half way through the ABC component.
- 41. In the *Dynamic Settings* dialog box, key in *Wall_Base-Front* for the *Point Name*.
- 42. Move the cursor to the left until the *X* coordinate reads -3.90 in the *Dynamic Settings* dialog box then **<D>**.
- 43. In the *Dynamic Settings* dialog box, key in *Wall_Top-Front* for the *Point Name*.
- 44. Move the Cursor straight up and **<D>** near the level of the *HMA_GRAIL-Top* point.

45. **<R>** and verify that *Closed Shape* is toggled on, then select **Finish** to complete the component. The illustration below shows the new wall component.

· _									
• · · · [Finish	Enter							
	Closed Shape	Ctrl-L	LT_	TANNA' GHRAT	L-Top_				
) [Mirror	Ctrl-M		Published C		EOP-Top			
	Undo Last	ESC	-	SubBase_G	SubBase	GRAIL-Top		hc_Should	er-Iop
	Cancel								
	Set Dynamic Origin	Ctrl-D	.						
			,⊺_loe•	-at-Wall					
	· · · · · · · · · · · · · · · · · · ·	· · · · · ·	· · · <mark>· · · ·</mark>						
				LT_ABC	- FORBG	PHinge-Top			
4				• • • • • • • • • • •			AB	C_Shoulde	er-Top
			LT	WallwBalseB	senBack				
					D FOR				
				LI_Sub	Base_EOP	- I op			
							Sut	Base_Sho	oulder-Top

- 46. **<D> <D> the LT_Wall_Base-Back** point to display the *Point Properties* dialog box.
- 47. In the *Point Properties* dialog box, set the *Constraint 1 Type* to Horizontal.
- 48. Set the *Constraint 2 Type* to Vertical.
- 49. Set the *Parent 1* for *Constraint 1* to HMA_GRAIL-Top.
- 50. Set the *Parent 1* for *Constraint 2* to LT_Wall_Base-Front.
- 51. Key in *0.00* for the *Value* of both constraints. The illustration below shows the completed dialog box.

Point Properties		×
Name:	LT_Wall_Base-	Back 🔻 🖶 Apply
Feature Name Override:	LT_Wall_Base-	Back Close
Surface Feature Style:	D_Wall-Retainin	ng
Alternate Surface:		Next >
		Next >
	Mem	Help
	LT_	Wall
Constraints		
Constra	aint 1	Constraint 2
Type: Horizontal	-	Vertical 👻
Parent 1: HMA_GRA	NL-Top 🔹 🕂	LT_Wall_Base-Front 💌 🕂
Value: 0.00		0.00
Label:	•	•
Style Constraint:		_
Horizontal	Vertical	🔘 Both
Range: 0.00		

- 52. **<D> Apply** then **<D> Close** to dismiss the dialog box.
- 53. **<D> <D>** the **LT_Wall_Base-Front** point.

- 54. Set the *Constraint 1 Type* to **Slope**.
- 55. Set the *Constraint 2 Type* to Vertical.
- 56. Set the *Parent 1* for both constraints to LT_Toe-at-Wall.
- 57. Key in 10000% for the Value of Constraint 1.
- 58. Key in **1.50** for the *Value* of *Constraint* **2**. The illustration below shows the completed dialog box.

e			
Point Properties			×
Name:	LT_Wall_Base-From	nt 🔻 🕂 🦳	pply
Feature Name Override:	LT_Wall_Base-From	nt 🗌 🗖	lose
Surface Feature Style:	D_Wall-Retaining	▼	revioue
Alternate Surface:			
			iext >
	Member	of:	Help
		u.	
	LI_Wa		
-			
Constraints		0	
Type: Slass			-
Siope		venical	<u> </u>
Parent I: LT_Toe-at-	Wall 🔻 🕂	LT_Toe-at-Wall	• •
Parent 2: 🔳 Rollov	ver Values		
Value: 10000.00%		-1.50	
Label:	•		•
Style Constraint:		-	
Horizontal	Vertical 🔘	Both	
Range: 0.00			

- 59. **<D> Apply** then **<D> Close** to dismiss the dialog box.
- 60. **<D> <D> the LT_Toe-at-Wall** point.
- 61. Set the *Type* of both constraints to **Slope**.
- 62. Set the *Parent 1* for *Constraint 1* to LT_Toe-of-Fill.
- 63. Set the *Parent 1* for *Constraint 2* to LT_Wall_Top-Front.
- 64. Key in 10.00% for the Value of Constraint 1.

65. Key in **-10000%** for the *Value* of *Constraint 2*. The illustration below shows the completed dialog box.

🐂 Point Properties		×
Name:	LT_Toe-at-Wall 🔹	+ Apply
Feature Name Override:	LT_Toe-at-Wall	Close
Surface Feature Style:	D_Toe-of-Fill 🔹	
Alternate Surface:		Nexts
		Next >
	Member of:	Help
	LT_D_Toe-of-Fill	
Constraints		
Constra	aint 1 Constr	aint 2
Constra Type: Slope	aint 1 Constr Slope	aint 2
Constra Type: Slope Parent 1: LT_Toe-of-	aint 1 Constr ▼ Slope -Fill ▼ + LT_Toe-a	aint 2 •Wall3 •
Constra Type: Slope Parent 1: LT_Toe-of- Parent 2: Rollow	aint 1 Constr Slope Frill ▼ ↓ LT_Toe-a ver Values	aint 2 -Wall3 • + ver Values
Constra Type: Slope Parent 1: LT_Toe-of- Parent 2: Rollow Value: 10.00%	-Fill + Constr Ver Values + Constr Constr Slope LT_Toe-a Rollo -10000.00	eint 2
Constra Type: Slope Parent 1: LT_Toeof: Parent 2: Rollov Value: 10.00% Label:	Fill Ver Values	ver Values
Constra Type: Slope Parent 1: LT_Toe-of- Parent 2: Rollow Value: 10.00% Label:	aint 1 Constr Fill ▼ + LT_Toe-a ver Values ← Rolo -10000.00	aint 2 Walt3 • + ver Values %
Constra Type: Slope Parent 1: LT_Toe-of- Parent 2: Rollow Value: 10.00% Label: Style Constraint: © Horizontal	Aint 1 Constr -Fil Ver Values Ver Values Vertical Both	aint 2 Wall3 • • ver Values %
Constre Type: Slope Parent 1: LT_Toe of: Parent 2: Rollow Value: 10.00% Label: Style Constraint: @ Horizontal (Range: 0.00	Aint 1 Constr Slope Fill Fill Fi	aint 2 Wall3 • + ver Values %

- 66. **<D> Apply** then **<D> Close** to dismiss the dialog box.
- 67. **<D> <D>** the **LT_Wall_Top-Front** point.
- 68. Set the *Constraint 1 Type* to Horizontal.
- 69. Set the *Constraint 2 Type* to Verfical.
- 70. Set the *Parent 1* for both constraints to HMA_GRAIL-Top.
- 71. Key in 1.00 for the Value of Constraint 1.

72. Key in **0.00** for the **Value** of **Constraint 2**. The illustration below shows the completed dialog box.

🐂 Point Properties			×
Name:	LT_Toe-at-Wall3	+	Apply
Feature Name Override:	LT_Toe-at-Wall3		Close
Surface Feature Style:	D_Wall-Retaining	•	< Previous
Alternate Surface:		-	Next >
	Membe	r of:	Help
	LT_W	all	
Constraints Constra	aint 1	Constraint 2	2
Type: Horizontal	•	Vertical	•
Parent I: HMA_GRA	IL-Top 🔻 🕂	HMA_GRAIL-T	op ▼ <u>+</u>
Value: -1.00		0.00	
Label:	•		•
Style Constraint:		-	
Horizontal	Vertical	Both	
Range: 0.00			

- 73. **<D> Apply** then **<D> Close** to dismiss the dialog box.
- 74. In the Template Library explorer, expand the folders to show the contents of the C:\Projects\12345\Design\InRoads\DE\$12345_Walls-Lab.itl > 4 Components > Barriers & Misc Components > Guardrail Type 7 folder.
- 75. **<D>** on the **Guardrail_Type 7-CD** component.
- 76. Drag the component by the origin (lower left corner) and drop it on to the LT_Wall_Top-Front point. The illustration below shows the completed template.



- 77. Select **File > Save** from the *Create Template* menu bar.
- 78. **<D>** the **Close** button on the *Create Template* dialog box to dismiss it.

The template is now ready to use in the corridor.

- 79. Select **Modeler > Roadway Designer** from the InRoads menu bar.
- 80. From the *Roadway Designer* menu bar, select Corridor > Template Drops.
- 81. In the Template Drops dialog box, highlight the entry in the Current Template Drops area.
- 82. In the *Station* field, key in *1+50.00*.
- 83. **<D>** the **Change** button.
- 84. Highlight the entry again and **<D>** the **Synchronize with Library** button.



- 85. In the *Station* field, key in *0+00.00*.
- 86. Expand the Template library folder to show the contents of the 1 Templates folder.
- 87. Highlight the CONC_Ramp_with_Wall-Rt template from the Library Templates list.
- 88. **<D>** the **Add** button.
- 89. In the *Station* field, key in *1+49.99*.

🔚 Templa	ate Drop	s			- • •
Corridor:	Bryant		-		Add
Station:	1+49.99)	-	+ -	Close
Interval:	25.00		-	₽	Change
Library Ten	nplates:				
a 1	- Templa	ites	•		Сору
	≪ 5th_A ≪ 5th A	ve_Asphalt ve_Concrete			Help
Current Ter	CONC CO	;_Divided_lypeA_4 ;_Ramp ;_Ramp_with_Wall ;_Ramp_with_Wall al Blvd for the second seco			
Station	Inter	Template		Revi	Library
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1+49.9 2	25.00	CONC_Ramp_with	_Wall	ITL	C:\Projects\123
1+50.0 2	25.00	CONC_Ramp_with	_Walls	ITL	C:\Projects\123
•		III			•
Synchron	nize with I	ihener	-	19	

90. **<D>** the **Add** button then **<D> Close** to dismiss the dialog box. The completed dialog box is shown below.

- 91. Scroll through the template drops in the Cross Section view of the Roadway Designer dialog box.
 - Verify that the wall is expanding and contracting to meet the existing ground.
- 92. Select **File > Save** from the *Roadway Designer* dialog box.
- 93. **<D> Close** to dismiss the dialog box.
- 94. Close InRoads and MicroStation.

Section Summary:

- An end condition was used to locate the feature to tie to. This can also be done with a Null point and a point control.
- A true vertical segment can not be used to create a triangulated surface, that is why the wall face has a 10000% slope.

Chapter Summary:

- Add walls to a corridor using dedicated templates and template drops. Using walls as part of an end condition solution may result in walls occurring in areas where they are not wanted or not occurring in areas where they are needed.
- Wall sections will contain either an end condition or point control to determine the height of the wall.
- Changes from the non-wall to the wall template should occur within 0.01 feet. This ensures a clean change from one template to the other.