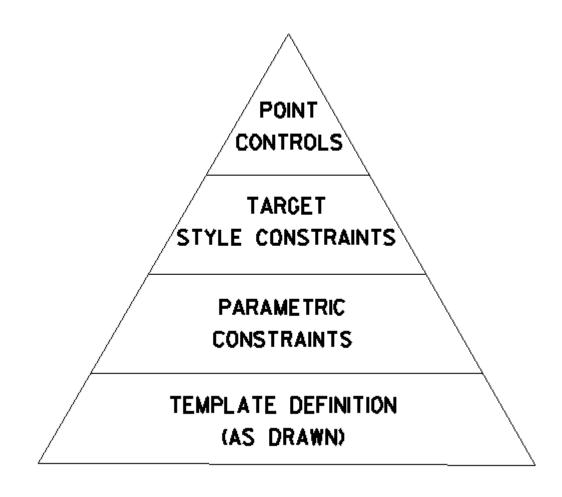
3_15 ROADWAY DESIGNER POINT CONTROLS

Question:

Please elaborate on the benefits of using point controls in Roadway Designer.

Answer:

For simplicity, Point Controls is a procedure in Roadway Designer where the user selects a point in the template and moves it any anywhere on a 2D plane (horizontally or vertically) or 3D plane (both horizontally and vertically). Since Pont Controls has the highest priority, it can be used to override the other methods of controlling template points locations. Below is a sketch of the order (priority) in which points in a typical template are usually processed or moved from their default location.



Point Controls – Horizontal Mode

Control Type:

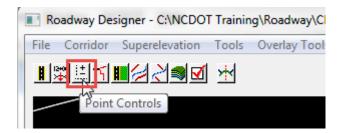
- Alignment use the *New Chain Name* in plan graphics.
- **Feature** use the horizontal location of the DTM feature. 3D features are generated from corridor template points when the DTM is created.
- Style use the *Drafting Standard* in plan graphics.
- **Corridor Point** use the horizontal point location from another corridor in the same IRD.

The most common procedure of Point Controls in horizontal mode is to move a template point to the horizontal location of where a plan graphics is stored. For example, a chain name **PS_L-LT** was stored as the left side paved shoulder in the Corridor Modeling Plan Graphics dialog box.

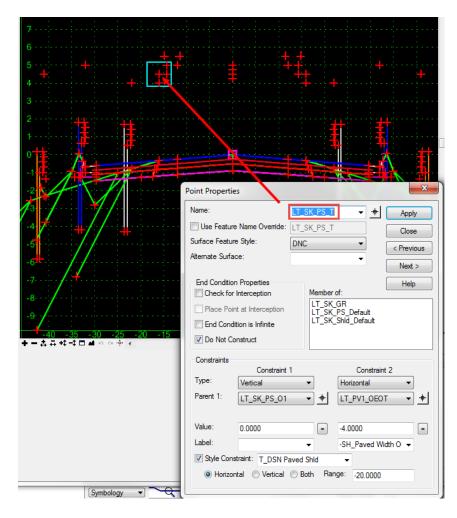
M Corridor Modeling - C:\NCDOT Training\Roadway\CM Templates\3 Templates Customization\b5164_rdy.rdp Image: Constraint of the second seco	+ 10, 10,	8:1 8:1 8:1	6			
Search Criteria Chain Side Beg. Offse End Offse New Chain DTM Geometry V: Prop Paved Shoulder, Co:, Wt:, Lc:,, L Right 0.00 0.00 PS_L-LT Plan Graphics ALG Viewer III III III III IIII IIII IIII IIII IIII IIII IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	<u>File T</u> ools	C:\NCDOT Training\Roadway\CM Temp	olates\3 Temp	lates Cust	tomization\b5164_rdy.rdp	23
DTM Lv: Pattern 1, Co: , Wt: , Lc: , Type: L Right 0.00 OEEOP_L-RT Geometry Plan Graphics Lv: Prop Paved Shoulder, Co: , Wt: , Lc: , L Left 0.00 0.00 PS_L-LT Lv: Prop Paved Shoulder, Co: , Wt: , Lc: , L Right 0.00 0.00 PS_L-RT P ALG Viewer III III III III P Symbology III III III III III Symbology III III III IIII IIII IIII New Chain Name: PS_L-LT New Chain Name: PS_L-LT Horizontal: 50.00			Chain	Side	Beg, Offse End Offse New Chain	
Geometry Plan Graphics ALG Viewer Symbology Undisplay Begin Offset: 0.00 Chain: L Left 0.00			L			*
Plan Graphics Lv: Prop Paved Shoulder, Co: , Wt: , Lc: , L Right 0.00 0.00 PS_L-R1 > ALG Viewer III III III III III III > <		Lv: Prop Paved Shoulder, Co: , Wt: , Lc:		Left		D
Symbology Symbology Begin Offset: 0.00 Chain: L Sk Side: Side: End Offset: 0.00 New Chain Name: PS_L-LT Horizontal: 50.00		Lv: Prop Paved Shoulder, Co: , Wt: , Lc:	L	Right	0.00 0.00 PS_L-RT	×
Chain: L Side: L End Offset: 0.00 New Chain Name: PS_L-LT Horizontal: 50.00	ALG Viewer					
Chain: L Side: L End Offset: 0.00		Symbology		Unc	display Pegip Offect: 0.00	
Filter Tolerances New Chain Name: PS_L-LT Horizontal: 50.00			N		begin onset. 0.00	
New Chain Name: PS_L-LT Horizontal: 50.00			ats			
		New Chain Name: PS L-LT				
Drafting Standard: T_DSN Paved Shid Variance: 0.010000					Import	

Note that the **Drafting Standard** selection only applies to the targeted style constraints. Usually this is how the paved shoulder location is defined. For purpose of this demo, Point Controls, along with the New Chain Name, will be used instead.

Point controls is the third toolbox in Roadway Designer.



In a typical roadway template, the point **SK_PS_T** is used to determine the paved shoulder width.



In Point Controls select this template point and move it horizontally to the location of the **PS_L-LT** chain name.

Point Controls			x 356 ····			
Corridor: L		Add	354 · · ·			
Control Description: horizontal paved shoulder		Close	352 · · ·			
Point:	Station Limits Start: 13+70.00	Chang	• 350 · · ·			
Horizontal O Vertical O Both	Stop: 17+60.00	+ Help	340			
Control Type:	Horizontal Offsets		346 · · ·			
Horizontal Alignment: PS_L-LT +	Start: 0.0000	+	344 · · ·	۲		
Use as Secondary Alignment	Stop: 0.0000	+	342			
	Vertical Offsets					
	Start: 0.0000	+	238			
Priority: 1	Stop: 0.0000	<u>+</u>	336			
Horizontal and Vertical Controls:						
E P Name Start St Stop St	Mode Type	Control Descrip				
X 1 LT_SK_PS_T 13+70.00 17+60.00	Horizontal Alignment	PS_L-LT horizont	al pa 330	-20	- 10	
					- 10	
٠			tation:	K < 16+70	.00	> > +
		Delete	terval:	5.0000)]
			emplate:	UF_SH	ld - Typical	Display I

Point Controls – Vertical Mode

Control Type:

- Alignment use *Profile(s)* in Corridor Modeling Geometry.
- **Feature** use the vertical location of the DTM feature. 3D features are generated from corridor template points when the DTM is created.
- Style use the *Drafting Standard* in plan graphics.
- **Corridor Point** use the vertical point location from another corridor in the same IRD.
- Superelevation usually automatic via input or RD Superelevation Wizard.
- **Elevation Difference** adjust by adding the elevation of a profile to the current point elevation.
- **Elevation and Grade** determine the elevation and grade (station range) of a point, e.g. ditch grade.

The most common procedure of Point Controls in vertical mode is to move a template point to a ditch grade. For example, when storing the geometry (converting the GPK or ALG) both the horizontal and vertical alignments are defined. The following are example usages from the Hydro Ditch Delta Training Manual.

K Corridor Modeling			X
<u>File T</u> ools			
Job: hyd 🔍 🖂	A 🛱 🕏 🌲		
Preferences	Chain Profile	Drafting Standard	
	L DLRT2A,DLRT3,DLRT4,DLRT5,DLRTALL,EX_L	F_Prop CL	5
Geometry			Ð
─□ Plan Graphics □ ALG Viewer			×
	Chain: L 2 • K Drafting Standard: F_Prop CL 3 • Ctrl or Sh	DLR14	
	Import	6 DLRT5	•

Most ditch templates, the ditch base point **DD_Base In_P-CTL** can be used for the ditch grade.



Use Point Controls in vertical mode to move the ditch base point vertically to the ditch grade elevation.

Point Controls			
Corridor: RT_L-LAD_097+40-99+25(2)			Add
Control Description:			Close
Point RT_DD_Base In_P-C1 •	Station Limits		Change
Mode	Start: 97+40.00	<u>+</u>	
OHorizontal OBoth	Stop: 98+05.00	<u>+</u>	Help
Control Type: Alignment	Horizontal Offsets		
Horizontal Alignment	Start: 0.0000	-#-	
Vertical Alignment	Stop: 0.0000	-	
	Vertical Offsets		
	Start: 0.0000	+	
	Stop: 0.0000	+	
Priority: 1			
Horizontal and Vertical Controls:			
Ena Prio Name Start Station Stop Stati	on Mode 1	Гуре	Control De
X 1 RT_DD_Bas 97+40.00 98+05.00	Vertical A	lignment	L:DLRT2A
< III			4
			Delete

For projects without ditch grades stored in the GPK/Geometry, use the **Elevation and Grade** (with station ranges) option as the control type.

Point Controls		
Corridor: LT_L-LAD_096+40-97+80	6	Add
Control Description:		Close
Point: LT_DD_Base In_P-CT	Station Limits	Change
Mode	Start: 96+40.00	
Horizontal O Horizontal O Both	Stop: 97+80.00	Help
Control Type: Elevation and Grade		
Elevation: 41.3000	Start: 0.0000	
Grade: -0.93%	Stop: 0.0000 +	
	Vertical Offsets Start: 0.0000 +	
	Stop: 0.0000 +	
Priority: 1		
Horizontal and Vertical Controls:		
	St Stop St Mode Type	Control Des
X 1 LT_DD_Base In_P-CTL-UCE 96+40.0	00 97+80.00 Vertical Elevation and Grade	41.3000:-0.93
•		4
		Delete

Point Controls – Both Mode (Horizontal and Vertical)

Control Type:

- Alignment use the *Chain* and *Profile(s)* stored in Geometry.
- **Feature** use the horizontal and vertical location of the DTM feature. 3D features are generated from corridor template points when the DTM is created.
- Style use the Drafting Standard in plan graphics.
- **Corridor Point** use the horizontal and vertical point location from another corridor in the same IRD.

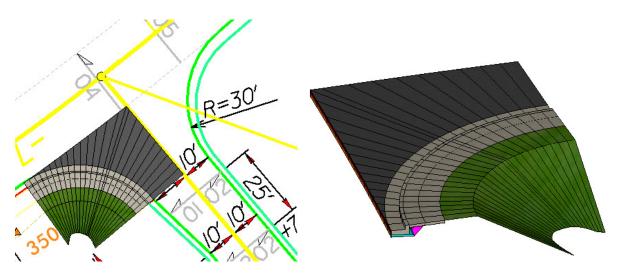
An example of Point Controls using the Alignment option is moving the centerline point of an at-grade intersection quadrant template (and corridor) to a -Y- Line horizontal chain and vertical profile location.

Point Controls									
Corridor: LY_QC									Add
Control Description:									Close
Point:	PV1_PGL	*	+	Station			_		nange
Mode				Start: g	5+29.	23	+		
O Horizontal 🤇	Vertical	💿 Both		Stop:	5+47.	82	+		Help
Control Type:	Alignment	~		Horizor	ntal O	ffsets			
Horizontal Alignment:	Y	~	+	Start:	0.000	0	+		
Vertical Alignment:	Y	~		Stop: (0.000	0	+		
🔲 Use as Secondary	Alignment								
				Vertica	3.4	2022			
				Start: (0.000	0	+		
rmontrost. a				Stop: (0.000	0	+		
Priority:	1								
Horizontal and Vertica	I Controls:								
En Pri Na	me	Start Station	n 9	Stop Stat	ion	Mode	Туре		Contro
	PGL	5+00.00		-29.22		Both	Corridor		L:RT_F
X 1 PV1	PGL	5+29.23	5+	47.82		Both	Alignme	nt	Y:Y
<)							>
									elete
									11.

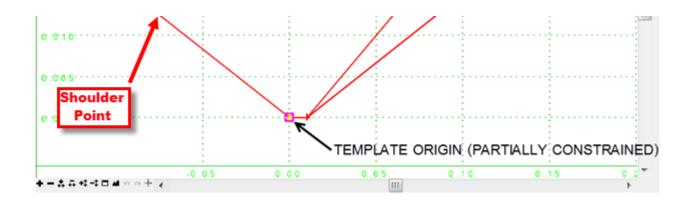
Corridor Points can also be used such as locating the EOT point of the mainline corridor.

Point Controls		
Corridor: LY_QC	[Add N
Control Description:		Close
Point: PV1_PGL 🗸 🕈	Station Limits	Change
Mode	Start: 5+00.00	
O Horizontal O Vertical O Both	Stop: 5+29.22 +	Help
Control Type: Corridor Point	Horizontal Offsets	
Corridor:	Start: 0.0000 +	
Reference Point: RT_PV1_0E0T V	Stop: 0.0000	
	Vertical Offsets	
	Start: 0.0000 +	
	Stop: 0.0000 +	
Priority: 1		
Horizontal and Vertical Controls:		
En Pri Name Start Station	Stop Station Mode Type	Contro
X 1 PV1_PGL 5+00.00 5	+29.22 Both Corridor Po	int L:RT_F
<		>
	[Delete

Using this combination for at-grade intersections would produce a 3D model like this.



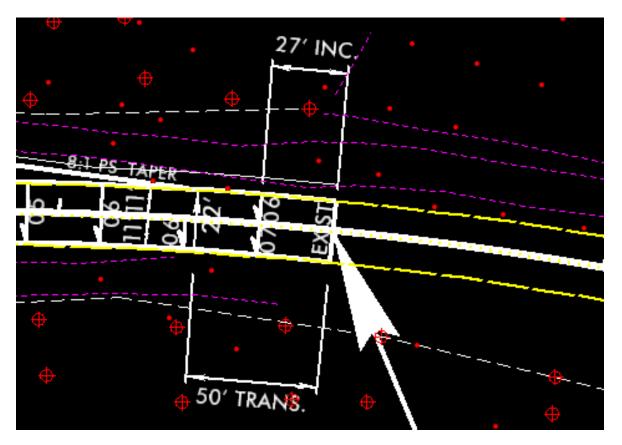
Similar to Corridor Points, the 3D features generated when the DTM was created can be used as Point Controls. The following is from the Hydro Ditch Delta Training. The objective was to move the template shoulder point **RT_GS_OS_CTL** to the horizontal and vertical location of the same roadway feature name **RT_GS_OS_CTL** (shoulder point).



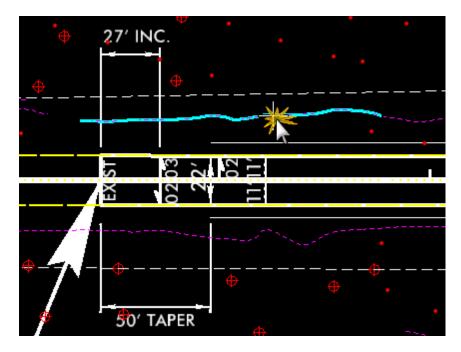
Point Controls					le le	
Corridor: RT_Y8R	PDB-ROD_62+00	-66+55			- 7	Add
Control Description:					6	Close
Point	RT_GS_OS_	сті. 🚺 🗄		Limits		Change
Mode			Start	62+00.00	<u>a</u> ±	Change
Horizontal	Vertical	🖲 Both 🕗	Stop	Propos		Help
Control Type:	Feature	3.	Horiz	DTM		
Surface:	Y8RPDB1-TH	N 4-	Start	0.0000	±	
eature:	RT_GS_OS_		Stop:	0.0000	+	
Use as Seconda	ry Alignment			Featu	re	
			Verbi	Nam	e	
			Start		*	
			Stop:	0.0000	+	
riority:	1					
forizontal and Vertic	cal Controls:					
En., Pri., Name	e Start Stat	Stop Stati	Mode	Туре	Control	Description
(1 RT_G	S_OS62+00.00	66+55.00	Both	Feature	Y8RPDB1	
•						
						Delete

50 40 30	Shoulder Point			
+	-20 0 20	40 60	80 100	
Station: < <	62+50.00	>>+	Process All	
Interval:	50.0000		Process Visible Ra	nge
Template:	RT Roadway Ditch for Fre	Display Mode:	Normal	
			Superelevation	n
			Overlay	1

Note that the 3D features can be either proposed or existing. For example, when the Geopak existing ground TIN was converted to an inRoads DTM, they contained some feature information as breaklines.



Although the existing feature names are not known (unassignable by the user) during the TIN to DTM conversion, users can select each breakline graphically in the DTM DGN file and it will automatically populate the Feature name field.



Point Control	s	
Corridor: L		Add
Control Description:		Close
Point:	LT_SS_Fill_2to11 triangle for the second s	Change
O Horizontal	O Vertical O Both Stop: 12777.72 ♥	Help
Control Type:	Feature Horizontal Officeto	
Surface:	b4560_ls_tin_08110 V Start: 000 Feature	
Feature:	b4560_ls_tin_08110 ✓ + ^{460p:} 0.00 Name	
Use as Seconda		

With this approach, Point Controls can be used to tie the fill slope to an existing feature (breakline in the DTM).

