



Advanced Channel Design – Turning Basin

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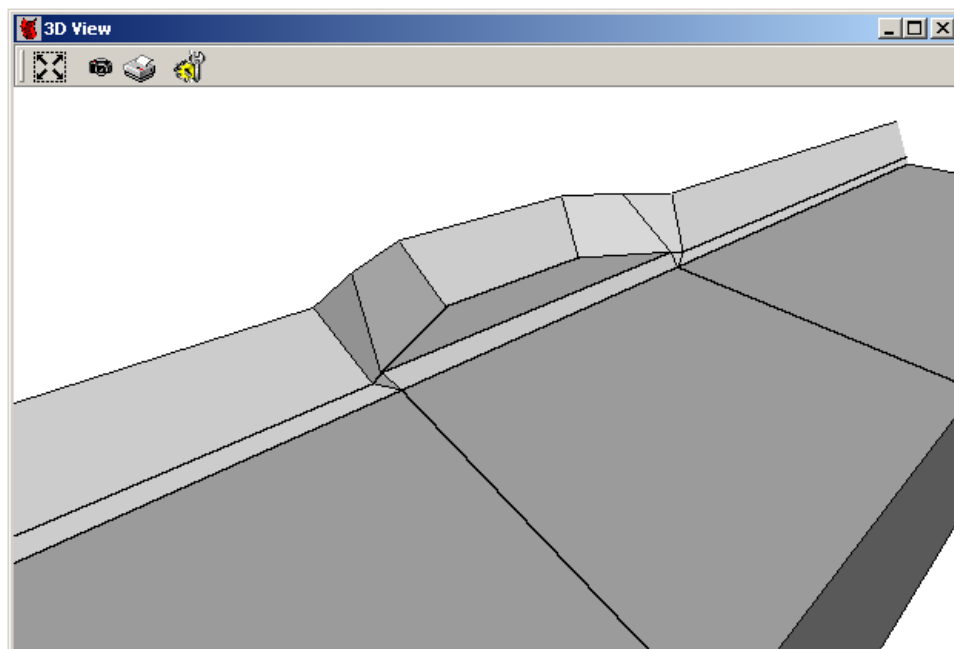
The PLN mode allows you to design the channel by defining the left and right toe. Additionally, you can enter an unlimited number of turning basins on each side. Previously, we had a limitation in turning basin design regarding side slopes. Namely, the turning basin base slope was always equal to toe slope. Sometimes this does not satisfy our customer's need.

FIGURE 1. Defining a Turning Basin in ADVANCED CHANNEL DESIGN

Advanced Channel Design											
	Ins	Cut	Pst	Fill	Col	Next Basin	Prev Basin	Add/Save Basin	Del Basin		
Right Basin						Name	LB	Level	10	Base Slope	10:1
Left Basin		X	Y	Slope							
	1	9800.00	10800.00	5:1							
	2	9700.00	10900.00	5:1							
	3	9700.00	11100.00	5:1							
	4	9800.00	11200.00	5:1							

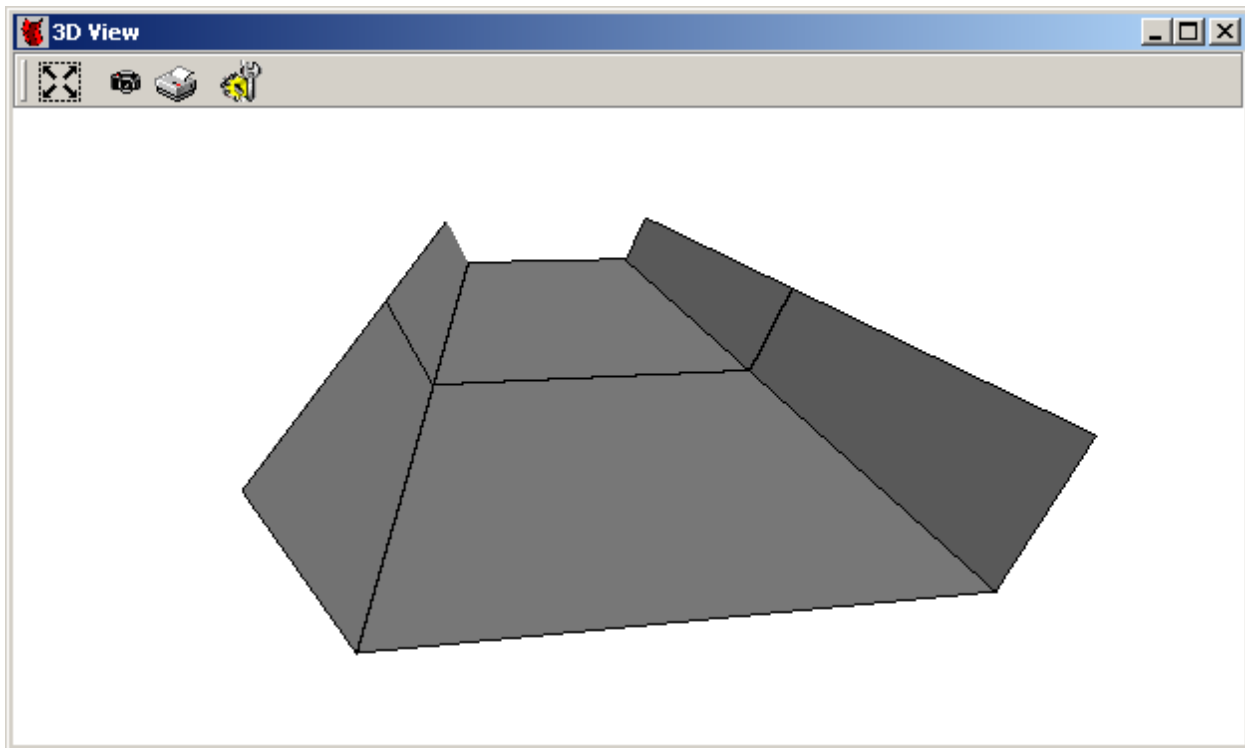
There is a way to set turning basin base slope as you can see from Figure 2. In our example, we set the toe base slope to 4:1, the toe base slope above the turning basin to 5:1, and finally, the basin base slope to 10:1.

FIGURE 2. Connecting parallel segments with different slopes



Imagine we have a channel with two sections like in Figure 3.

FIGURE 3. Channel with Two Sections



But we want to have different slope in the front part.

FIGURE 4. The Hypothetical Channel

For example, 6:1 in the front part and 4:1 in the back. If we enter values something like in the table on the left it is not going to work because it is not possible to connect parallel toes with different slopes.

Advanced Channel Design						
Right Basin	Ins	Cut	Pst	Fill Col	Offset From Center Line	Load From Flie
		X	Y	Z	Slope	
Left Basin	1	9800.00	10000.00	12.00	4 : 1	
	2	9800.00	10800.00	12.00	6 : 1	
	3	9800.00	11200.00	12.00		

One simple trick can solve the problem:

We can insert a very small segment that will provide the connection. I copied node 2, shifted it by 0.01 to the left and inserted it as node 3. I shifted node 4 by 0.01 to the left (although it was not necessary). It created very short segment between node 2 and 3 that was enough to provide smooth transition from slope 4:1 to 6:1 as you can see from Figure 6.

FIGURE 5. *The Hypothetical Channel—After*

Advanced Channel Design						
Right Basin	Ins	Cut	Pst	Fill Col	Offset From Center Line	Load From File
		X	Y	Z		Slope
Left Basin	1	9800.00	10000.00	12.00		4 : 1
	2	9800.00	10800.00	12.00		6 : 1
	3	9799.99	10800.00	12.00		6 : 1
	4	9799.99	11200.00	12.00		

FIGURE 6. *The Modified Channel with Smooth Transition Between a Side Slope of 4 and a Side Slope of 6*

