



TIN Model TIN to CHN Volumes - Elevation Mode

Although HYPACK® depth convention has always been “Positive Down,” many HYPACK® users prefer “Positive Up” as used in various CAD programs. While HYPACK® has never intended to be a CAD program, we try to “keep the peace” when it comes to different sign conventions. This, of course, makes it much more difficult to troubleshoot! Here is an example of a troubleshooting situation we ran into, where the customer was trying to calculate TIN-to-CHN volumes, and was not getting the expected results.

When calculating TIN to CHN volumes, the report did not list any volumes as shown here. What could be happening?

	Design	Overdepth
	Cut	NoContour
Zone	Volume	Volume

Total		0.0 0.0

Upon further investigation, we realized that the XYZ file was in elevation mode (negative down), as was the CHN file. The issue is that CHN files, when creating 3D faces, require that the nodes are be connected in a counterclockwise fashion. This works fine in depth mode, but when in elevation mode, TIN MODEL sees these faces as connected in a clockwise fashion, and does not see these as valid 3D faces. That is why there is no volume calculated.

HOW TO WE FIX THIS?

Well, the next TIN MODEL release will pop up a warning if that CHN file is considered the wrong depth convention:

To fix the CHN file, simply take your existing CHN file back into the ADVANCED CHANNEL DESIGN program. In the Faces tab, click the “Elevation/Depth” icon (Figure 2):

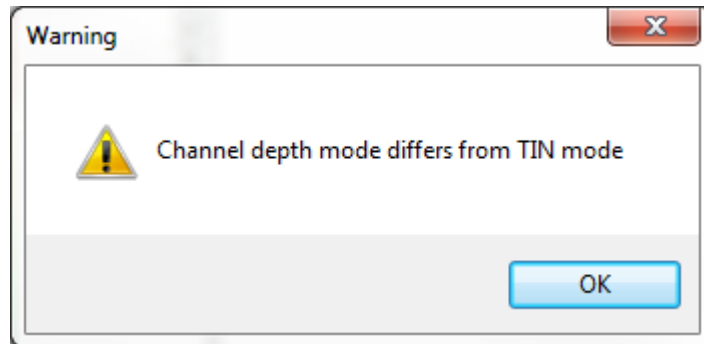
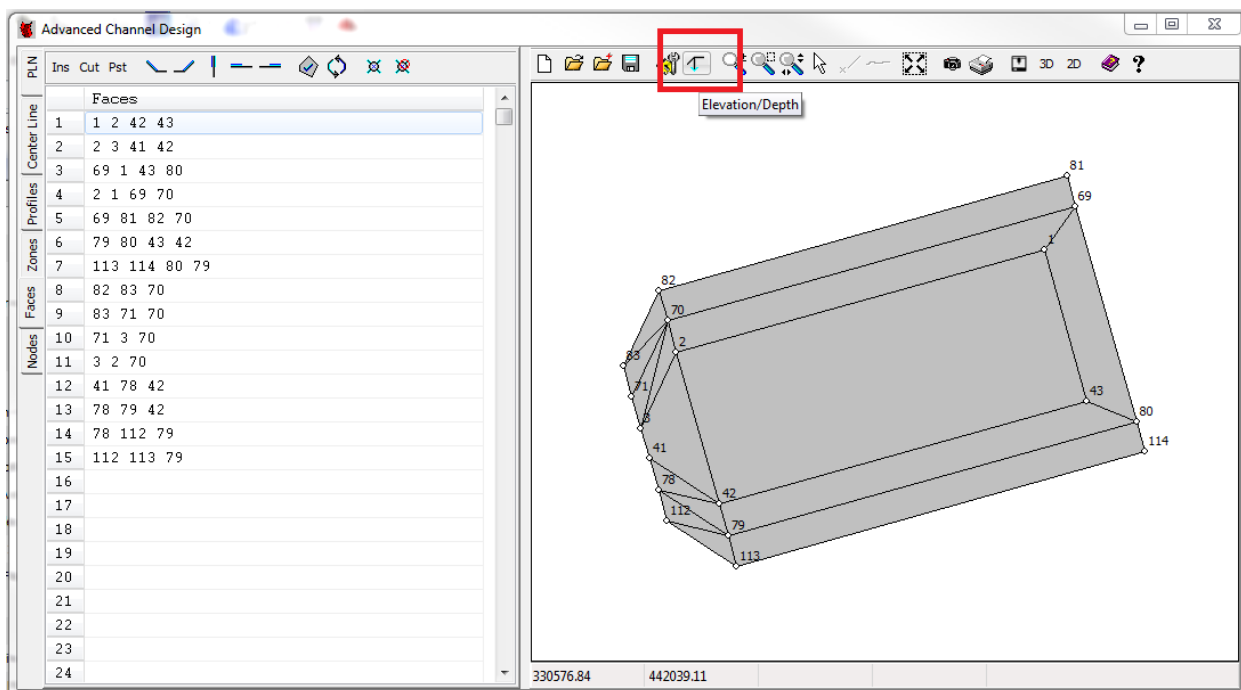


FIGURE 2. Reversing Elevation/Depth Mode of your Channel File



This will reverse the orientation of the faces. Save the CHN file and bring it back in TIN MODEL to calculate your TIN-to-CHN volumes. TIN MODEL will now properly calculate your volumes in elevation mode.

FIGURE 3. *Correct TIN-to-CHN Volumes Report*

TIN vs Channel Volume Totals - Itemized by Channel Zones
Volume unit: Cubic Meter
TIN File: G:\TIN_CHN\Sort\basin.xyz
CHN File: G:\TIN_CHN\ACD in Elevation.chn
Global Overdepth: 1.0

Zone	Design Cut Volume	Overdepth NoContour Volume
Trench Base	3904.2	2181.3
Trench Slope	3618.1	2500.8
Total	7522.3	4682.1