

UnCivilEngineer.net

Search



Menu

Watercourses and ridges on topographic maps: Why the V's?

by [UnCivilEngineer](#) July 14, 2017 7:34 pm [1 Comment](#)

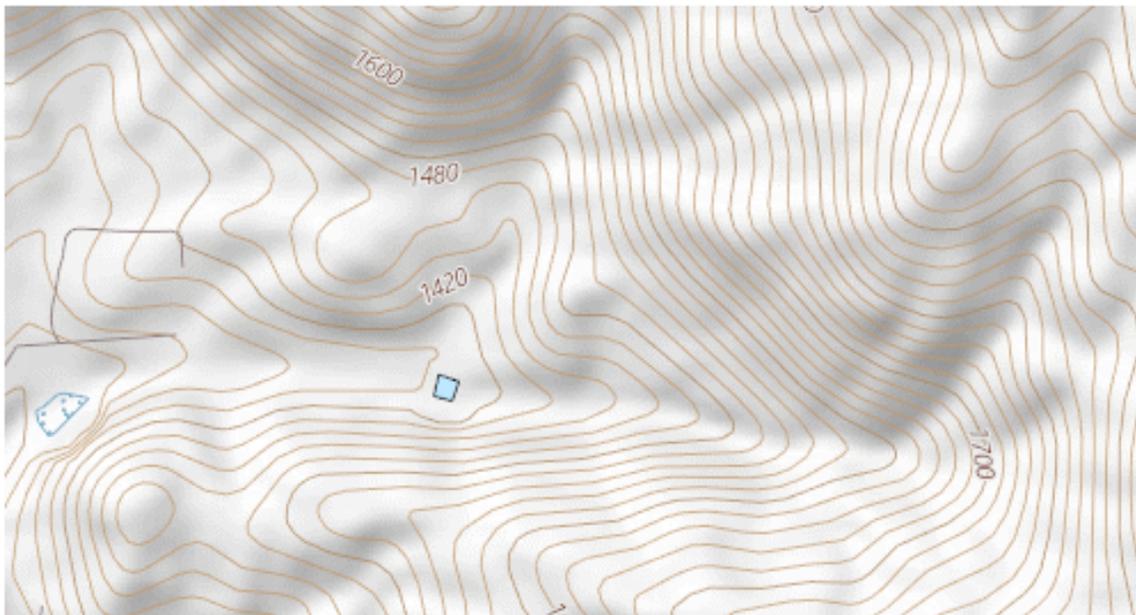
[CA Seismic](#), [Civil PE Exam](#), [Water Resources](#)

[90](#), [contour](#), [flow](#), [perpendicular](#), [ridge](#), [rule](#), [topographic](#), [watercourse](#)

*If you're not familiar with topographic maps, I recommend going over this National Resources Conservation Service (NRCS) article on [reading topo maps](#) first.

Why does a "V" point uphill for a watercourse, and downhill for a ridge?

When viewing topographic maps, you'll notice that valleys or watercourses are always shown in areas where a V's pointy end is oriented uphill. In contrast, mountain ridges are in areas where the "V" points downhill. "Just look for the V's" is common advice when looking for these features.



Note: This topographic map is from the USGS's official website, on their [GIS map viewer](#).

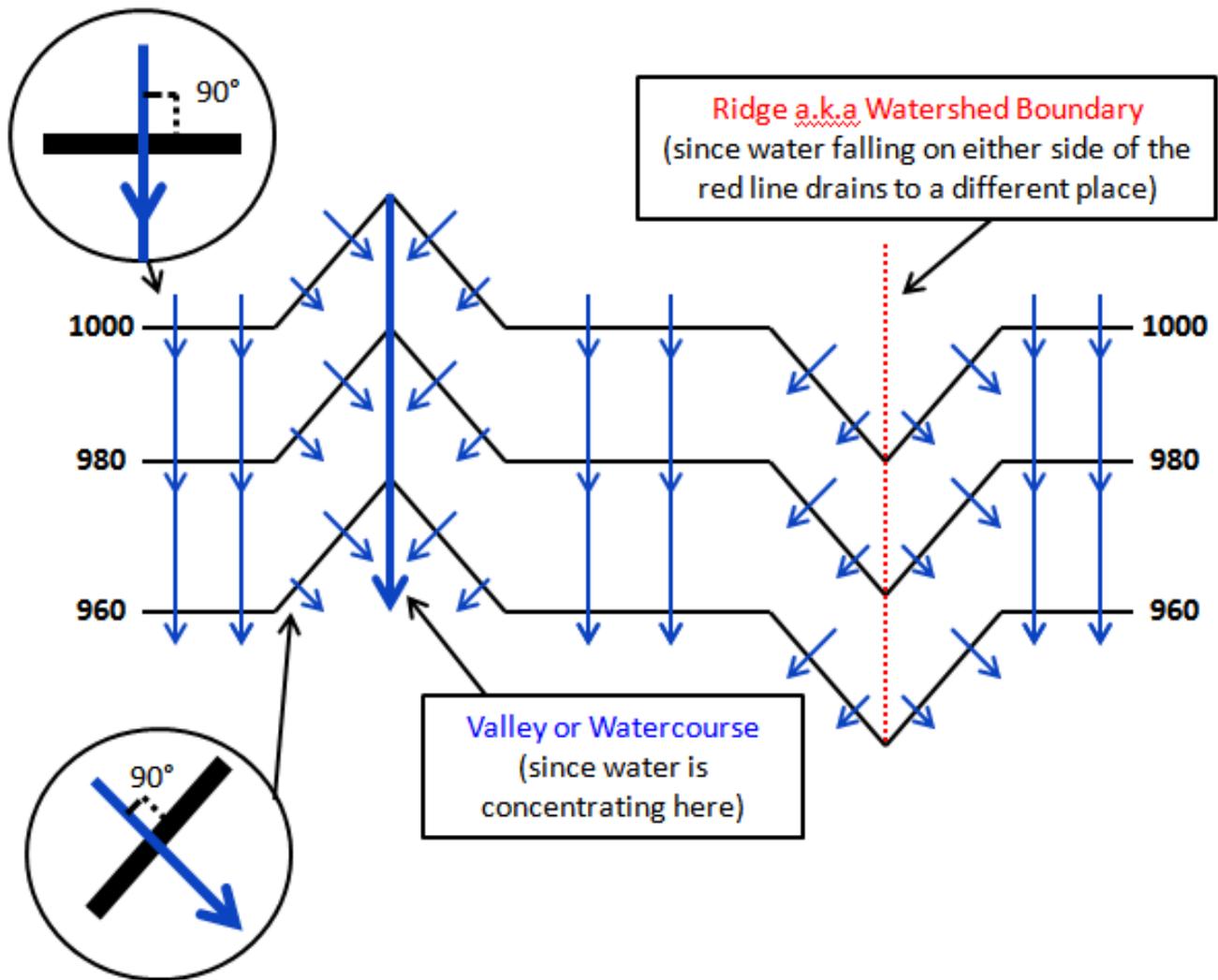
Why's it got to be a "V"?

To me, this advice is not intuitive at first because valleys and ridges do not always look like a "V". Sometimes they can look like really flat, subtle "U"s. It's also easy to mistake one feature for the other if you just look for the "V." What's so special about the Vs?

The 90° rule

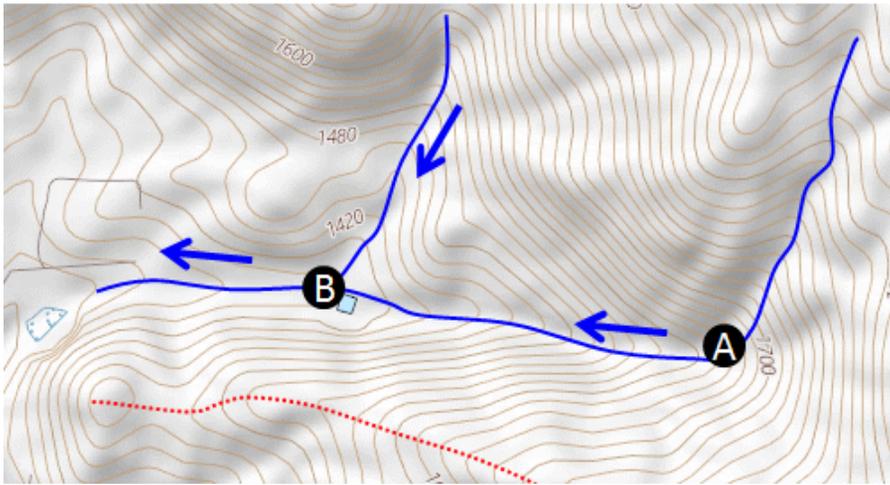
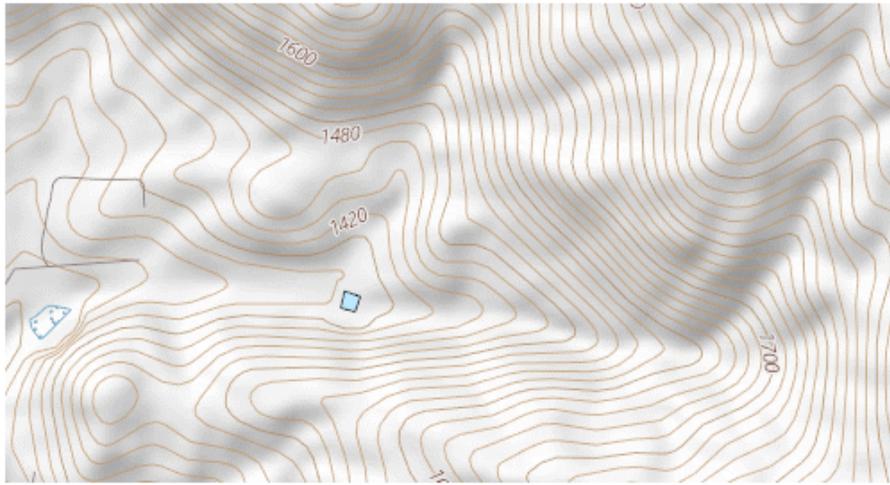
A better way to interpret topographic/contour (line of constant elevation) maps, and to understand why "V"s are indicative of valleys and ridges, is the following rule: **"Water always flows downhill, perpendicular (at a 90° angle) to contour lines."** Seriously, if you can remember this, you can understand how water will flow in any area, with or without any obvious "V."

Take a look at this contour map below. The left side shows a valley (watercourse) and the right side shows a ridge, or watershed boundary. Now, imagine it's raining uniformly over this entire area. The blue lines show where raindrops will flow to once they hit the ground and gravity takes over. These blue lines follow the 90° rule:



If you can follow this example, you can figure out the drainage patterns of any topographic map you view, especially since most maps have contours going all over the place. To be fair, even for the less-obvious ridges or valleys you'll be able to find a "V." However the "V" may be very wide (flatter), or may have a lot of curves resembling a sine wave.

Here's a USGS topographic map of an area with some obvious watercourses, and a well-defined ridge (in red) at the bottom. This area slopes downward to the west. Points A and B are for reference. Notice how there is vegetation from east to west. Vegetation often coincides with a well-defined watercourse.



Note: These modified topographic maps and imagery are from the USGS's official website, on their [GIS map viewer](#).

And for a better view, here's a Google Earth version (looking easterly):



Map Data: Google, INEGI

I hope this helps! Remember, the 90° rule can help you in any rainy-day situation...Bah dum tss..

ABOUT ME

Welcome to my site, I plan to post various topics and tips for civil engineering, but branching out to other topics as i continue on 😊

Nathaniel Olivas, P.E.

© 2020 UncivilEngineer.net • Powered by [WordPress](https://WordPress.com/) • Theme: [Gillian](https://Gillian.com/)