

Side Drain Length Calculation



Engineering Division
Production Support

Website: <https://www.tn.gov/tdot/engineering-division/engineering-production-support.html>

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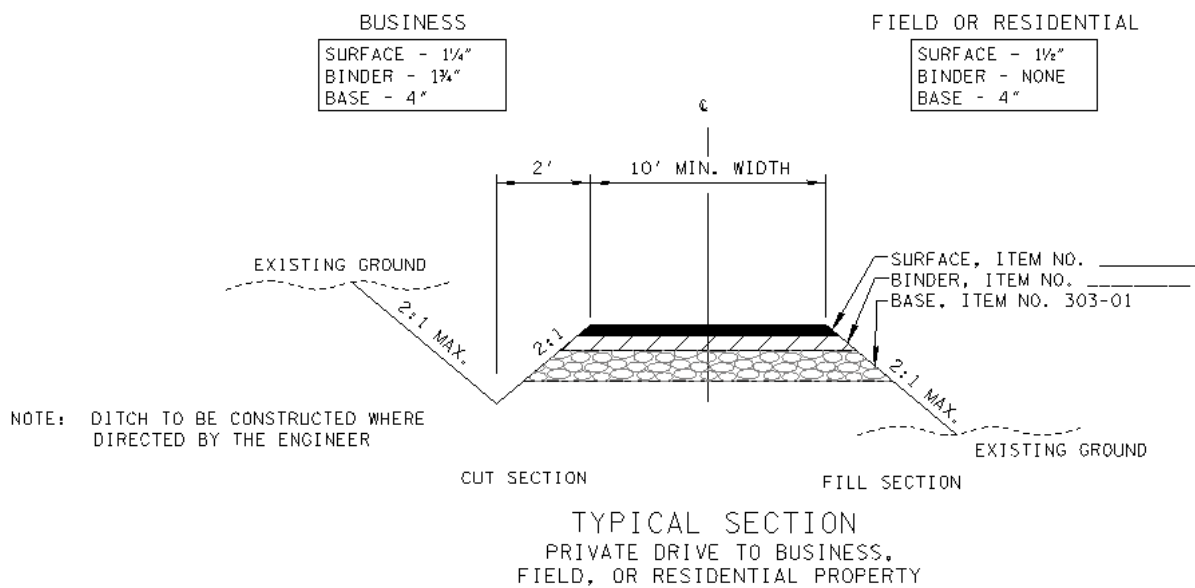
The purpose of this tutorial is to outline the method for calculating the length of side drains to be displayed on roadway plans.

Side Drain Length Calculation

The length of a side drain is dependent upon:

- The width of private drive, field or business entrance
- The height of drive above the side drain
- The diameter of side drain

TYPICAL SECTION OF DRIVEWAYS

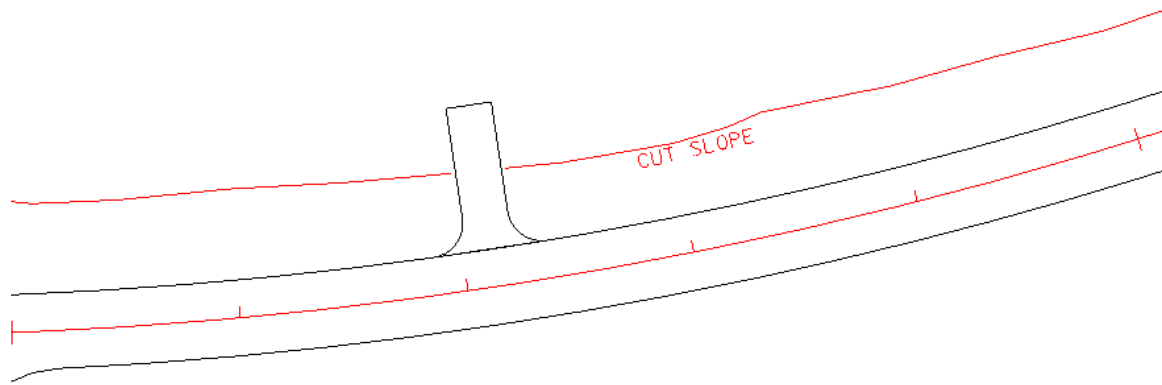


Side Drain Length Calculation

EXAMPLE

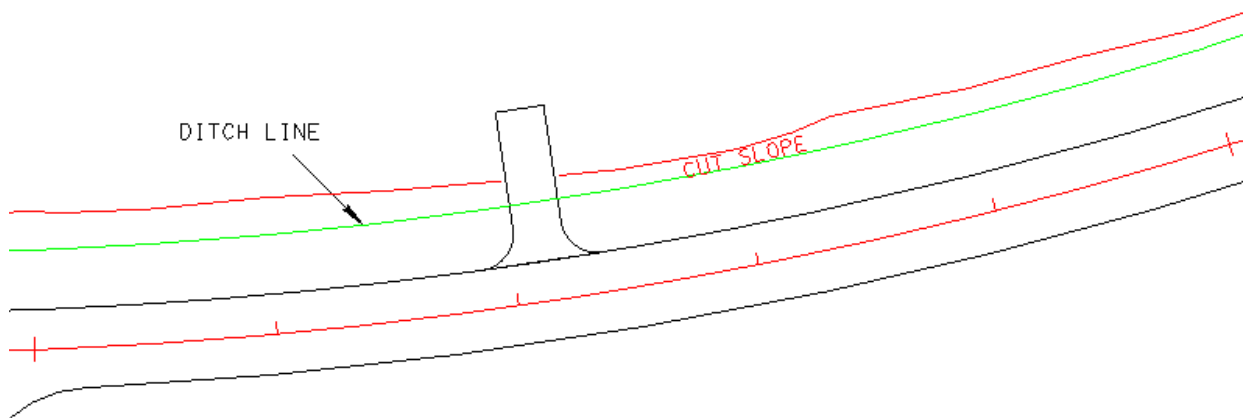
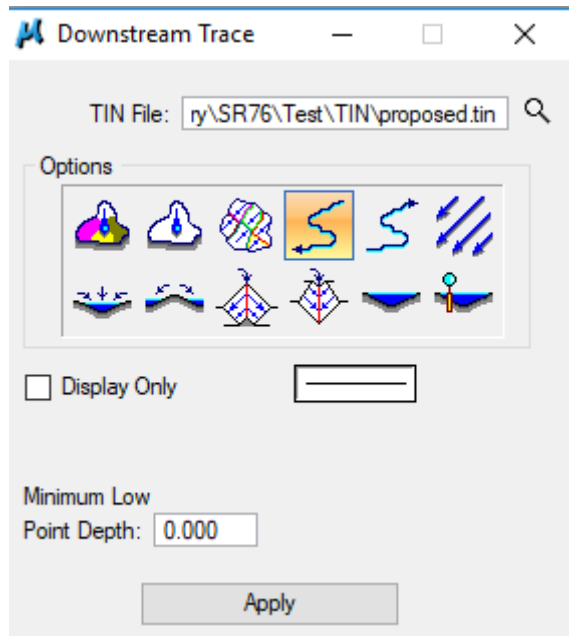
Side drain in cut section

Private Drive Width = 20 ft.



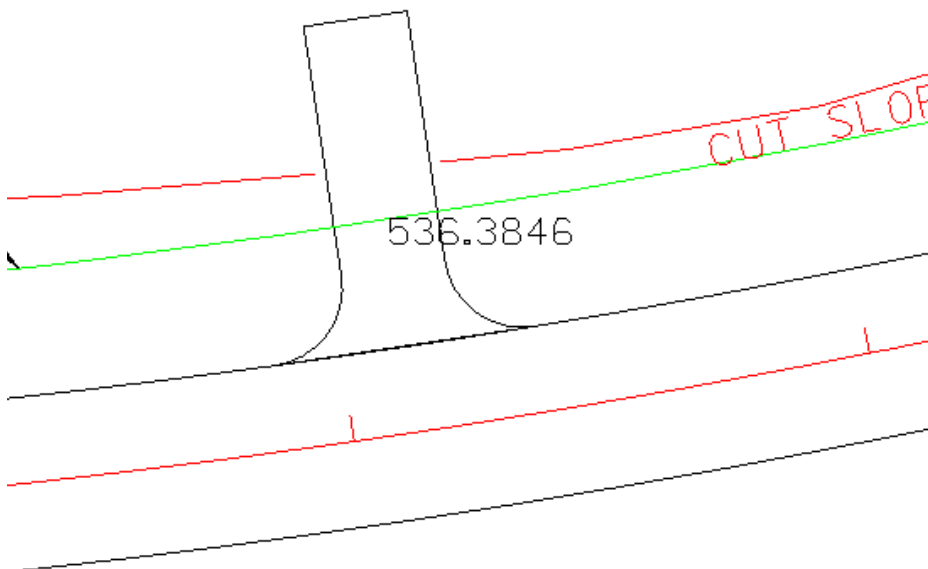
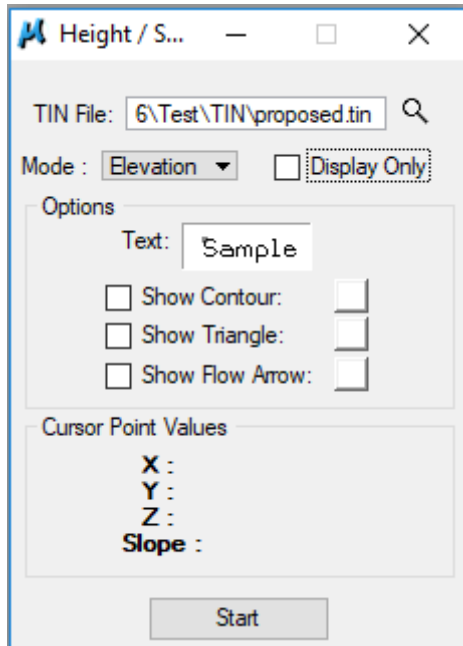
The side drain will be located in the ditch line which can be located using the downstream trace tool if a proposed .tin surface has been created.

Side Drain Length Calculation



Using the Height/Slope tool, the elevation at the side drain location in the ditch line can be found.

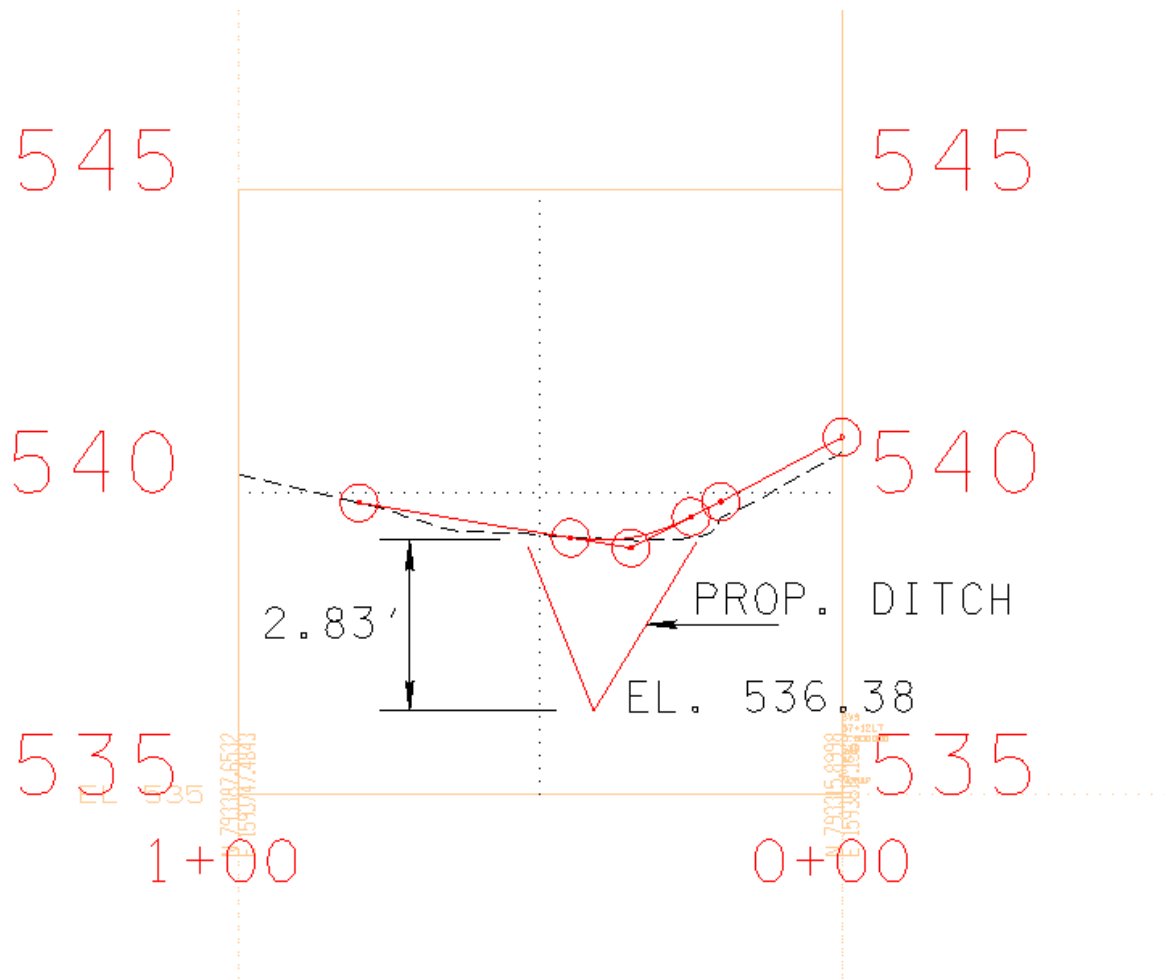
Side Drain Length Calculation



Side Drain Length Calculation

Draw existing and proposed profile of the drive using the standard documentation as a guide

https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/cadd_files/documents/Private%20Drive%20Profiles.pdf



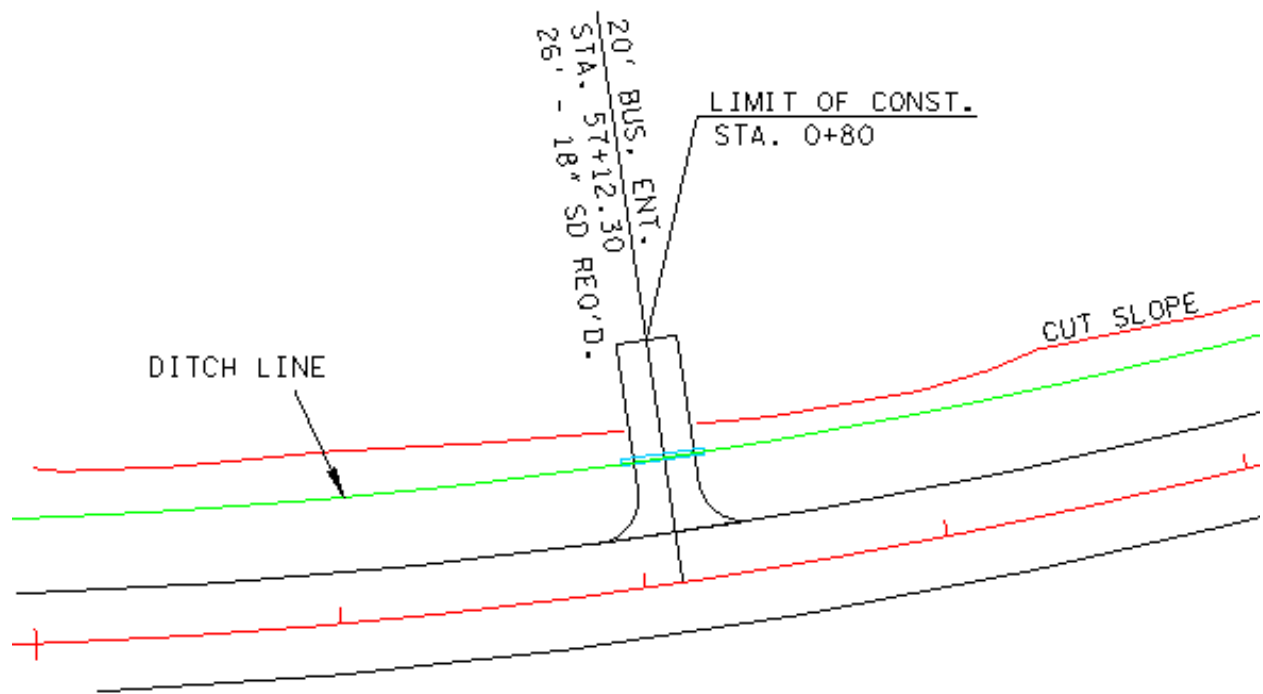
Assuming a 18" diameter side drain, the height is $2.83 - 1.5 = 1.33'$

Length:

Using 2:1 side slopes for drive:

$$(2 \times 1.33) \times 2 = 5.32 \text{ (for side slopes)} \\ + 20 \text{ (width of drive)} = 25.32, \text{ or } 26'$$

Side Drain Length Calculation



View of Side Drain on plans