# Part 4: Roads

Roads may be a long-term sedimentation concern if not properly designed, constructed or maintained.

**<u>Note:</u> There are several rules and guidance requirements that limit where roads can be constructed, especially near streams or in wetlands.**

Proper road design and layout are key. Consult with an experienced road builder or civil engineer. References are listed below:

- ✓ *A Guide for Forest Access Road Construction and Maintenance in the Southern Appalachian Mountains.*
- ✓ *Environmentally Sensitive Road Maintenance Practices for Dirt and Gravel Roads.* (USFS Pub.No. 1177-1802)
- ✓ *Low-Volume Roads Engineering BMP Field Guide.*
- ✓ *USDA-NRCS Conservation Practice #560, Access Road*.

**When possible, avoid constructing new roads. Consider alternative access routes or harvest methods.**

The NRCS soil surveys have ratings for each soil series in the county of its suitability as road fill material.

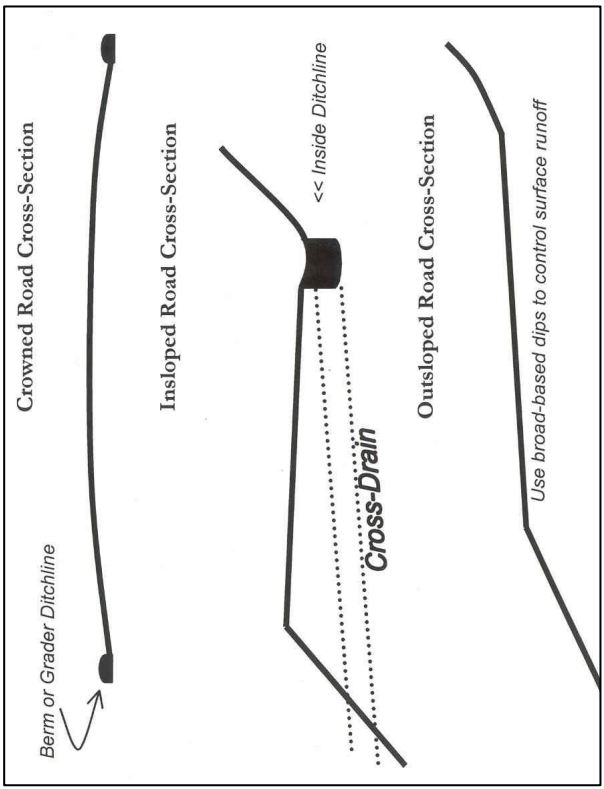
Using geotextiles can reduce the amount of fill material needed and improve the all-weather trafficability of the road. Their upfront cost is often much less than the extra backfill or machine time that would otherwise be needed.

- Minimize the overall footprint of soil disturbance when constructing a new road or rebuilding an old road, including cut banks and fill slopes.
- When possible, construct the road during dry soil conditions and complete work well in advance of the forestry operation. Give time for the new road to settle, firm up, establish groundcover vegetation and assess the function of erosion and runoff controls.
- Incorporate runoff control structures such as broad-based dips, rolling dips, turnouts, sediment pits, crowning, ditchlines and cross drains.
- Promptly stabilize the travel surface, roadside edge and cut bank/fill slope with gravel and/or vegetation.
- Trim back overhanging tree limbs along the road corridor so sunlight can can dry the road after precipitation.
- Establish an access point to the public road in a way that minimizes sedimentation and provides for safety.
- In steep terrain: Place the road along the contour of the land and avoid steep grades up and down the slope. Grades of 10 percent or less are recommended.
- In wetlands: Comply with the 15 required federal BMPs and the 2004 guidance document from the U.S. Army Corps of Engineers.

***Avoid placing roads in ephemerals if possible.***

***Do not build roads in coastal marsh.***

## Cross-Section Sketches of Road Profile Options



Geotextile keeps gravel from sinking into soft soil. Curving the road reduces the grade and gives room to install water diversions. Groundcover is needed on bare soil.

An ample layer of stone promotes surface drainage, good control of runoff and improved trafficability.

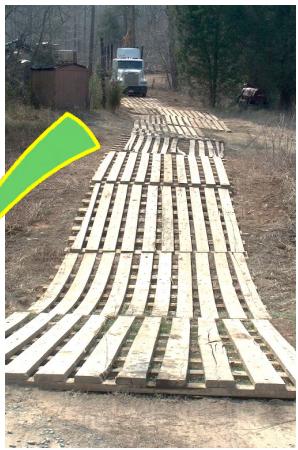
Little effort went into installing water diversions. Too much soil was exposed all at once with no groundcover. Construction was during a wet period and it was used too soon, with no time for it to firm up.

Broad-based dips are built in the road (arrows). There is ample gravel and the road edge is stabilized with grass.

An erosion gully is carving away the road because it lacks water diversions and surface stabilization.

LEFT: No diversions or groundcover, resulting in accelerated erosion and gullying of the road.

RIGHT: This long sloping road has multiple diversions to break the grade and ample vegetation.



LEFT: Entrance stabilized with ample gravel.
RIGHT: Road pallet mats used for an access entrance.

Bridgemats, logs and road mats were used on this logging road access entrance.

This wetland road is low profile, has gravel and uses a cross-drain pipe to allow water to equalize on both sides.

This road was blown out because of inadequate cross drainage to handle storm runoff from neighboring land.

This road is too close to a large river.
The narrow strip of weeds is the only thing keeping sediment out of the water.

This road is sloppy and has lost its structural integrity. Sedimentation into streams is very likely and extra wear and tear on equipment is possible.

Low standard roads like this often need more work to maintain surface drainage and erosion control structures.

Excellent use of gravel on a logging road.

Soft soil has been repeatedly scraped off this road, creating side berms of soil that trap rainfall runoff. Significant regrading is needed to reshape this road.

Good road using gravel, diversions, grass and bridgemats. Work is needed to level off the ruts and prevent sedimentation runoff into the stream.