

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**ACCESS ROAD**

(Ft)  
Code 560



**DEFINITION**

An access road is an established route for equipment and vehicles.

**PURPOSE**

An access road is used to provide a fixed route for vehicular travel for resource activities involving the management of timber, livestock, agriculture, wildlife habitat, and other conservation enterprises.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies where access is needed from a private or public road or highway to a land use enterprise or conservation measure, or where access is needed in a planned land use area.

Access roads range from single purpose, seasonal use roads, designed for low speed and rough driving conditions, to all-purpose, all-weather roads. Single purpose roads provide access to areas such as forest fire lines, forest management activities, remote recreation areas, or for maintenance of facilities.

This practice does not apply to temporary or infrequently used trails used for logging. Use Florida NRCS conservation practice standard (CPS) Forest Trails and Landings, Code 655. Trails and walkways used for animals, pedestrians, or off-road vehicles are addressed in Florida NRCS CPS Trails and Walkways, Code 575.

**CRITERIA****General Criteria Applicable to All Purposes**

Design the access road to serve the enterprise or planned use with the expected vehicular or equipment traffic. Factors in the design include the type of vehicle or equipment and the speed, loads, soils, climate, and other conditions under which vehicles and equipment are expected to operate.

Where general public use is anticipated, design roads to meet applicable federal, state and local criteria.

Follow sound engineering practices to ensure that the access road meets the requirements of its intended use and that maintenance requirements are acceptable.

Geologic investigations shall be in accordance with National Engineering manual (NEM) Part 531, Geology, Subpart A – Geological Investigations. Review of existing data or other suitable means of investigation shall be conducted to characterize materials within the foot print of the road. Classify soil materials using the Unified Soil Classification System (USCS) and maintain a permanent record of all soil borings in the design folder.

Impact to cultural resources, wetlands and Federal and state protected species shall be evaluated and avoided or minimized to the extent practicable during planning, design and implementation of this conservation practice in accordance with established National and Florida policy, General Manual (GM) Title 420-Part 401; Title 450-Part 401, Title 190-Parts 410.22 and 410.26, National Planning Procedures Handbook (NPPH) Florida Supplements to Parts 600.1 and 600.6, National Cultural Resources Procedures Handbook (NCRPH), National Food Security Act Manual (NFSAM), and the National Environmental Compliance Handbook (NECH).

**Criteria Applicable for Non-Public Use Access Roads**

**Location.** Locate the access road to serve the purpose intended, to facilitate the control and disposal of surface and subsurface water, to control or reduce erosion, and to make the best use of topographic features. Design the layout of the road to follow natural contours and slopes to minimize disturbance of drainage patterns. Locate the access road where it can be maintained and where water management problems are not created. To reduce potential pollution, position the road as far as possible from water bodies and watercourses. To the extent possible, do not impede overland flow. Utilize buffers where possible to protect waterbodies.

**Alignment.** Adapt the gradient and horizontal alignment to the intensity of use, the mode of travel, the type of equipment and load weights, and the level of development.

Grades normally should not exceed 10 percent except for short lengths. A maximum grade of 15 percent should only be exceeded if necessary for special uses such as field access roads or fire protection roads.

For stream crossings, the road should be aligned so that it crosses perpendicular to the channel as much as possible.

**Width.** The minimum width of the roadbed for an all-purpose road is 14 feet for one-way traffic and 20 feet for two-way traffic. The roadbed width includes a tread-width of 10 feet for one-way traffic or 16 feet for two-way traffic and 2 feet of shoulder width on each side. Increase the two-way traffic width by a minimum of 4 feet for trailer traffic. Single purpose roads will have a minimum width of 10 feet with greater widths at curves and turnouts. Use vegetation or other measures to protect the shoulders from erosion.

Use turnouts on single lane roads where vehicles travel in both directions on a limited basis. Design the turnout to accommodate the anticipated vehicle use. Where turnouts are needed, the turnout will be constructed with a minimum width of 14 feet, minimum length of 30 feet, and an entrance of 10 feet and an exit of 10 feet to accommodate vehicles with a longer wheelbase. Final turnout dimension will be based on professional judgment.

Provide a turnaround at the end of dead end roads. Size the turnaround for the anticipated vehicle type that will be using the road.

Provide parking space as needed to keep vehicles from parking on the shoulder or other undesirable locations.

**Side slopes.** Design all cuts and fills to have stable slopes that are a minimum of 2 horizontal to 1 vertical (2:1). For short lengths, rock areas, or very steep hillsides, steeper slopes may be permitted if soil conditions warrant and special stabilization measures are installed.

Where possible, avoid areas with geological conditions and soils that are subject to slides. When the area cannot be avoided, treat the area to prevent slides.

**Drainage.** The type of drainage structures used will depend on the intended use and runoff conditions. Provide a culvert, bridge, ford, or surface cross drain for water management at every natural drainage way. The capacity and design of the drainage feature must be consistent with sound engineering principles and must be adequate for the class of vehicle, road type, land use in the watershed, and intensity of use.

When a culvert or bridge is installed in a drainage way, it must have a minimum capacity that is sufficient to convey the design storm runoff without causing erosion or road overtopping. Table 1 lists minimum design storm frequencies for various road types.

Table 1 - Minimum Design Storm Frequencies for Various Road Types

Road Intensity & Usage	Storm Frequency
Intermittent; single purpose or farm use	2 year - 24 Hour
Frequent; farm headquarters, livestock access, isolated recreation areas	10 year - 24 Hour
High intensity; residential or public access	25 year - 24 Hour

Use Florida NRCS CPS Stream Crossing, Code 578 to design stream crossings. The capacity of the culvert or bridge must be sufficient to carry the design flow for the applicable storm event.

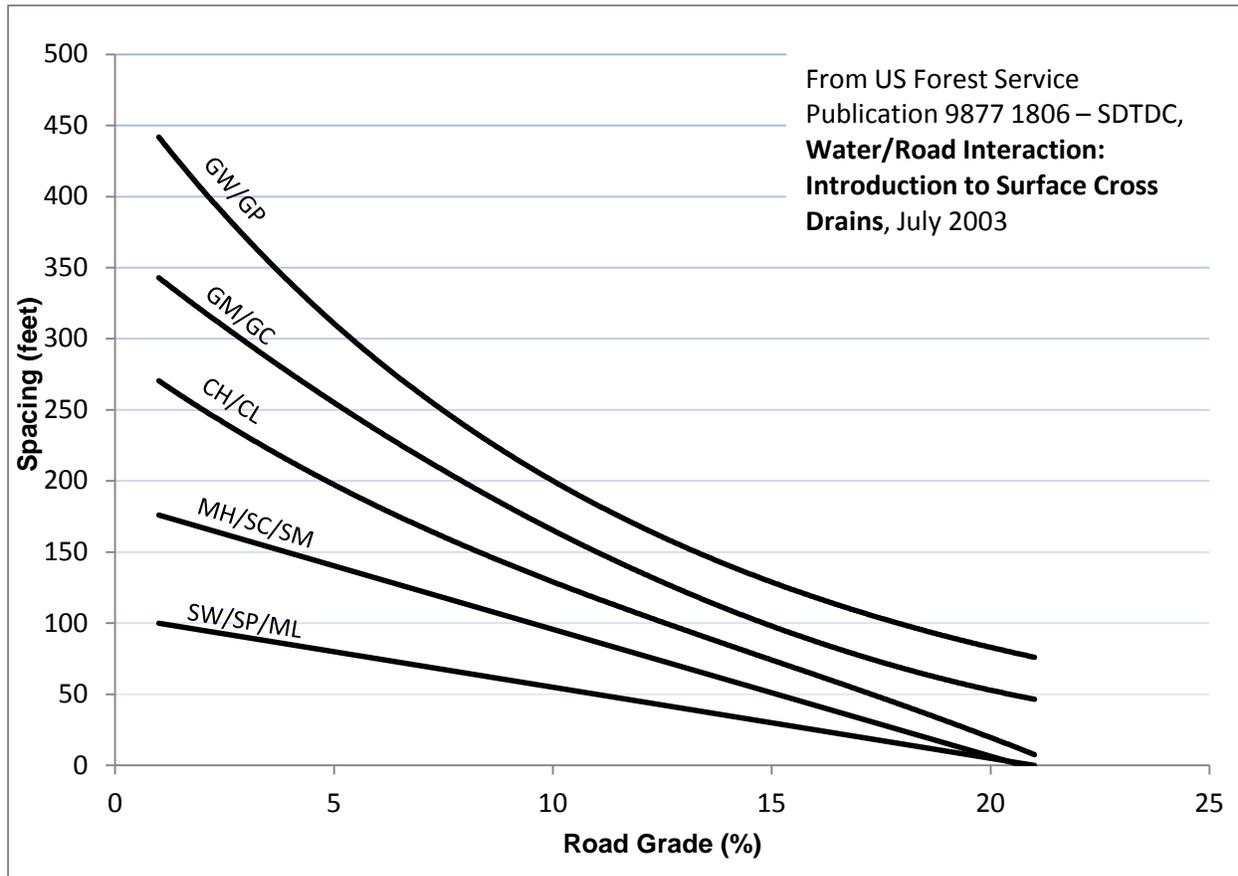
An erosion resistant low point or overflow area may be constructed across the access road to supplement culvert capacity on non-public use roads.

Surface cross drains, such as water breaks, water bars, diversions, and broad-based or rolling dips, may be used to control and direct water flow off the road surface on low-intensity use forest, ranch or similar roads. Protect the outlets of drainage measures to limit erosion. On steep grades where water could run down the road, use a broad-based dip or other similar feature to divert runoff. The surface cross drain must be constructed of materials that are compatible with the use and maintenance of the road surface. The discharge area for a surface cross drain must be well-vegetated or have other erosion resistant materials. See Figure 1 - Recommended Spacing of Surface Cross Drains Based on Soil Type. Reduce separation distances as needed to account for local hydrologic conditions.

Crown the road surface to direct precipitation off of the road.

Provide ditches, as needed, to move water away from the road. Maintain unobstructed flow into the ditches to prevent flows from causing roadside erosion. The capacity of a roadside ditch must be adequate to carry the drainage from the road surface. Design ditch channels to have stable grades and side slopes. Provide a stable outlet for the ditch. Protection may include riprap or other similar materials. Use Florida NRCS CPS Structure for Water Control, Code 587; Lined Waterway or Outlet, Code 468; or Grade Stabilization Structure, Code 410, if needed.

Figure 1. Recommended Spacing of Surface Cross Drains Based on Soil Types



**Surfacing.** Install a wearing course or surface treatment on the access road if required by traffic needs, soil, climate, erosion control, particulate matter emission control, or other site condition. If none of these factors apply, no special treatment of the surface is required.

When a treatment is used, the type of treatment will depend on local conditions, available materials, and the existing road base. On roads made of soils with weak bearing capacity, such as silts, organics, and clays, or where it is necessary to separate the surfacing material from the foundation material, place a geotextile material specifically designed for road stabilization applications under the surface treatment. Use the criteria in Florida NRCS CPS Heavy Use Area Protection, Code 561 to design the surface treatment. Do not use toxic and acid-forming materials to build the road.

If dust control is needed, use Florida NRCS CPS Dust Control on Unpaved Roads and Surfaces, Code 373.

Unsurfaced roads may require controlled access to prevent damage or hazardous conditions during adverse climatic conditions.

Toxic and acid-forming materials shall not be used on roads. This should not be construed to prohibit use of chemicals for dust control after considering potential impacts on stabilizing vegetation.

**Safety.** Provide passing lanes, turnouts, guardrails, signs, and other facilities as needed for safe traffic flow. Design an intersection to a public highway to meet applicable federal, state and local criteria.

**Construction Operations.** Construction operations shall be carried out in such a manner that erosion and air and water pollution are minimized and held within legal limits. Construction shall include the following requirements as necessary for the job:

1. Measures must be in place to limit the generation of particulate matter during construction.
2. Trees, stumps, roots, brush, weeds, and other objectionable material shall be removed from the work area.
3. Unsuitable material shall be removed from the roadbed area.
4. Grading, sub-grade preparation, and compaction shall be applied as designed.
5. Surfacing shall be applied as designed.

**Erosion control.** Use the criteria in Florida NRCS CPS Critical Area Planting, Code 342 to vegetate road banks and disturbed areas as soon soil and climatic conditions are favorable. If permanent vegetation cannot be established in a timely manner, use appropriate temporary measures to control erosion. If the use of vegetation is precluded and protection against erosion is needed, use the criteria in Florida NRCS CPS Mulching Code 484 to provide surface protection.

During and after construction, use erosion and sediment control measures to minimize off-site damages.

Design roadside channels, cross drains, and drainage structure inlets and outlets with appropriate design capacity and stable and in conformance with Florida NRCS CPS Grassed Waterway, Code 412; Lined Waterway or Outlet, Code 468; or Structure for Water Control, Code 587. If protection is needed to stabilize the site, rock riprap or other similar materials shall be used.

Watercourses and water quality shall be protected during and after construction by erosion-control facilities and maintenance. Florida NRCS CPS Filter Strip, Code 393, Water and Sediment Control Basin, Code 636 or other conservation practices shall be used and maintained as needed.

#### **Criteria Applicable for Public Use Access Roads**

Access roads used by the public shall be designed in conformance with local and state laws, rules and regulations to ensure a safe road for the anticipated traffic volumes, type of vehicles, and site conditions.

#### **CONSIDERATIONS**

Consider visual resources and environmental values during planning and design of the road system.

Limiting the number of vehicles and vehicle speed will reduce the potential for generation of particulate matter and decrease safety and air quality concerns.

Consider using additional conservation practices to reduce the potential for generation and transport of particulate matter emissions such as Florida NRCS CPS Dust Control on Unpaved Roads and Surfaces, Code 373 or Windbreak/Shelterbelt Establishment, Code 380.

During adverse weather, some roads may become unsafe or may be damaged by use. Consider restricting access to the road at that time.

Access roads should be located where minimal adverse impacts will affect wetlands, waterbodies and wildlife habitat. Consideration should be given to the following:

- Effects on downstream flows or aquifers that would affect other water uses or users.
- Effects on wetlands and aquatic wildlife habitats that would be associated with the practice.
- Utilizing buffers where possible to protect surface water.
- Short-term and construction-related effects of this practice on the quality of on-site downstream water courses.
- Overall effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances that would be carried by runoff from construction activities.
- Establishing vegetation on road shoulders.
- Limiting the number of vehicles and vehicle speed will reduce the potential for generation of particulate matter and decrease safety and air quality concerns.

When available, consider using organic biodegradable materials as a surface treatment.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for constructing access roads shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications shall include, but not limited, to the following items:

- A plan view of the proposed road that shows the location of water features, utilities, and other features that affect the design.
- Road width and length with profile and typical cross section(s) including turnouts, parking, and turnarounds.
- Design road grades or maximum grades when applicable.
- Location of soil borings and plot of the soil/geologic boring showing the USCS.
- Type and thickness of surface treatment including any subbase preparation.
- Grading plan.
- Cut and fill slopes where applicable.
- Planned drainage features.
- Structure requirements for culverts, bridges, etc.
- Vegetative requirements that include vegetation materials to be used, establishment rates, and season of planting.
- Erosion and sediment control plan.
- Expected usage of the road and relevant safety features.

### **OPERATION AND MAINTENANCE**

An operation and maintenance plan shall be provided to and reviewed with the landowner.

The plan shall include the following items and others as appropriate:

- Inspect culverts, roadside ditches, water bars, and outlets after each major runoff event and restore flow capacity as needed. Ensure adequate cross section is available and outlets are stable.
- Maintain vegetated areas in adequate cover to meet the intended purpose(s).
- Fill low areas in travel treads and re-grade, as needed, to maintain road cross section.
- Select chemical treatment(s) that minimize the damage to vegetative buffers adjacent to the road when it is necessary to chemically treat the road surface to maintain erosion protection.
- Use conservation practices that limit particulate matter emissions should be incorporated into long-term maintenance plans.

### **REFERENCES**

Florida Drainage Guide

Florida NRCS CPS

Critical Area Planting, Code 342

Dust Control on Unpaved Roads and Surfaces, Code 373

Forest Trails and Landings, Code 655

Filter Strip, Code 393

Grade Stabilization Structure, Code 410

Grassed Waterway, Code 412

Heavy Use Area Protection, Code 561  
Lined Waterway or Outlet, Code 468  
Mulching, Code 484  
Stream Crossing, Code 578  
Structure for Water Control, Code 587  
Trails and Walkways, Code 575  
Water and Sediment Control Basin, Code 638  
Windbreak/Shelterbelt Establishment, Code 380

**General Manual**

Title 420-Part 401  
Title 450-Part 401  
Title 190-Parts 410.22 and 410.26

National Cultural Resources Handbook

National Engineering Manual, Part 531

National Environmental Compliance Handbook

National Food Security Act Manual

National Planning Procedures Handbook

Florida Supplements to Parts 600.1 and 600.6

United States Forest Service. July 2003. *Water/Road Interaction: Introduction to Surface Cross Drains*  
(Publication 9877 1806 – SDTDC).