

USDA
NATURAL RESOURCES
CONSERVATION SERVICE

DELAWARE CONSERVATION
PRACTICE STANDARD

ACCESS ROAD

CODE 560
(Reported by Ft.)

DEFINITION

A travel-way for equipment and vehicles constructed as part of a conservation plan.

PURPOSES

To provide a fixed route for vehicular travel for resource activities involving the management of timber, livestock, agriculture, wildlife habitat, and other conservation enterprises while protecting the soil, water, fish, wildlife, and other adjacent natural resources.

**CONDITIONS WHERE PRACTICE
APPLIES**

Where access is needed from a private or public road or highway to a land use enterprise or conservation measure, or where travel ways are needed in a planned land use area.

Access roads range from seasonal use roads, designed for low speed and rough driving conditions, to all-weather roads heavily used by the public and designed with safety as a high priority. Some roads are only constructed for a single purpose; i.e. control of forest fires, logging and forest management activities, access to remote recreation areas, or access for maintenance of facilities.

CONSIDERATIONS

The following items should be considered:

- Consider visual resources and environmental values during the planning and designing of the road system.
- Access roads should be located where minimal adverse impacts will affect wetlands, waterbodies, and wildlife habitat.
- Effects on downstream flows or aquifers that would effect other water uses or users.
- Effects on the volume and timing of downstream flow to prohibit undesirable environmental, social, or economic effects.
- 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.
- Effects on wetlands and water-related wildlife habitats that would be associated with the practice.

This practice has the potential to affect National Register listed cultural resources or eligible (significant) cultural resources. These may include archeological, historic, or traditional cultural properties. Care should be taken to avoid adverse impacts to these resources. Follow NRCS state policy for considering cultural resources during planning.

CRITERIA

Criteria Applicable to All Purposes

Access roads shall be designed to serve the enterprise or planned use with the expected vehicular or equipment traffic. The type of vehicle or equipment, speed, loads, soil, climatic, and other conditions under which vehicles and equipment are expected to operate need to be

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

addressed. Planned work shall comply with all federal, state, and local laws, rules, and regulations.

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

Location. Roads shall be located to serve the purpose intended, to facilitate the control and disposal of surface and subsurface water, to control or reduce erosion, to make the best use of topographic features, and to include scenic vistas where possible. The roads should generally follow natural contours and slopes to minimize erosion and disturbance of drainage patterns. Roads shall be located where they can be maintained and where water management problems are not created. To reduce potential pollution, roads shall be located away from watercourses and utilize buffers where possible to protect waterbodies.

Alignment. The gradient and horizontal alignment shall be adapted to the intensity of use, 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. Maximum grades of 18 percent should only be exceeded if necessary for special uses such as logging roads, field access roads, fire protection roads, or other roads not accessible for use by the general public. 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 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. Each type of road also requires 2 feet of shoulder width on each side. Single-lane logging or special-purpose roads can have a minimum width of 10 feet, with greater widths at curves and turnouts. The two-way traffic width shall be increased approximately 4 feet for trailer traffic. The shoulder width may be either gravel or grass.

Turnouts shall be used on single lane roads where vehicles travel in both directions on a limited basis. Where turnouts are used, road

width shall be increased to a minimum of 20 feet for a distance of at least 30 feet.

Side Slopes. All cuts and fills shall be designed to have stable slopes of a minimum of 2 horizontal to 1 vertical on heights of less than 4 feet. For short lengths, rock areas, or very steep hillsides, steeper slopes may be permitted if soil conditions warrant and special stabilization measures are installed.

Areas with geological conditions and soils subject to slides shall be avoided or treated to prevent slides.

Drainage. The type of drainage structure used will depend on the intended use and runoff conditions. Culverts, bridges, fords, or grade dips for water management shall be provided at all natural drainageways. The capacity and design shall be consistent with sound engineering principles and shall be adequate for the class of vehicle, type of road, development, or use. When a culvert or bridge is installed in a drainage way, its minimum capacity shall convey the design storm runoff without causing erosion or road overtopping. Table 1 lists minimum design storm frequencies for various road types.

Table 1

Road Type	Storm Frequency
Forest Access Roads, Farm Field Access Roads	2 year - 24 Hour
Farm Driveways, Recreation Facility Access Roads	10 year - 24 Hour
Public Access Roads, Campgrounds, Etc.	25 year - 24 Hour

An erosion-resistant low point or overflow area may be constructed across the access road to supplement culvert capacity on non-public use roads. Culverts, bridges, fords, and hardened overflow areas should be installed so the road crossing does not significantly impact fish migration.

Roadside ditches shall be adequate to provide surface drainage for the roadway and deep enough, as needed, to serve as outlets for subsurface drainage. At a minimum, the

roadside ditch shall be 1.0 foot below the top of road surface to provide internal drainage. Ditch channels shall be designed to be on stable grades or protected with structures or linings for stability.

Water-breaks or water-bars may be used to control surface runoff on low-intensity use forest, fern, or similar roads. On steep grades where runoff and erosion is anticipated down the road, water bars should be considered. Water bars must be constructed of materials that are compatible with the use and maintenance of the road surface. Water bar discharge areas must be well vegetated or have other erosion resistant materials. See chart for recommended spacing of relief culverts and water bars based on soil type.

Surface crowning can also help direct road runoff into the side drainage ditches. Unobstructed flow into the ditches must be maintained to prevent flows from causing roadside erosion. Provide a turnaround at the end of dead end roads. In some areas, turnarounds may also be desirable for stream, lake, recreation, or other access purposes.

Provide parking space as needed to keep vehicles off the road or from being parked in undesirable locations.

Surfacing. Access roads shall be given a wearing course or surface treatment if required by traffic needs, soil, climate, erosion control, or dust control. The type of treatment, if needed, depends on local conditions, available materials, and the existing road base. If these factors or the volume of traffic is not a problem, no special treatment of the surface is required. On weak bearing capacity soils such as silts, organics, and clays, the surface treatment should be underlain with a geotextile material specifically designed

for road stabilization applications when the road is used on a regular basis.

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 and snow and ice removal after considering potential impacts on stabilizing vegetation.

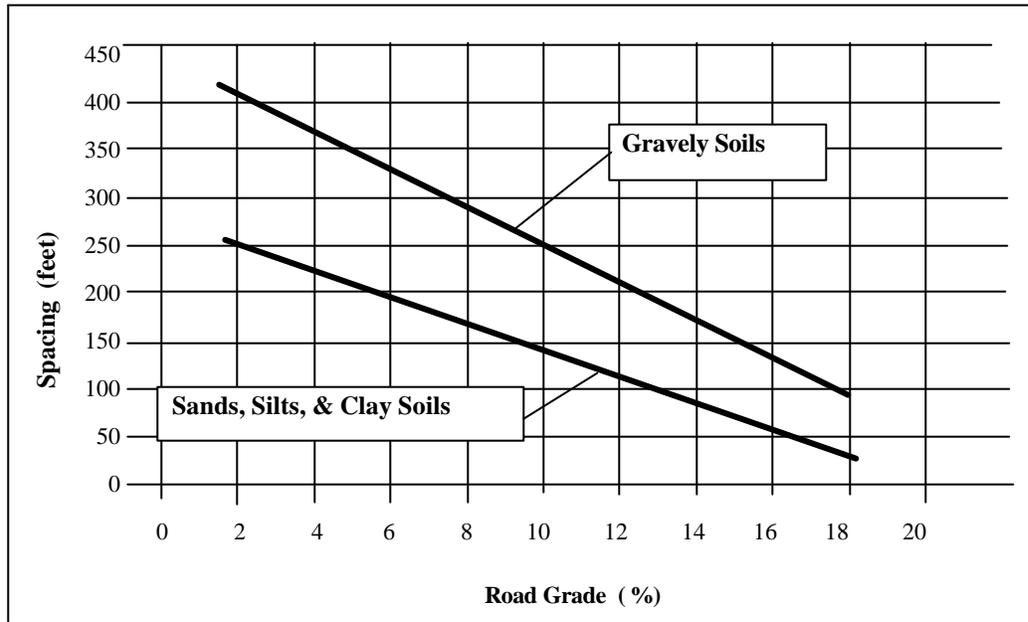
Construction Operations. Construction operations should be carried out in such a manner that erosion and air and water pollution are minimized and held within legal limits. Construction shall include the following requirements as necessary for the job:

1. Trees, stumps, roots, brush, weeds, and other objectionable material shall be removed from the work area.
2. Unsuitable material shall be removed from the roadbed area.
3. Grading, sub-grade preparation, and compaction shall be done as needed.
4. Surfacing shall be done as needed.

Traffic Safety. Passing lanes, turnouts, guardrails, signs, and other facilities as needed for safe traffic flow shall be provided. Traffic safety shall be a prime factor in selecting the angle and grade of the intersection with public highways. Preferably, the angles shall be not less than 85 degrees. The public highway shall be entered either at the top of a hill or far enough from the top or a curve to provide visibility and a safe sight distance. The clear sight distance to each side shall not be less than 300 feet or as required by local regulations.

**RECOMMENDED SPACING FOR RELIEF CULVERTS AND WATER BARS
SOIL TYPES**

BASED ON



Erosion Control. If soil and climatic conditions are favorable, roadbanks and disturbed areas shall be vegetated as soon as possible and skid trails, landings, logging, and similar roads shall be vegetated after harvesting or seasonal use is completed. Planting shall be in accordance with NRCS Practice Standard 342, Critical Area Planting. If the use of vegetation is precluded and protection against erosion is needed, protection shall be provided by non-vegetative materials, such as gravel or other organic or inorganic material (see NRCS Practice Standard 484, Mulching), or in accordance with local regulations.

Roadside channels, cross drains, and drainage structure inlets and outlets shall be designed to be stable in accordance with NRCS Practice Standard 587, Structure for Water Control. If protection is needed, 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. Filter strips, water and sediment control basins, and other conservation practices shall be used and maintained as needed.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail concerning site preparation and establishment to ensure successful management of the practice. Appropriate conservation practice standards shall be used for designing and installing structural and vegetative measures. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) Plan will be developed and carried out for the life of the practice:

1. Inspect culverts, roadside ditches, water bars, and outlets after each major runoff event and restore flow capacity as needed.
2. Maintain vegetated areas in adequate cover. Re-seed and mow as needed.
3. Fill low areas in travel treads and re-grade, as needed, to maintain road cross section.

4. Inspect roads with water bars periodically to insure proper cross section is available and outlets are stable.

SUPPORTING DATA FOR DOCUMENTATION

The following is a list of the minimum data and documentation to be recorded in the case file:

1. The location and length of the practice marked on the conservation plan map.
2. Assistance notes.
3. Completed copy of the appropriate Job Sheet(s) or other specifications. See NRCS Practice Standard 342, Critical Area Planting, for details.

Field Data and Survey Notes

Record on survey notepaper, SCS-ENG-28, or other appropriate format. The following is a list of the minimum data needed:

1. Plan view sketch.
2. Profile of existing ground along the proposed access road.
3. Cross-sections of the existing ground at the location of the access road.
4. Locations of all waterbodies or streams crossed.
5. Profile and cross-section of the waterbodies and streams at their intersection with the access road.

Design Data

Record on appropriate engineering paper. For guidance on the preparation of engineering plans see Chapter 5 of the Engineering Field Handbook - Part 650. The following is a list of the minimum required design data:

1. Determine soil type and any special restrictions.
2. Determine peak runoff from the contributing drainage area for the required design storm in accordance with Chapter 2, Engineering

Field Handbook - Part 650 or by other approved method.

3. Design the access road alignment and profile in accordance with the requirements of this practice standard.
4. Show the engineering job class on the plans. Show the location description and elevation of temporary benchmarks utilized in the design survey. Provide a location map, which indicates the job site.
5. Plan view sketch, profile of access road and cross-sections of the existing ground and proposed access road are to be shown on the construction plans.
6. Details of road surfacing, culverts, and outlet protection as well as other required structural components.
7. Show on the plans the planting plan for disturbed areas.
8. Estimated quantities and cost estimate.

Construction Check Data/As-Built Plans

Record on survey notepaper, SCS-ENG-28, or other appropriate format. Survey data will be plotted in red on the as-built plans. The following is a list of minimum data needed for as-built documentation:

1. Documentation of site visits. The documentation shall include the date, who performed the inspection, specifics as to what was inspected, all alternatives discussed and decisions made and by whom.
2. Check notes recorded during or after completion of construction showing grade and cross section of the access road and components including length, top width, and grade as well as the size and grade of culverts and outlet protection.
3. Measure and document the length of road and culverts.
4. Statement regarding the road surface and seeding.

5. Final quantities and documentation for quantity changes. Material certifications as appropriate.
6. Signature and date on the check-notes and plans of someone with appropriate engineering job approval authority. Include a written statement that the constructed practice meets or exceeds the construction plans and NRCS practice standards.