

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**ACCESS ROAD**

(Feet)

**CODE 560**

**DEFINITION**

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

**PURPOSE**

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, air, 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.

**CRITERIA**

Design access roads to serve the planned use with the expected frequency of vehicular or equipment traffic. Consider conditions under which vehicles and equipment are expected to operate, such as vehicle or equipment type, speed, loads, soil, and climate.

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

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

**Location.** Construct roads to facilitate the control and disposal of surface and subsurface water, control or reduce erosion, utilize topographic features where feasible, and include scenic vistas where possible. Construct roads to follow natural contours and slopes to minimize disturbance of drainage patterns. Locate roads where they can be maintained and water management problems are not created. To reduce potential pollution, locate roads away from watercourses and utilize buffers where possible to protect waterbodies.

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

For stream crossings, align roads so it crosses perpendicular to the channel.

Grades shall not exceed 10 percent except for short lengths of up to 50 feet. 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. A water control mechanism is required immediately above steep grades.. Roads can be located diagonally across the slope, only when necessary to stay within maximum allowable grades.

**Width.** For one-way traffic, the minimum width of the roadbed is 14 feet; for two-way traffic the minimum width is 20 feet. 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.

Turnouts shall be spaced every 200 to 500 feet. Where sight distances exceed 1000 feet, turnouts may be spaced at 1000 feet.

Turnarounds shall be used at the end of dead roads. Turnarounds may also be desirable for stream, lake, recreation, or other access purposes. The minimum radius of curvature of centerline for turn arounds and curves shall be 40 feet for cars only and 50 feet for cars with trailers up to 30 feet long.

For agricultural access roads, minimum widths of 12 feet are acceptable on tangents with fairly level sections without appreciable depth of cut or fill. Minimum widths of 14 feet shall be used on all curves, side hill sections or areas of substantial cut or fill. Sufficient side clearance shall be allowed for clear passage of trucks along the finished road. Generally, a minimum of two feet of cleared area is to be maintained from the edge of the graded surface.

**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, only if soil conditions warrant or special stabilization measures are installed.

Avoid areas with geological conditions prone to sliding or slope instability. When such sites are to be used provide treatment to ensure slope stability. Allowable treatments include but are not limited to regrading slope, installing turf-reinforcement mats, or placement of gabion wire-mesh baskets.

**Drainage.** Drainage structures shall be chosen to accommodate the intended use and runoff conditions. Culverts, bridges, fords, or grade dips for water management shall be provided at all natural drainage ways and shall be designed in accordance to Rhode Island Conservation Practice Standard Stream Crossing, code 587. The minimum capacity of a culvert or bridge in drainage way 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.**

**Minimum Design Storm Frequencies for Various Road Types**

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. Install culverts, bridges, fords and hardened overflow areas to avoid significant impact of fish migration.

Roadside ditches shall be adequate to provide surface drainage for the roadway and contributing area, and maintain the proper depth to serve as outlets for subsurface drainage. At a minimum, the roadside ditch shall be 1.0 foot below the top of the 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, ranch or similar roads. Consider water bars on steep grades where runoff and erosion is anticipated down the road. Construct water bars with materials 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 Figure 1. Recommended Spacing of Relief Culverts and Water Bars Based on Soil Type.

Provide roadbed drainage at all seep areas and high water table areas. The depth, spacing, outlets, and size of roadbed drains must keep the water table at least 24 inches below the surface.

Use surface crowning to help direct road runoff into the side drainage ditches. Crown the centerline of the access road at least 3 inches higher than the shoulder or grade from one side of the road to the other on a single uniform slope. Flow into the ditches must remain unobstructed to prevent roadside erosion.

**Surfacing.** Provide surface treatment on access roads as required by traffic needs, soil, climate, erosion control, or particulate matter emission control. Treatment type depends on local conditions, available materials, and the existing road base. If these factors or volume of traffic pose no problem, special treatment of the surface is not required. For weak bearing capacity soils such as silts, organics, and clays, the surface treatment should be underlain with geotextile material specifically designed for road stabilization applications when the road is used on a regular basis.

To prevent damage or hazardous conditions during adverse climatic conditions, consider controlled access on unsurfaced roads.

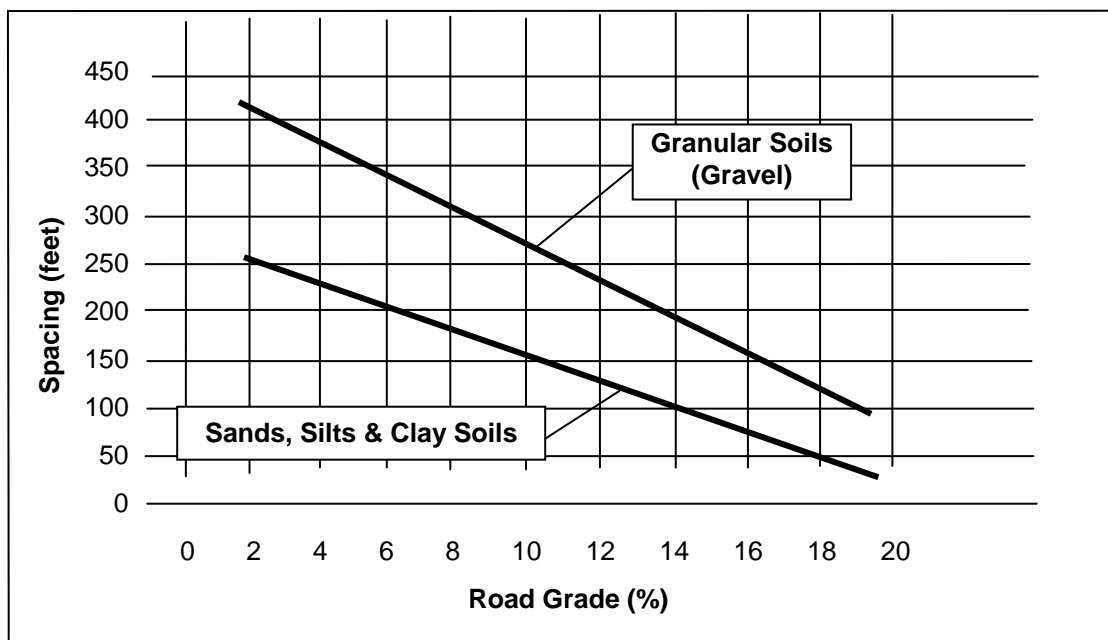
Toxic and acid-forming materials shall not be used on roads. This is not to be construed to prohibit use of chemicals for dust control and snow and ice removal after considering potential impacts on stabilizing vegetation.

Utilize additional conservation practices to reduce the potential for generation and transport of particulate matter emissions.

**Construction Operations.** Construction operations should be carried out in such a manner that air and water pollution and erosion 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. Removal of unsuitable material from the roadbed area.
3. Grading, sub-grade preparation, and compaction shall be done as needed.
4. Surfacing shall be done as needed.
5. Limit the generation of particulate matter during construction.

**Figure 1. Recommended Spacing of Relief Culverts and Water Bars Based on Soil Types**



**Traffic Safety.** Provide passing lanes, turnouts, guardrails, signs, and other facilities as needed for safe traffic flow. Traffic safety shall be a prime factor in selecting angles and grades of intersections with public highways. The minimum angle shall be 85 degrees. The public highway entrance shall be either at the top of a hill or far enough from the top of a curve to provide visibility and a safe sight distance. The minimum clear sight distance to each side is 300 feet or as required by state or local regulations.

State and local highway officials should be consulted to help determine where an access road may enter a state or town highway.

**Erosion Control.** Vegetate roadbanks and disturbed areas when soil and climatic conditions are favorable. Vegetate skid trails, landings, logging, and similar roads after harvesting or seasonal use is completed in accordance with the Rhode Island Soil Erosion and Sediment Control Handbook and Rhode Island Conservation Practice Standard Critical Area Planting, code 342.

If 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 in conformance with Rhode Island NRCS Conservation Practice Standard Mulching, code 484 or local regulations.

Roadside channels, cross drains, and drainage structure inlets and outlets shall be designed for stability and in conformance with Rhode Island NRCS Conservation Practice Standard Structure for Water Control, code 587. When protection is needed, riprap or other similar materials shall be used.

Protect watercourses and water quality 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.

## CONSIDERATIONS

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

When available, consider using organic bio-degradable materials as a surface treatment.

Construct access roads where minimal adverse impacts will affect wetlands, waterbodies wildlife habitat, and air quality. Consideration should be given to the following:

- Effects on downstream flows or aquifers that would affect other water uses or users.
- 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 aquatic wildlife habitats associated with the practice.
- Establishing vegetation on road shoulders wider than the 2-4 ft.
- Limiting the number of vehicles and vehicle speed to reduce the potential for generation of particulate matter and decrease safety and air quality concerns.

## PLANS AND SPECIFICATIONS

Prepare plans and specifications for access roads that describe the requirements for applying the practice according to this standard. As a minimum the plans and specifications shall include:

- Location of the access road.
- Road width and length with profile and typical cross section(s)

- Design road grades or maximum grades when applicable.
  - Type and thickness of surface treatment including any subbase preparation.
  - Cut and fill slopes where applicable.
  - Drainage areas and structure requirements for culverts, bridges, etc.
  - Vegetative requirements that include vegetation materials to be used, establishment rates, and season of planting.
3. Maintain vegetated areas in adequate cover to meet the intended purpose(s).
  4. Fill low areas in travel treads and re-grade, as needed, to maintain road cross section.
  5. Inspect roads with water-bars periodically to insure proper cross section is available and outlets are stable.
  6. Incorporate conservation practices that limit particulate matter emissions into the long-term maintenance plan.
  7. Site specific construction specifications that describe the installation requirements of the access road.

### **OPERATION AND MAINTENANCE**

Provide an operation and maintenance plan to review with the landowner. Include the following items and others as appropriate in the plan:

1. Inspect culverts, roadside ditches, water bars and outlets after each major runoff event and restore flow capacity as needed.
2. Minimize damage to vegetative buffers adjacent to the road when necessary to chemically treat the road surface for maintaining erosion protection.

### **REFERENCES**

Rhode Island NRCS Conservation Practice Standards  
 Critical Area Planting, (342)  
 Mulching, (484)  
 Structure for Water Control, (587)

Rhode Island Soil Erosion and Sediment Control Handbook