Access Road (Feet) 560

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, 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

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 considered.

Access roads shall be planned, designed, and installed to meet all federal, state, local, and tribal laws and regulations.

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 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. Utilize buffers where possible to protect water bodies.

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 (4.2 m) for one-way traffic and 20 feet (6 m) for two-way traffic. The roadbed width includes a tread-width of 10 feet (3 m) for one-way traffic or 16 feet (4.9 m) for two-way traffic. Each type of road also requires 2 feet (0.6m) of shoulder width on each side. Single-lane logging or special-purpose roads can have a minimum width of 10 feet (3 m), with greater widths at curves and turnouts. The two-way traffic width shall be increased approximately 4 feet (1.2 m) 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 (6 m) for a distance of at least 30 feet (9 m).

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 (1.2 m). 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 drainageway, its minimum capacity shall convey the design storm runoff without causing erosion or road overtopping. Table 1 lists minimum culvert or bridge design storm frequencies for various road types on streams or drains with a drainage area of less than 2 square miles.

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

On streams or drains with a drainage area of 2 square miles (5.2 sq km) or more, a permit is required from the Michigan Department of Environmental Quality under the State's Floodplain Regulatory Authority found in Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. A hydraulic analysis must be provided with the application indicating that the proposed project will not cause a harmful interference with respect to the stage or discharge characteristics of a stream for a range of discharges up to and including the 100-year discharge. If the project causes an increase in upstream flood elevations when compared to existing conditions, then it must be determined to be non-harmful. A harmful flood elevation increase would be one that causes damage to property, threat to life, threat to personal injury or causes pollution, and impairment or destruction of the water or other natural resources. In addition, upstream property owners must be notified if the increase in flood elevations extends on their property.

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 (0.3 m) 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, ranch, or similar roads. On steep grades where runoff and erosion is anticipated, 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 Figure 1, 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 particulate matter emission 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.

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.

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 erosion and air and water pollution are minimized and held

within legal limits. Measures must be in place to limit the generation of dust during construction.

Subgrade. The subgrade or roadbed shall be suitable for the anticipated loads. A geotextile material specifically designed for road stabilization applications may be used to distribute loads over the subgrade material. Trees, stumps, roots, brush, weeds, and other unsuitable material shall be removed from the subgrade area. Grading, subgrade preparation, and compaction 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 (90 m) or as required by local regulations.

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. Vegetate the site in accordance with NRCS conservation practice standard Critical Area Planting (342).

Use vegetation adapted to the site that will accomplish the desired purpose. Preference shall be given to native species in order to reduce the introduction of invasive plant species; provide management of existing invasive species; and minimize the economic, ecological, and human health impacts that invasive species may cause. If native plant materials are not adaptable or proven effective for the planned use, then non-native species may be used. Refer to the Field Office Technical Guide, Section II, Invasive Plant Species, for plant materials identified as invasive species.

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 conservation practice standard Mulching (484)), or in accordance with local regulations.

Roadside channels, cross drains, and drainage structure inlets and outlets shall be designed to be stable (see NRCS conservation practice standard Structure for Water Control (587)). 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.

CONSIDERATIONS

Consider the potential effects of installation and operation of access roads on the cultural, archeological, historic, and economic resources.

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

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

Consider additional shoulder width along the road or at turnouts to accommodate snow plowing on roads where vehicular use is anticipated during the winter.

Consider controlled access to unsurfaced roads to prevent damage or hazardous conditions during adverse climatic conditions.

Access roads should be located where minimal adverse impacts will affect wetlands, water bodies, 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.
- 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.
- Effects on wetlands and water-related wildlife habitats that would be associated with the practice.
- Limiting the number of vehicles and vehicle speed will reduce the potential for generation of particulate matter and decrease safety and air quality concerns.

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended use.

Support data documentation requirements are as follows:

- Inventory and evaluation records
  - Assistance notes or special report
- Survey notes, where applicable
  - Design survey
  - Construction layout survey
  - Construction check survey
- Design records
  - Physical data, functional requirements, and site constraints, where applicable
  - Soils/subsurface investigation report, where applicable
- Design and quantity calculations
- Construction drawings/specifications with:
  - Location map
  - "Designed by" and "Checked by" names or initials
  - Approval signature
  - Job class designation
  - Initials from preconstruction conference
  - As-built notes
- Construction inspection records
  - Assistance notes or separate inspection records
  - Construction approval signature
- Record of any variances approved, where applicable
- Record of approvals of in-field changes affecting function and/or job class, where applicable

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan shall be developed for this practice. The O&M plan shall be consistent with the purposes of the practice, its intended life, safety requirements, and the criteria for the design.

FIGURE 1
Recommended Spacing of Relief Culverts and Water Bars Based on Soil Types