NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

FOREST TRAILS AND LANDINGS

(Ft. and Ac.)

CODE 655

DEFINITION

A temporary or infrequently used route, path or cleared area.

PURPOSE

- Provide routes for temporary or infrequent travel by people or equipment for management activities
- Provide periodic access for removal and collection of forest products.

CONDITIONS WHERE PRACTICE APPLIES

Trails and landings including skid trails are applicable on forest land.

CRITERIA

General Criteria Applicable To All Purposes

Trails and landings will be of a size, gradient, number and location to accomplish the intended purpose.

Trails and landings shall be located and minimized in number and size to reduce adverse onsite and off-site impacts such as accelerated erosion, slope failure, water quality and riparian area degradation, stream channel and streambank damage, hydrologic modification, aesthetics, unacceptable damage to advance regeneration or residual growing stock, or fragmentation of wildlife habitat.

Locate trails on the contour to the greatest extent possible and incorporate breaks in grade (water bars, rolling dips or rolled grades) for trails on slopes. Skid logs uphill (with front ends off the ground) as practicable to minimize mechanical displacement of soil. Trails and landings will be set back from water bodies and water courses. Stream Crossings, if necessary, will be minimized in size and number.

Avoid locating trails and landings on poorly suited soils of low-bearing strength and sites such as wetlands, riparian areas, critical wildlife habitat, or other environmentally sensitive areas. Also, avoid skidding through stream channels, springs, seeps, sinkholes, and other wet areas.

Timing and use of equipment will be commensurate with site and soil conditions to maintain site productivity and minimize soil erosion, displacement and compaction.

Drainage and erosion control measures shall be integrated with trails and landings and located to minimize detrimental effects of concentrated flow, erosion and sedimentation rates both during and after trail/landing use. After usage, stream crossings will be restored and stabilized. Refer to applicable drainage and erosion-sedimentation prediction technology and practice standards such as CRITICAL AREA PLANTING (342), STRUCTURE FOR WATER CONTROL (587), STREAM CROSSING (578) and MULCHING (484), as well as state forestry Best Management Practices.

Those trails and landings intended or anticipated for management activities in subsequent years shall be designated for reuse to minimize the need for new trails and landings and associated site impacts.

CONSIDERATIONS

Review forestland soil interpretations and limitations when planning, installing, and maintaining trails and landings.

Assure safe ingress and egress to site.

Locate landings and trails to preserve aesthetic qualities.

Landings and trails may be used for wildlife food and cover plantings.

Favor native species for revegetating trails and landings.

Landings and trails may be utilized as firebreaks.

Woody residue from harvest operations, natural leaf-fall, and volunteer vegetation will often stabilize non-erosive sites when coupled with controlled vehicle access.

Consider cultural resources and environmental concerns such as threatened and endangered species of plants and animals, natural areas and wetlands.

Landings and trails no longer needed can be retired by removing high maintenance structures, such as culverts and bridges, and restored to a vegetative cover by planting and seeding.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes and narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Periodic inspections of landings and trails will be conducted and maintained as necessary.

Landings and trails utilized as firebreaks will be properly maintained to accomplish this purpose.

Landings and trails shall be closed when and where needed for erosion control, safety and liability, and reduced maintenance costs. Refer to ACCESS CONTROL (472).

Landings and trails no longer needed, and not used as a firebreak, can be retired. They shall be sufficiently revegetated as needed.

GENERAL SPECIFICATIONS

If needed, seed abandoned trails and landing areas using adequate site preparation. For erosive areas, refer to CRITICAL AREA PLANTING (342). For areas where erosion will not be a problem and seeding is desired, refer to CONSERVATION COVER (327) or UPLAND WILDLIFE HABITAT MANAGEMENT (645).

Specifications for re-vegetation of landings and trails should include species, timing and method of application. Refer to *Table 1. Seeding Rates (pounds pure live seed per acre [PLS/ac] – single species rate)* for recommendations on species, seeding rates by purpose, and shade tolerance. Refer to *Table 2. Planting Dates* for acceptable and optimal planting dates.

Landings or Yarding Areas

Locate landings or yarding areas before developing skid roads and trails. Preferred sites include ridgetops, well-drained areas, areas close to an all-weather road, or sites close to the stand being harvested. The areas should have some slope to facilitate drainage. Construct road approaches to the area at a slight grade to divert road drainage from the landing area.

Do not locate landings within 200 feet of streams, ponds, lakes, sink holes, springs, caves, or wetlands.

Harvest Trails

Keep grades as low as possible. Avoid long, steep grades that exceed 20%.

Plan the location of trails to minimize the number of stream crossings. Remove any temporary bridges and culverts when logging activities are completed. Fords shall not be used in watersheds which provide drainage to public surface water supplies or on state or federal designated important fishing streams.

On harvest (skid) trails with erosion problems, install water breaks (bars). Use Missouri Department of Conservation Watershed Protection Practice Guidelines - Best Management Practices (BMPs).

Water bars, rolling dips and other drainage measures for trails shall be of sufficient size, intervals and gradient for adequate drainage and erosion control. Start building water bars at the end of the trail and work back up the slope to avoid damaging previously constructed water bars. Adjust spacing to place water bars at abrupt gradient changes. Protect the discharge area with stone, grass sod, brush, logs, or other materials that will reduce the velocity of the runoff and control scouring.

REFERENCES

Forestry Handbook, Second Edition: Society of American Foresters; Wiley Press; 1984.

"Missouri Watershed Protection Practices: Management Guidelines for Maintaining Forested Watersheds to Protect Streams" Missouri Department of Conservation; 2005.

"A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters, and Landowners". Northeast Regional Agricultural Engineering Servcive. NRAES-60. 1993.

Table 1. Seeding Rates (pounds pure live seed per acre [PLS/ac] – single species rate)

Species	Conservation Cover (PLS/ac)	Critical Area Planting (PLS/ac)	Upland Wildlife [3] (PLS/ac)	Shade Tolerance
Cool Season Legumes:				
Ladino Clover	3.0	6.0	2.25	Intermediate
Red Clover	6.1	12.2	4.6	Intolerant
Alfalfa	7.5	15.0	5.6	Intolerant
Warm Season Legumes:				
Common Lespedeza [1]	7.5	15.0	5.6	Intolerant
Illinois Bundleflower	14.5	29.0	10.9	Intolerant
Partridge Pea [2]	26.8	53.6	20.1	Tolerant
Roundhead Bushclover	6.3	12.6	4.7	Intolerant
Showy Ticktrefoil	10.0	20.0	7.5	Tolerant
Cool Season Grasses:				
Canada Wildrye	15.3	30.6	11.5	Tolerant
Virginia Wildrye [2]	15.0	30.0	11.2	Tolerant
Kentucky Bluegrass	2.2	4.4	1.7	Intolerant
Orchardgrass	4.2	8.4	3.2	Tolerant
Redtop	1.7	3.4	1.3	Intolerant
Timothy	3.1	6.2	2.3	Intermediate
Warm Season Grass:				
Big Bluestem [2]	8.0	16.0	6.0	Intolerant
Composite Dropseed	2.3	4.6	1.7	Intolerant
Eastern Gamagrass [2]	8.0	16.0	6.0	Intolerant
Indiangrass [2]	7.8	15.6	5.9	Intolerant
Little Bluestem [2]	6.4	12.8	4.8	Intolerant
Sideoats Grama [2]	7.5	15.0	5.6	Intolerant
Switchgrass [2]	4.7	9.4	3.5	Intolerant
Warm Season Forbs:				
Grayhead Coneflower	3.6	7.2	2.7	Intolerant
Pale Purple Coneflower	16.4	32.8	12.3	Intolerant
Ox-eye Falsesunflower	11.3	22.6	8.5	Intermediate
Wild Berganot	1.4	2.8	1.0	Intermediate

[1] Annual species – plant early in the growing season to allow seed-set to occur.
[2] Use locally adapted cultivars or ecotypes of these native species where possible.
[3] Use these rates on only non-erosive sites.

For mixtures: Use the single species rates from Table 1. for the appropriate site use multiplied by the desired seeding mixture percentages to determine the seeding rate per species. Final seeding rate for the mixture will equal each adjusted seeding rate added together. For seeding Canada wildrye and Timothy as a conservation cover with each species making up 50% of the mix, the formula would be:

15.3 PLS pounds/ac X 50% = 7.6 pounds/acre seeding rate (Canada wildrye)
3.1 PLS pounds/ac X 50% = 1.5 pounds/acre seeding rate (Timothy)
Total PLS for seeding mixture = 7.6 pounds Canada wildyre + 1.5 pounds Timothy = 8.1 pounds/acre total seeding rate

Refer to the appropriate Conservation Practice Standard to determine fertility and lime application requirements.

Table 2. Planting Dates[1/]

Plantings with a dominance of:	Spring Planting Period[2/]	Summer or Fall Planting Period	Dormant Season Planting Period[2/]
Cool Season Grasses and Legumes in Northern Missouri[1/]:			
Acceptable Dates	Mar 16 – May 31	Aug 01 – Oct 15[3/]	Dec 01 – Mar 15
Optimal Dates	Mar 16 – Apr 30	Aug 16 – Sep 15	
Cool Season Grasses and Legumes in Southern Missouri[1/]:			
Acceptable Dates	Mar 01 – May 15	Aug 16 – Oct 15[3/]	Dec 16 – Feb 29
Optimal Dates	Mar 01 – Apr 15	Sep 01 – Sep 30	
Warm Season Grasses, Legumes, and Forbs in Northern Missouri[1/]:			
Acceptable Dates	Mar 16 – Jun 30		Nov 16 – Mar 15
Optimal Dates	Apr 16 – Jun 15		
Warm Season Grasses, Legumes, and Forbs in Southern Missouri[1/]:			
Acceptable Dates	Mar 01 – Jun 15		Dec 01 – Feb 29
Optimal Dates	Apr 01 – May 31		

[1/] Planting dates are based on plant suitability zones. Northern Missouri is all counties north of Bates, Henry, Benton, Morgan, Moniteau, Cole, Osage, Gasconade, Franklin, and St. Louis Counties. Southern Missouri is all counties including and south of those listed.

[2/] Mixtures containing annual species (common lespedeza, partridge pea, or southern crabgrass) will be planted only in the dormant or spring planting periods.

[3/] Mixtures containing legume species will be planted by September 15 in Northern Missouri and September 30 in Southern Missouri.