

CHAPTER 14 - TIMBER HARVESTING



Source Unknown

Timber harvesting involves cutting trees for sale. It may be done as part of the initial clearing and grubbing process for future development or independent of any future activity on the site. Although timber harvesting is exempted from the necessity of obtaining an NPDES construction permit, removal of trees, even if those trees are subsequently sold, in preparation for future development is not exempt. Timber harvesting projects not done as preparation for future development that disturb 25 acres or more, including the sum of all haul roads, skid trails, landing areas, etc. are required to obtain an Erosion and Sediment Control Permit (ESCP) prior to beginning the harvest.

In either case, the BMPs are very similar in the initial stages. The difference is that BMPs approved for the future development should be under construction as clearing progresses, while a site that is simply undergoing a timber harvest will typically not have sediment basins, traps, storm sewer inlets, etc. The Department's Timber Harvesting Packet is recommended for development and submittal of E&S plans for timber harvesting.

Since access is as important to timber harvesting as it is to development, the BMPs described in Chapters 3 and 4 are recommended for use on timber harvest sites.

The principal areas of disturbance associated with a timber harvest are the haul roads, skid trails, and landing areas.

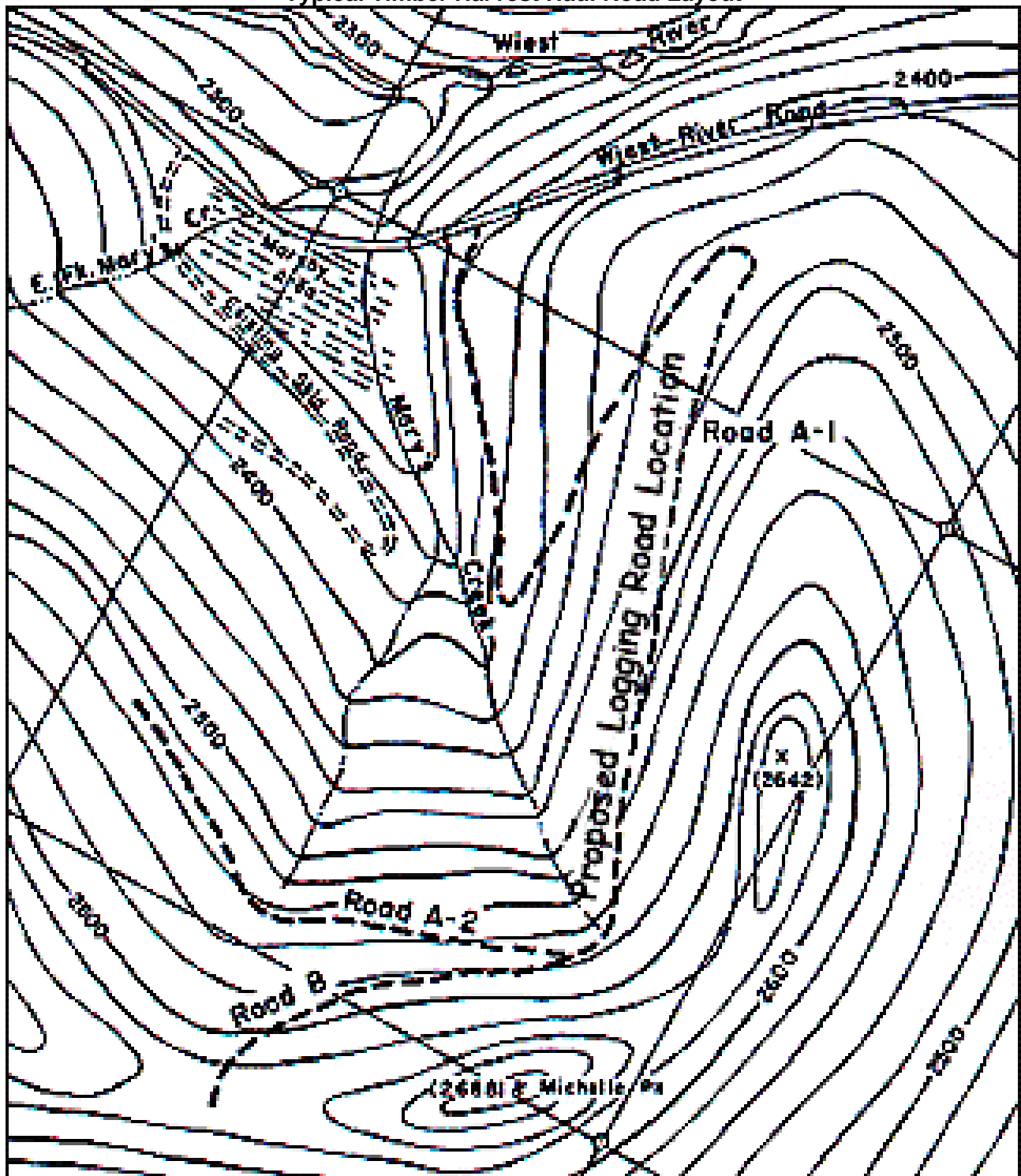
HAUL ROADS

Haul roads for a timber harvest project typically run from the landings to the entrance(s). Every road system should be planned and developed as if it will be permanent. Many roads are initially considered to be temporary, but often these temporary roads are used again and again. Therefore, the entire road system should be designed before any road construction begins. This process may seem to take more time, but a well-planned road system will be more efficient, less costly, and easier to maintain.

The following points should be considered when laying out a road system:

1. **Construct only as much road as necessary.** Minimize clearing. Keep road width to the minimum necessary for safe and efficient operation.
2. **Terminal Points** - Locate the start and end of the road system using the best access that is safe and visible from public roads. Locate landings away from streams and wet areas. Install stabilized entrances, as shown in Standard Construction Detail # 3-1, at all exit points onto a public roadway. Install an entry gate or barricade to keep potentially damaging and unwanted traffic off the haul road. **NOTE: A highway occupancy permit may be required.**
3. **Grades** - Roads with a maximum slope of 10 percent and a minimum of 2 percent are usually the easiest to maintain. Where absolutely necessary, grades of 15 to 20 percent can be used for short distances. Follow the contour as much as possible.
4. **Topography** - Roads on moderate side hills are easiest to build and maintain. Avoid steep slopes wherever possible.
5. **Drainage** - Construct roads to drain at all times, such as using crowned or insloped surfaces. Install ditch relief culverts at specified intervals, as shown in Table 3.3 or 3.4. Provide outlet protection at all culvert outfalls. Turnouts, as shown in Figure 3.3, may be used on low-side ditches to direct flow into vegetative filter areas.
6. **Grading** - Minimize cut and fill work, and keep slopes at stable angles. Remove trees from tops of cuts, and seed and mulch cut and fill slopes promptly. Do not place fill into open sinkholes, waterways, wetlands, floodways, or other sensitive areas.
7. **Obstacles** - Design the road system to go around springs, seeps, wetlands, poor drainage areas, ledges, and rocky areas wherever possible.
8. **Soils** - Be aware of soil texture, drainage class, and slope position as outlined in Appendix E. Some soils are poorly drained or seasonally wet and are difficult to log. Others are unstable when support is removed to make a road cut or when used as fill. The NRCS soils website should be consulted to identify soil limitations. Minimize the traffic areas. Running equipment over soil compacts it and damages its ability to infiltrate runoff.
9. **Distances from Streams** - Buffer areas should be maintained along stream corridors to provide sediment filtration and maintain stream temperatures. Wherever sufficient filter strips are not possible between roadways and receiving waters, install BMPs, such as wood chip berms, silt fence, etc., as the roadway progresses. See Table 14.1 for minimum filter strip widths.
10. **Stream Crossings** - Minimize the number of stream crossings. Cross at a 90 degree angle and approach the stream at as gentle a slope as possible. Consider all stream crossings temporary. Only bridge crossings, as shown in Figure 3.5, or culvert type crossings, as shown in Standard Construction Details 3-11, 3-12 and 3-13, may be used. Ford crossings are not acceptable. **NOTE: An encroachment permit or Army Corps of Engineers (ACOE) permit will be required.**
11. **Old roads** - It is often possible to use existing roads and thereby lessen the soil disturbance. However, to avoid problems, carefully evaluate the road's suitability for upgrading.
12. **Size and duration of sale** and the anticipated season of harvest.
13. **Floodways and wetlands** - Avoid encroaching on wetlands. Roadway construction within floodways — typically 50 feet from top of streambank — and wetlands require encroachment permits.
14. **Water control structures** - Carefully plan the use of broad-based dips, waterbars, culverts, and ditches to maintain existing flow patterns and minimize the amount of runoff being conveyed by roadways and roadside ditches. Figure 14.1 shows a typical haul road layout.

FIGURE 14.1
Typical Timber Harvest Haul Road Layout



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SKID ROADS AND SKID TRAILS

The primary difference between a skid road and a skid trail is the degree of preparation for use. Main skid roads should be flagged, cleared, and graded. Skid trails, which are used for transporting logs from stump to main skid road, are usually not graded and need only minimal clearing. In developing a skid road and trail system, pay special attention to proper drainage and soil stabilization. The following items should be considered:



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1. **Landings** - Locate landings in relation to the main haul road. Then lay out the skid road and trail approaches on a low grade to the landings.
2. **Grades** - Keep grades as low as the topography will permit. Do not go straight up the slope; proceed across the slope as much as possible. Grades of 20% or more should be avoided. Where unavoidable, they should be kept to short distances and make use of waterbars.
3. **Avoid Streams, Wetlands, Rocky Slopes, and Steep Grades.** Skid trails and skid roads should be located at least 50 feet from stream channels and wetlands wherever possible.
4. **Stream Crossings** - Use temporary bridges or culverts and obtain all appropriate permits/authorizations.
5. **Use Waterbars** wherever it is not possible to avoid going straight up or down slopes.
6. **NEVER SKID THROUGH OR ACROSS STREAM CHANNELS, WETLANDS, SPRINGS, OR SEEPS.**

LOG LANDINGS

The number and size of landings should be kept to the minimum necessary to operate safely and efficiently.



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Few erosion problems are associated with a properly located landing. Problems will occur, however, when water control is not considered in selecting a location. Only sites that will hold up under the anticipated use by heavy equipment should be chosen. Avoid sensitive areas such as riparian management zones, waterways, wetlands, caves, springs, seeps, and open sinkholes. Allow adequate undisturbed buffer strips between the landing and streams or sensitive areas, as shown in Table 14.1.

TABLE 14.1
Minimum Vegetative Filter Strip Widths for Timber Harvesting

Land Slope (%)	Minimum Filter Strip Width (ft.) Meadow	Minimum Filter Strip Width (ft.) Forest*
≤ 10	50	75
20	65	100
30	85	125
40	105	160
50	125	190
60	145	220
70	165	250

*A sediment barrier (e.g. wood chip berm, silt fence, straw bales, etc.) should be placed immediately below the disturbed area due to minimal sediment removal on typical forest floors.

Disturb only the area needed for safe operations. If the topography warrants, use a diversion channel, as described in Chapter 6, above the landing to keep upslope runoff from entering the landing area.

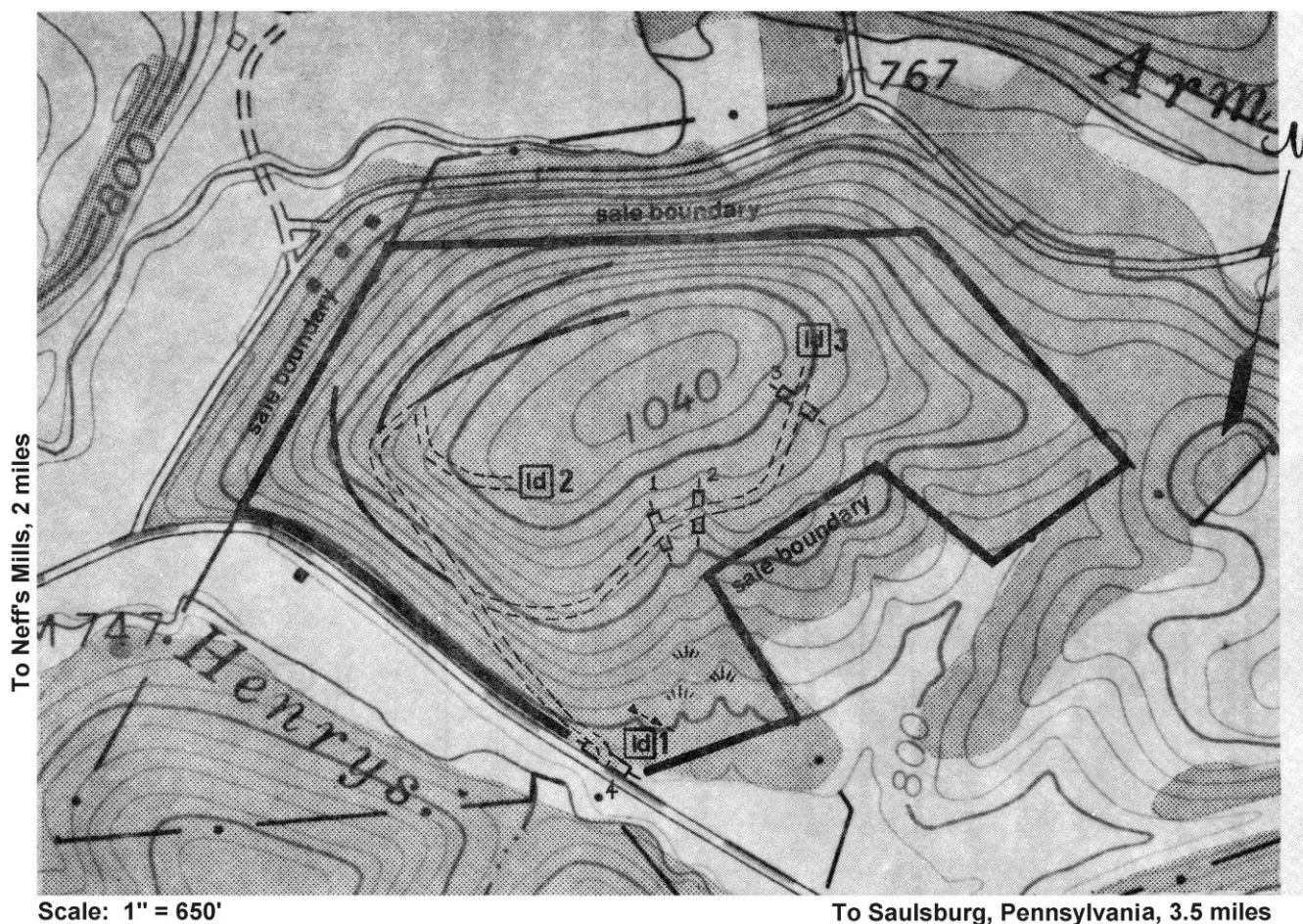
The diversion channel should have a suitable protective liner and outlet to an existing waterway wherever possible. If no waterway exists, the discharge should be directed to a stable area. If leveling is necessary, cut and fill should not alter the natural drainage pattern of the area.

Heavy equipment quickly compacts soils on landings, preventing water from infiltrating. Therefore, the landing should be sloped so as to direct runoff to a sediment removal BMP such as a wood chip berm, silt fence, straw bales, etc.

Skid roads, skid trails, and haul roads approaching the landing from above should have a waterbar, broad-based dip, or other means of diverting flow into a stable area before it reaches the landing.

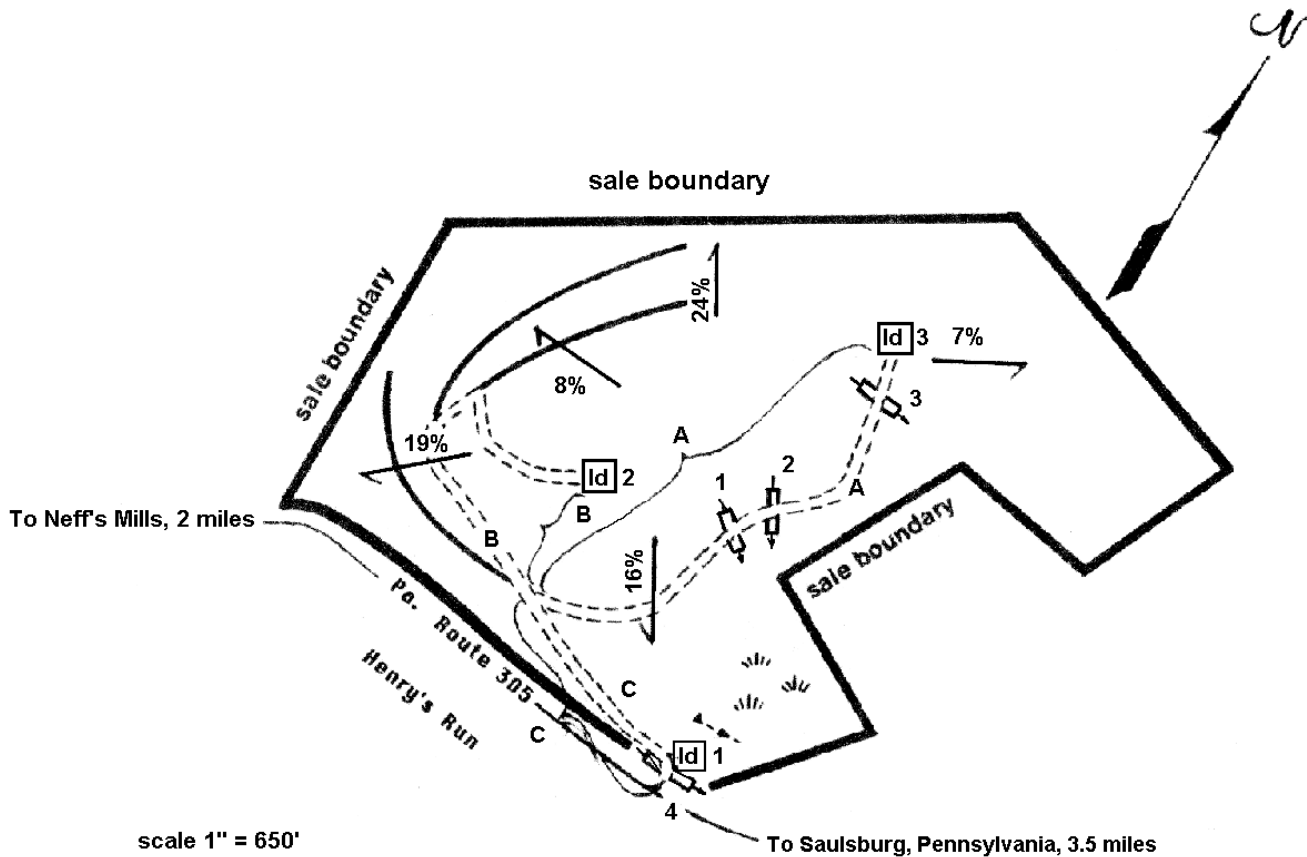
Figure 14.2 is an example of a typical timber harvest site plan and Figure 14.3 is an alternative timber harvest site plan. If a legible photocopy of a USGS topographic quad map is submitted as a location map for the E&S plan, as specified in the Timber Harvesters Action Packet, the contours need not be duplicated on the site plan.

FIGURE 14.2
Typical Timber Harvest Site Plan



PA Timber Harvest Packet

FIGURE 14.3
Alternative Timber Harvest Site Plan



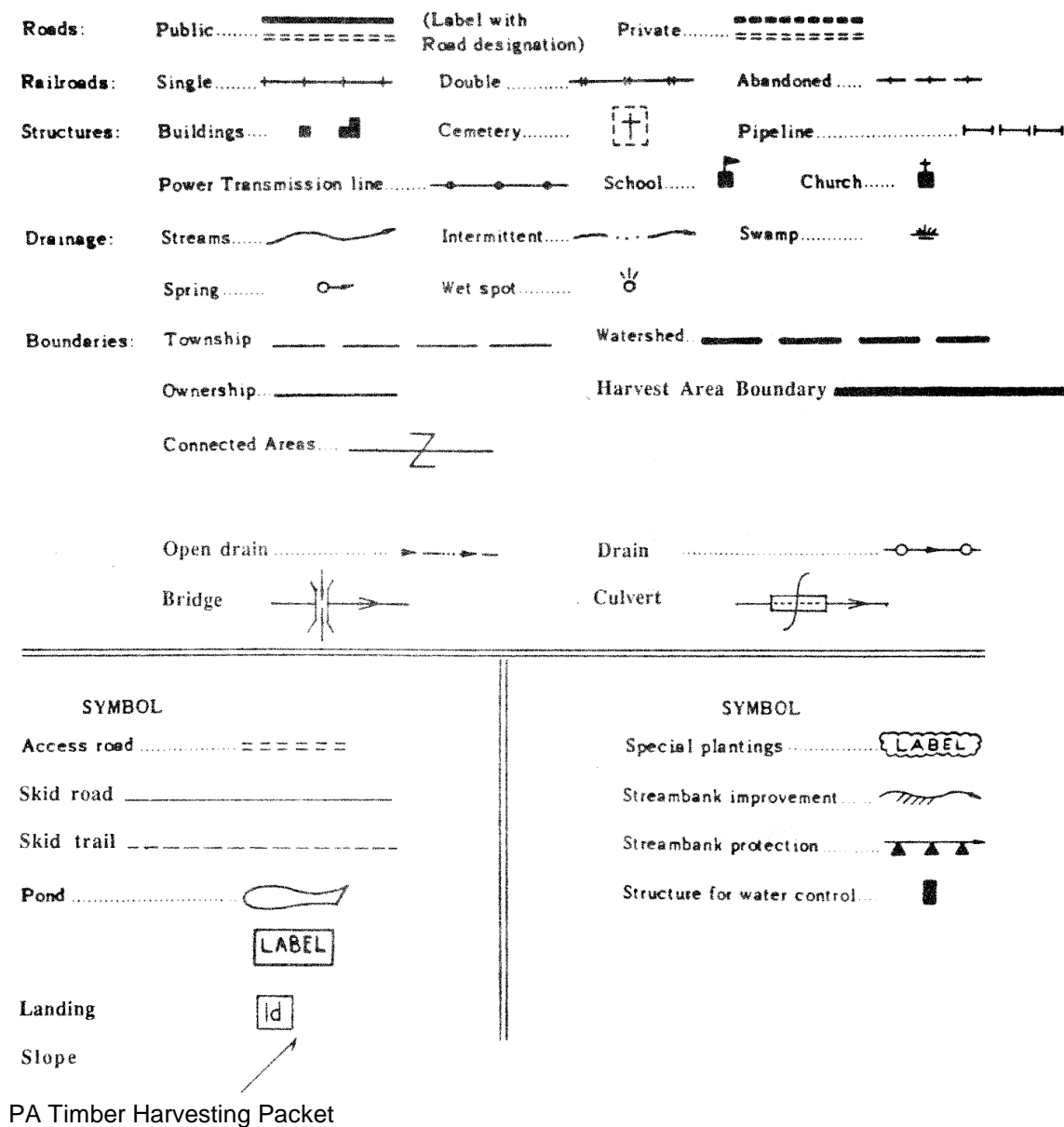
Adapted from PA Timber Harvest Packet

WINTER HARVESTS

Timber harvests are often conducted during the winter months to take advantage of frozen ground. While this practice is encouraged, there are a few concerns that should be addressed:

1. Before it snows, mark existing culverts and other drainage structures as well as waterways and wetlands, which can be obscured by snowfall. Keep all drainage structures open and functioning properly.
2. Wherever haul roads and skid roads are constructed over soils with low strength, as identified in Appendix E, hauling and skidding should be limited to periods when temperatures are below freezing unless these roads have been engineered to withstand the equipment weights involved.
3. During cold weather, snow should be plowed from haul roads and skid roads to facilitate freezing of the road grade before hauling.
4. Operations should be suspended during thaw cycles, winter rains, and during times of heavy snow melt when soils tend to be saturated.
5. During times of heavy snow, provide breaks in snow berms along plowed roads to facilitate drainage.
6. Compact skid trail snow before skidding logs. This will help protect soils that are not completely frozen.

FIGURE 14.4
Typical Timber Harvest Plan Mapping Symbols



RETIREMENT OF HAUL ROADS, SKID ROADS, SKID TRAILS, AND LANDINGS

When a tract or parcel within a harvest area has been completed, all haul roads, skid trails, and landings associated with that tract or parcel should be retired; even while timbering continues on other tracts and parcels. To do so, the following guidelines are recommended:

1. Regrade all road and landing surfaces to approximate original contour. Scarify compacted soils in preparation for seeding.
2. Remove ditch relief culverts and replace them with waterbars or broad-based dips.
3. Remove all temporary stream and wetland crossings and stabilize disturbed areas. Install or restore waterbars at appropriate distances on the approaches to the stream crossings.
4. Seed and mulch disturbed areas with seed mixtures appropriate for site conditions, such as shade tolerant, steep slope mixture, acid tolerant, etc. and further identified in Tables 11.3, 11.4 and 11.5. Blanket disturbed areas within 50 feet of stream channels or wetlands.



Armstrong Conservation District