

Section K – OTHER PRACTICES

43.0 STANDARD AND SPECIFICATIONS

FOR

TREE PROTECTION

Definition

Protection of desirable trees from mechanical and other injury while the land is being developed.

Purpose

To employ the necessary protective measures to insure the survival of desirable trees for shade, beautification, and vegetative cover.

Conditions Where Practice Applies

On areas now occupied by single specimen trees or groups of trees.

Criteria for deciding upon the trees to leave:

1. Aesthetic value: Consideration should be given to autumn foliage, flowering habits, bark and crown characteristics, and type of fruit.
2. Freedom from disease and rot.
3. Life span of trees: Some are considered short-lived trees.
4. Wind firmness: Virginia pine has a very shallow root system, and trees will blow over easily if they have been growing in a closed stand.
5. Wildlife values: Oaks, hickories, and dogwoods, etc. have a high wildlife food value.
6. Comfort index: Summer temperatures are generally ten degrees cooler under stands of hardwoods than pines or cedars.
7. Sudden exposure: Some trees are sensitive to direct sunlight radiated heat from proposed buildings and pavement.
8. Space needed: Give consideration to future growth and relationship to structures, electric and telephone lines, water and sewer lines, and driveways. Mark trees

with bright paint or ribbon so there is no doubt as to which trees are to be left and protected from damage during construction.

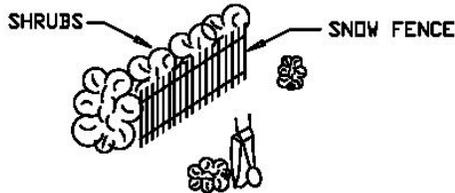
Criteria for protecting trees:

1. Trees within 25' of a building site and associated grading, parking and utility extensions shall be boxed in to prevent mechanical injury. The box should be as close to the drip line of the tree as possible.
2. Boards will not be nailed to trees during building operations.
3. Heavy equipment operators will be cautioned to avoid damage to existing tree trunks and roots during land leveling operations. Tunnel under root system when installing utility lines, if possible.
4. Tree trunks and exposed roots and limbs damaged during equipment operations will be cared for as prescribed by a forester or licensed tree expert.
5. Wood chips when spread to a 4" depth can be used in wooded sites to help prevent soil compaction and damage to trees.
6. The use of heavy equipment on root systems of desirable trees must be avoided to prevent soil compaction. All construction should be kept out of the drip line of protected trees. Protective fencing shall be utilized for trees being retained and shall be located at the drip line.
7. Broad leaf trees should receive a heavy application of complete fertilizer to aid their recovery from possible damage caused by construction operations. Fertilization should be done during winter and/or early spring following completion of construction. It should be applied at the following rate: 2 to 4 lbs. of 10-6-4 for each inch of trunk diameter measured at 4 1/2' above ground line. Fertilizer should be applied in holes 1" in diameter 18" deep. Spaced about 2' apart at the drip line of the tree.
8. During the first two summers following construction, it is desirable that the trees receive adequate amounts of water.

References

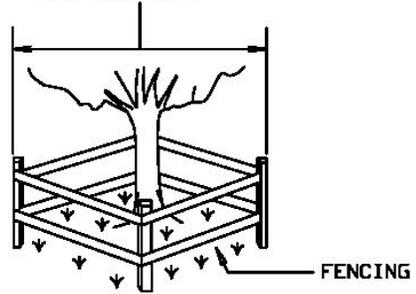
1. Agricultural Information Bulletin 285, "Protecting Trees Against Damage from Construction Work," Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
2. Guidelines for the Control of Erosion and Sediment in Urban Areas of the Northeast, USDA, Soil Conservation Service, Upper Darby, Pa., 1970.

DETAIL 83 - TREE PROTECTION



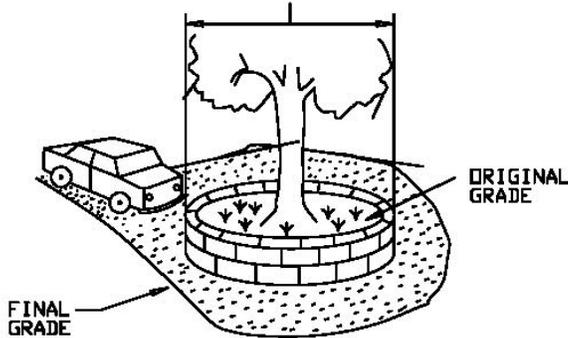
TEMPORARY MEASURES

NOTE: ALL PROTECTIVE FENCING SHALL EXTEND BEYOND THE TREE DRIPLINE

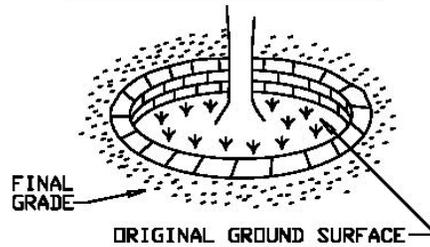


TEMPORARY AND PERMANENT MEASURES

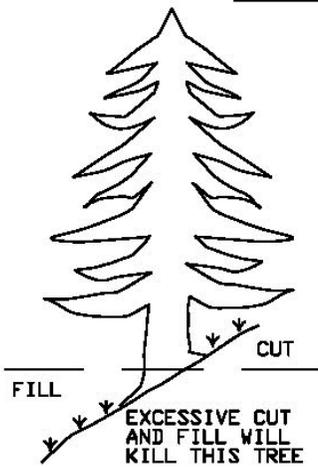
NOTE: ALL PROTECTIVE MEASURES SHALL EXTEND BEYOND THE TREE DRIPLINE



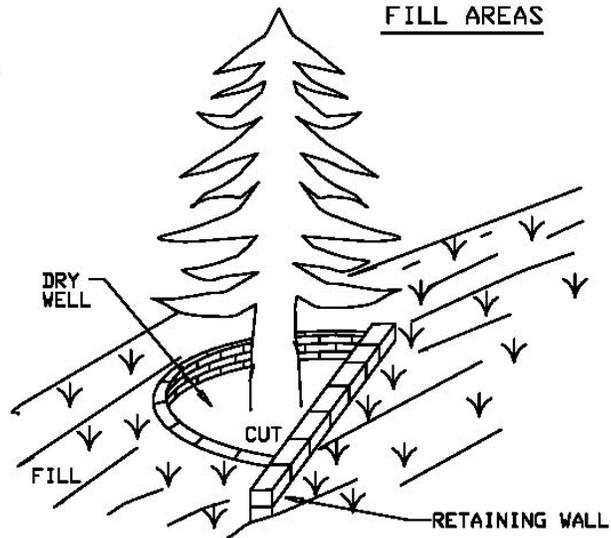
CUT AREAS



FILL AREAS



IMPROPER PROCEDURE



PROPER PROCEDURE

44.0 STANDARDS AND SPECIFICATIONS

FOR

DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

Temporary Methods:

- A. Mulches - See standards for critical area stabilization with mulches only. Chemical or wood cellulose fiber binders may be used instead of asphalt to bind mulch material.
- B. Vegetative Cover - See standards for temporary vegetative cover.
- C. Spray-on Adhesives - On mineral soils (not effective on muck soils). Keep traffic off these areas.

	<u>Water Dilution</u>	<u>Type of Nozzle</u>	<u>Apply Gallons/Ac.</u>
Anionic asphalt emulsion	7:1	Coarse Spray	1,200
Latex emulsion	12.5:1	Fine Spray	235
Resin-in-water emulsion	4:1	Fine Spray	300

- D. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.

- E. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed.
- F. Barriers - Solid board fences, snow fences, burlap fences, crate walls and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
- G. Calcium Chloride - Apply at rate that will keep surface moist. May need retreatment.

Permanent Methods:

- A. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
- B. Topsoiling - Covering with less erosive soil materials. See standards for topsoiling.
- C. Stone - Cover surface with crushed stone or coarse gravel.

References:

1. Agriculture Handbook 346. Wind Erosion Forces in the United States and Their use in Predicting Soil Loss.
2. Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

45.0 STANDARDS AND SPECIFICATIONS

FOR

NEW PRODUCTS AND PROCEDURES

The BMPs set forth in this manual shall be appropriately incorporated into all erosion and sedimentation control plans unless the designer shows that alteration of these BMPs or inclusion of other BMPs shall effectively minimize accelerated erosion and sedimentation. Since the burden of proof for whether a proposed new product or procedure will be effective lies with the designer, all necessary information required to approve the use of the new product or procedure must be submitted as part of the application. At a minimum, this should include:

1. The name of the product (and type of control if a brand name is used)
2. Proposed use (e.g. storm sewer inlet protection). If this product or procedure has the potential to minimize accelerated erosion and sedimentation more effectively or efficiently than current methods, this should be stated and the reason given (e.g. same protection for less cost, less maintenance required, etc.). It should be demonstrated that the proposed use meets with any manufacturer's recommendations (e.g. manufacturer's recommendations showing such use, test data, limitations, etc.).
3. Where the proposed use is in a protected watershed (HQ or EV) or a critical area (e.g. adjacent to a stream channel or wetland), an alternative conventional BMP should be specified for installation should the innovative product or procedure fail. The definition of a product failure must be clearly stated.
4. Sufficient installation information must be provided to ensure its proper use. This should include a clear, concise sequence as well as a typical detail showing all critical dimensions and/or elevations.
5. The plan maps must show all locations where the proposed new product or procedure will be used. All receiving waters must be identified. Any downstream public water supplies, fish hatcheries, or other environmentally sensitive facilities must be noted.
6. A suitable maintenance program must be provided. Specific instructions, which identify potential problems and recommended remedies must be included.

New products and procedures which meet the above criteria will be reviewed on a case-by-case basis until their effectiveness has been sufficiently demonstrated by successful use in the field.

46.0 STANDARDS AND SPECIFICATIONS

FOR

POLYACRYLAMIDE

Description

The terms polyacrylamide, or PAM is a generic term that refers to a broad class of compounds. There are hundreds of specific PAM formulations, and all have unique properties that depend on polymer chain length and number and kinds of functional group substitutions along the chain. PAMs are classified according to their molecular weight and ionic charge and are available in solid, granular, liquid, or emulsion forms.

PAM's effectiveness to prevent or reduce erosion is due to its affinity for soil particles, largely via coulombic and Van der Waals attraction. These surface attractions enhance particle cohesion, stabilizing soil structure against shear-induced detachment and transport in runoff. In a soil application, PAM aggregates soil particles, increasing pore space and infiltration capacity, resulting in reduced runoff. These larger particle aggregates are less susceptible to raindrop and scour erosion, thus reducing the potential to mobilize sediments.

Conditions Where Practice Applies

Because of ease in application, PAM is well suited as a short-term erosion prevention BMP, especially for areas with limited access or steep slopes that hinder personnel from applying other cover materials. PAM can be used to augment other cover practice BMPs, though it can be effectively applied alone. Thus, the ease of application, low maintenance, and relatively low cost associated with PAM make it a practical solution to soil stabilization during construction.

Design Criteria

PAM can be applied to soil through either a dry granular powder or a liquid spray form. Optimal application rates to prevent erosion on construction sites are generally less than 1 kg/ha (about 1 lb/ac) (Tobiason et al., 2000). However, the concentration required can vary for specific soil properties and construction phases.