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Drain Restoration after Utility Construction

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Drain Restoration after Utility Construction

Developed by the ASAE Water Table Management in Humid Regions Committee, SW-232 in December 2003; reaffirmed February 2009; November 2013.

Keywords: Drain, Restoration, Utility

1 Purpose

1.1 This Engineering practice is intended to give guidance, design information and restoration practice when underground utilities are installed across agricultural lands. It is not intended for use in suburban or forest lands.

2 Scope

2.1 This practice covers planning, design, construction and restoration when agricultural lands are disturbed by utility construction. It has sections on right-of-way, clearing of trees, saving topsoil, repairing drainage systems, restoring agricultural usage, and preventing erosion and water problems.

2.2 Units: The values stated in inch-pound units are to be regarded as the standard. The values given in () are mathematical conversions provided for information purposes.

3 Definitions

3.1 agricultural land: Areas that are presently under cultivation; areas that have been previously cultivated and not subsequently developed for non-agricultural use; and cleared areas, which are capable of being cultivated. It includes areas used for crop, hay, pasture, managed woodlands, truck gardens, farmsteads, commercial agricultural related facilities, feedlots, livestock confinement systems, areas on which farm buildings are located, and areas in government set-aside programs.

3.2 ASTM: American Society for Testing and Materials — Standards for drainage material and construction.

3.3 clean water act: The legislation enacted by the United States Government to insure clean water. (PL 92-500 and its amendments)

3.4 crop land: Areas used for growing row crops, small grains, or hay; includes areas which were formerly used for crops but are currently in a government set-aside program, and pasture formerly used for crops.

3.5 directional drilling: The use of equipment to install a conduit for the drain or the utility with a minimum of excavation, usually at beginning and at the end.

3.6 drain, subsurface: A conduit for any below ground drainage system including, but not limited to clay tile, concrete tile, vitrified sewer tile, corrugated plastic pipe or PVC pipe.

3.7 drain cradle: A support that is in contact with the drain subsurface where it crosses a utility trench.

3.8 drain, surface: Any surface drainage system such as shallow surface field drains, grassed waterways, open ditches, or any other conveyance of surface water.

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3.9 landowner: A) person(s) holding legal title to property on the utility R.O.W. from whom the project sponsor is seeking, or has obtained, a temporary or permanent easement, B) any person(s) legally authorized by a property holder to make decisions regarding the mitigation or restoration of agricultural impacts to such person's property, C) any person lawfully residing on or in possession of the land (tenant) which makes up the R.O.W. as defined in this Agreement.

3.10 project sponsor: The name of the company that is proposing the utility construction, its successors, and assigns.

3.11 right-of-way (R.O.W.): Includes the permanent and temporary easements the project sponsor acquires for the purpose of constructing and operating the utility.

3.12 SWCD: County Soil and Water Conservation District, the office where USDA, NRCS employees and county personnel administer soil and water conservation projects and plans. Have different names in different states such as: Conservation Districts or Soil Conservation Districts, etc.

3.13 topsoil: The upper most part of the soil profile, commonly referred to as the plow layer, the "A'' layer, or the A horizon, or its equivalent in uncultivated soils. It is the surface layer of the soil that typically has the darkest color or the highest content of organic matter.

3.14 trench breaker or dam: A water tight structure in the trench to prevent water from following the utility and trench and to stop water from being carried to a different location and creating saturated soil. It may be a plastic sheet.

3.15 USDA NRCS: United States Department of Agriculture Natural Resources Conservation Service, the agency that provides technical assistance to the SWCD offices for various soil and water conservation practices including drainage systems and standards for drainage materials and construction.

3.16 utility: Includes buried underground gas, oil, electric, telephone, fiber optic and other pipes and wires and related appurtenances.

3.17 water bars: A small diversion dam to prevent water from following the utility trench and causing erosion.

4 Planning

4.1 The determination of the need of the utility may require a permit from the Federal Regulatory Energy Commission (FERC) or other government agency. This permit may give the utility the right of eminent domain.

4.2 There are many items to be considered by the utility in selecting the location and shall be covered in the location map.

4.2.1 Depth: Amount of cover over the utility. See Figure 1.

4.2.2 Depth to bedrock: See Figure 1.

4.2.3 Land use areas, determination of agricultural, forest, wetland, and other use areas.

4.2.4 Existing buildings, fences, and surface drains.

4.2.5 Location of existing utilities.

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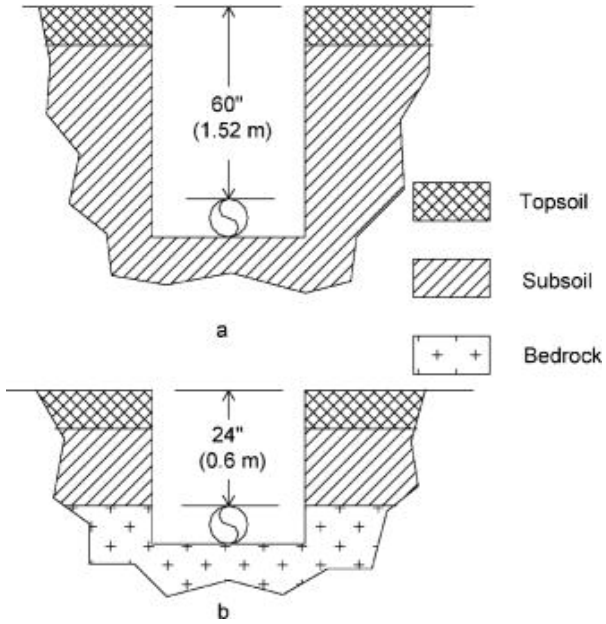

Figure 1 – Depth of utility trench

4.3 Acquiring of easements.

4.3.1 Easement agreed to by the landowner(s).

4.3.2 Easements acquired through eminent domain.

4.3.3 Design for continuous access to buildings, livestock and fields.

4.4 Producing a detailed survey, locating depth, curves, elevations, clearing width, width of R.O.W., locating drainage systems, preventing erosion, etc. Some of this shall be done with the help of an agricultural specialist that is familiar with the area and agricultural restoration. Some are controlled by the available easement. Agricultural specialists may be found through the SWCD offices.

4.5 Prior to the construction of the utility. The project sponsor shall provide to each landowner the name, telephone number and mailing address of the project sponsor representative assigned to the geographic area and responsible for the liaison activities on behalf of the project sponsor. This project sponsor representative will be the contact person during construction and during operational related activities. The project sponsor shall respond within two (2) working days to any written landowner issues or concerns during construction and long-term operational activities.

5 Construction

5.1 Staking the R.O.W.

5.2 Clearing the R.O.W.

5.2.1 Installing livestock and access control structures.

5.2.2 Clearing of trees and brush: If trees have commercial value there may be an agreement between the landowner and project sponsor for the sale of the trees.

5.2.2.1 Project sponsor will identify black cherry and other trees and vegetation that are toxic to animals and such vegetation will be disposed of to prevent contact with animals.

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