

Minimum Construction Standards for Water/Sewer Transmission Mains Located Wholly or Partially in an Agricultural District

FOR PIPELINES OF EIGHT INCHES OR GREATER OUTER - DIAMETER

The following standards apply to those portions of water/sewer transmission mains measuring eight (8) inches or more in outer-diameter, which are proposed for construction on agricultural land. The standards focus on measures that minimize or mitigate the impacts on farmland from such pipeline trenching/construction. The standards cover practical agricultural issues including: pipeline depth-of-cover, topsoil protection, waste stone/rock materials, soil rutting and compaction, existing and future farm drainage and other farm related facilities.

Pipeline Depth-of-Cover

Pipeline depth within the soil profile is important from the farming standpoint due to the permanence of a pipe's position in the soil profile. Inappropriate depth of a water/sewer line will diminish current and future farm operators' capacities to administer the scope of land-fitting practices required to meet specialized cropping needs. Such practices can range from deep tillage to the installation of subsurface tile drain lines.

From the pipeline operator's standpoint, appropriate depth-of-cover is essential for protection against puncture from surface disturbance and against bursting due to frost penetration and freeze up. A common minimum depth-of-cover employed in water/sewer pipelines is 4.5 feet.

Standard: In agricultural land, the minimum depth-of-cover from restored ground surface to top of the buried pipe will be 4.0 feet. (See "Existing and Future Farm Drainage" regarding depth adjustment.)

Topsoil Resource Protection

The topsoil layer of the soil profile is the fertile material needed for sustained crop productivity. Pipeline construction of this size range is generally ongoing through completion, regardless of soil moisture conditions, and can permanently alter the soil profile throughout the construction right-of-way.

The farm soils throughout New York State have only limited ability to recover from the concentrated disturbances of pipeline right-of-way construction activity, due to

a thin topsoil layer, humid climate and correspondingly excessive soil moisture for most of the year. Farm soils must be protected against degradation through the exercise of soil protection standards.

Standard: The full-width topsoil stripping practice should be employed over the construction right-of-way:

The topsoil (“A” horizon) should be stripped down to the top of the subsoil zone for the contiguous width of the construction work/traffic area, trench zone and trench spoil storage area.

The stripped topsoil should be segregated from all other materials in a segregated stockpile on top of unstripped topsoil at the far edge of the construction right-of-way on the side opposite from the trench and spoil side.

Trench Backfill and Waste Rock

Trench excavation for pipelines can unearth substantial quantities of stone and rock spoil from the various subsoil layers. It is important to restore the original soil profile and prevent either large rocks or concentrations of stone material used as backfill from obstructing normal farm tillage operations and disabling farm machinery. Also, if the backfilling phase is completed while there is water in the pipeline trench, long stretches of right-of-way with prolonged soil saturation conditions can occur. Such saturated soil conditions can result in significant restoration difficulties and delays.

Standard: The pipeline trench should be thoroughly dewatered prior to backfilling. The trench should be backfilled with the excavated spoil material and compacted during backfilling to minimize trench settling.

Topsoil should not be used as trench-backfill and should remain in its segregated stockpile until all deep ripping and stone removal work is completed.

On agricultural land, blasted or excavated bedrock, boulders and concentrations of excavated stone or rock materials should not be returned to the trench any closer than 24 inches from the exposed work surface of the stripped portion of right-of-way. The remainder of the backfill should be limited to suitable subsoil material, backfilled up to the top of the exposed work surface. Excess waste rock/stone materials should be removed and disposed of safely.

Deep Ripping and Stone Removal

The dense compaction of the exposed subsoil (i.e., the spoil storage area, backfilled trench and construction work and traffic area) must be alleviated together with stone removal prior to the subsequent stages of topsoil replacement and final subsoil shattering.

Standard: During periods of relatively low to moderate subsoil moisture, the exposed right-of-way shall be returned to rough grade; deep ripped with heavy duty ripper; and, alternately deep chiseled and rock-picked until uplifted stone/rock materials of four inches and larger size are cleaned off the site and disposed of properly. In subsoils with excessive stony-rocky material in the upper layer, an alternate ripping/stone removal plan should be developed and submitted to the Department of Agriculture and Markets for review in advance of project construction.

Topsoil Replacement and Subsoil Shattering

Standard: After the initial subsoil ripping, chiseling and stone removal has been completed, the segregated topsoil materials should be uniformly spread across the stripped portion of right-of-way.

Topsoil spreading should be conducted only during periods of low to moderate soil moisture to avoid rutting, mixing and recompaction of the soil profile. Topsoil spreading should not be conducted during periods of saturation or frozen ground. Alternative plans should be prepared for suspension of topsoil spreading under such conditions, and soil restoration work should not resume until appropriate moisture conditions occur during the following season.

After topsoil replacement, final subsoil shattering using a deep 4-shank paratill with narrow leg spacing should be conducted throughout the disturbed right-of-way to a depth of 18 inches. Large, uplifted rock materials should be picked from the surface and disposed of properly.

Final subsoil shattering and rock removal should be conducted only during periods of low to moderate soil moisture and not during periods of saturation or frozen ground. Final subsoil shattering and rock picking should be suspended when saturated or frozen soil conditions occur. This final phase of restoration

can be completed when appropriate moisture conditions return the following season.

Existing and Future Farm Drainage

Surface drainage ways for storm runoff and for the outletting of subsurface drain lines are afforded agricultural lands by natural creeks, swales, ditches, diversion terraces, etc. Subsurface drainage is managed through installed practices of random and pattern tile drain lines. Protection of existing surface and subsurface drainage is important for crop productivity as is the capacity to install future tile drain lines and maintain ditches.

Standard:

Existing Drainage

Surface drainage systems affected by the pipeline project should be protected and their function maintained by temporary fluming. Earthen berms of surface drainage systems (e.g. diversion terraces) should not be breached. Where breaching is unavoidable, the earthen berm should be fully restored by engineering methods and materials consistent with the specifications of the USDA Soil Conservation Service.

All severed tile drain lines should be repaired, maintaining original gradient, using methods and materials consistent with the standards of the NYS Department of Agriculture and Markets. All repairs and protective pipe sleeving or supportive channel iron should be shouldered firmly at least three feet beyond the limit of the water/sewer line excavation.

Future Drainage

During project planning and design, all operators of affected farmland should be inventoried for future locations of surface or subsurface drainage. All such locations should be noted in the design.

Depth and gradient for such future surface or subsurface drainage installation, consistent with USDA Soil Conservation Service engineering specifications, should be accommodated by appropriate engineering of the depth-of-pipeline.

Control of Water Piping, Soil Saturation and Seeps

Pipeline trench excavation in and immediately upgrade from agricultural areas can alter the natural stratification of soil horizons and natural soil drainage patterns.

Standard: The pipeline right-of-way should be monitored for at least one year following restoration for surface seeps and areas of prolonged soil saturation. Such measures as subsurface intercept drain lines should be used to prevent surface seeps and the seasonally prolonged saturation of the backfilled trench zone and adjacent areas. Intercept drain lines should be installed according to the specifications of the USDA Soil Conservation Service.

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