

# Fixing Broken Drain Tiles within Oil & Gas Pipeline Right of Ways

Understanding how to repair broken agricultural drain tiles is a necessity that pipeline contractors must face when they install oil and gas pipelines through the upper Midwest.

Due to the large number of systematically drained acres of farmland in the upper Midwest, it is inevitable that pipeline contractors will find that their right of ways will be crossing these drained farm fields.

There are number of conflicting issues that must be addressed and resolved if a successful installation is to be achieved. [SEE "POTENTIAL CONFLICTING ISSUES" LEFT] In order to meet all of the parties' interests, it is crucial that drain tile repairs be considered a two-step process: a temporary repair and a permanent repair. While it is unrealistic to expect all drain tiles will be identified in the pipeline right of ways prior to construction, the amount of time required to make drain tile repairs is significantly reduced when time is spent to locate drain tiles prior to the construction of the pipeline.

A temporary repair includes building a bridge over the pipeline to the appropriate level and connecting new drainage tile to the existing drain tile on each side of the pipeline ditch. At this time, the pipeline ditch can be backfilled.

After pipeline construction has been completed it has been observed that over 90% of the broken drain tiles in pipeline right of ways are found not in the ditch but on either side of ditch. These damages are the result of heavy equipment moving over thinly covered drain tiles. Wet conditions during construction can increase the likelihood of crushed drain tiles.

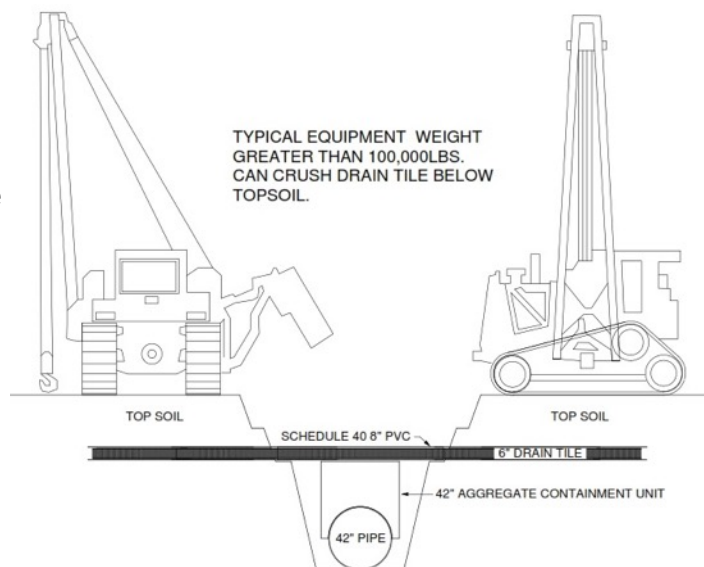
## POTENTIAL CONFLICTING ISSUES



LAND OWNER	PIPELINE OWNER	PIPELINE CONTRACTOR
Damage to drain tile	Expense of construction	Speed of pipeline construction
Short term disruption to field	Completion of pipeline	Speed of drain tile repair
Long term crop damages		Cost of repair of drain tile

## Making temporary repairs

After topsoil has been removed and stockpiled, and the digging of the trench has been initiated, it is important that each broken drain tile be marked with a flag as they are uncovered. If the drain tiles are running with water, it is imperative that temporary repairs be made as quickly as possible. This will help to keep the pipeline ditch as dry as possible.



1.1: LIGHTWEIGHT EXCAVATOR



1.2: CAMERA IN TILE PHOTO



**Making permanent repairs**

In order to satisfy the landowner’s concerns regarding the viability of his drain tile systems after the installation of the pipeline, permanent drain tile repairs need to be completed. Permanent repairs can only be made once heavy construction equipment has been removed from the field and the original topsoil has been returned.

If there is going to be a delay before permanent repairs can be made, a cover crop should be planted to discourage erosion. At the appropriate time, each temporary tile repair should be reopened using lightweight excavators.

[SEE PICTURE 1.1]

Once the temporary repair has been exposed, the tile should be cut. At this time a submerged pipe camera should be inserted into each side of the repair and the tile should be examined for crushed or damaged tile from the ditch to the edge of each right away.

[SEE PICTURE 1.2]

Any damaged or crushed tile should be repaired at this time. A new connection should be made at the ditch location where the camera was inserted. Once this step is completed the tile in the ditch can be repaired and the topsoil can be replaced.

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