

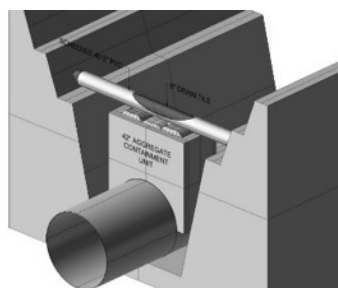
Understanding the Basics of Agricultural Drain Tile

Subsurface drainage is used in agriculture to remove excess water from poorly drained land. Properly designed and installed drain tile systems allow farmers to improve yields, soil quality, and timeliness of field operations. Subsurface drain tile systems are designed to use gravity to carry excess water from fields to streams or rivers.

Nationally, drainage improvement is required on more than 20 percent of our cropland (approximately 110 out of 421 million acres). This means that in a typical pipeline installation project that crosses hundreds of miles of cropland, there's a very high likelihood that you will need to dig up and then replace drain tiles.

How drain tiles work

Modern drain tile systems are comprised of laterals (typically 4" or 6" perforated plastic tubing) and mains (8" to 18" plastic pipes) that discharge into open ditches or naturally occurring streams or lakes.



The designers of drain tile systems typically use GPS and aerial surveying to design systems that will drain entire watersheds into the appropriate waterways. Most systematically tiled drainage systems are engineered to space laterals on 40' or 50' centers that connect to the appropriate number of mains to successfully drain the field.

[SEE PICTURE 1.1]

Grade is of paramount importance in both the design and execution of drainage tile installation. It is not unusual to find systems designed with a

maximum grade of 4" per 1,000' of installed tile.

Why grade matters

Installation of pipelines entails digging into the grade and breaking the tiles. However, disruption of the grade will result in tile failures that manifest as wet spots in the field.

At a minimum, wet spots in a field will negatively impact crop yields. In addition, tile failures that are not corrected can cause erosion, damage to equipment, and even pose a hazard to equipment operators.

[SEE PICTURE 1.2]

It is possible to replace these drain tiles in a way that maintains the grade. With proper planning and execution, it is possible to successfully cross agricultural fields with oil and gas pipelines.

To learn more about the basics of agricultural drain tile repair see **Watershed Materials Fact Sheet 2.**

1.1: FIELD TILE DRAWING



1.2: TRACTOR IN BROKEN TILE HOLE

