

Beyond 1,200 feet, towards the lower end use 4 inch tile, and so on. If the fall is less than what is desirable, the size of drain should be increased.

Wherever it is possible to avoid it, the rate of fall should not decrease, but when it must necessarily do so, and there is any considerable difference, a silt box should be placed at the point of change.

For drains 2,500 to 4,000 feet long use a 5 inch tile.

Remember the rule, that double the diameter gives four times the capacity. A four inch (round) tile will pass more than four times as much water as a two inch tile, because it has an opening four times as large and an inner surface (which obstructs the flow of water by friction) of less than four times the inner surface of the two inch tile. A three inch tile will pass about thirty-five gallons of water per minute when laid on a grade having six inches fall per hundred feet. But a larger drain is never out of place in a roadway, and it is better in some than the smaller one. It admits more freely the warm air in spring and hastens the thawing of the frost and the drying of the road.

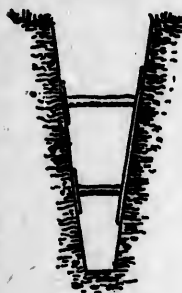


FIGURE 18.

Cross section of ditch with traced plank supports to prevent caving in.

they are struck by a steel blade or hammer. They are likely to become softer when saturated by water, and to yield to the pressure of earth or become destroyed by frost. Avoid, also, over-burned tiles, which, though often extremely hard, are generally shrunken, more or less warped, and difficult to lay and to match joints one with another. Select straight, hard tiles of a strong, bright cherry color, and see that they give out a clear, ringing sound when struck by a trowel or piece of steel. All tiles should be assorted before using, and the least perfect pieces should be put in the up stream or inlet end of the drain.

LAYING DRAIN TILES.

If your drain fails in a single spot it fails entirely, and no drain is better than its worst laid tile. The grade cannot be guessed at or carelessly followed, and in most cases it will be best to employ a skilled ditcher to do the work. A taut line should be stretched lengthwise with the ditch and over its centre, and this line should be exactly parallel with grade of the

QUALITY OF TILES.

Avoid soft, underburned tiles, which can generally be detected by their pale color and by the soft, dead, "punky" sound given out when they are struck by a steel blade or hammer. They are likely to become softer when saturated by water, and to yield to the pressure of earth or become destroyed by frost. Avoid, also, over-burned tiles, which, though often extremely hard, are generally shrunken, more or less warped, and difficult to lay and to match joints one with another. Select straight, hard tiles of a strong, bright cherry color, and see that they give out a clear, ringing sound when struck by a trowel or piece of steel. All tiles should be assorted before using, and the least perfect pieces should be put in the up stream or inlet end of the drain.



FIGURE 19.

Workman at work in drain ditch: taking out bottom with draining scoop and laying tiles as described in the text.