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Laying Sewer Pipe.

It will save considerable trouble in the laying of pipe if the foreman has the trench du: exactly to line and grade as ascertained by measuring and plumbing from a grade line already set. It is better to have the bottom a little too high rather than too low.

Pipe sewer is usually laid up the grade, and the pipes are so manufactured that the specials must be laid with their bell ends pointing up. Laying the sewer-pipe in this way is more likely to produce good joints, particularly if the grade is at all steep, since if laid down-grade, a pipe, after being placed in position and before the next is laid, tends to slide away from the one next above and cause a break in the inner surface of the sewer and a leaky joint. It is also much easier to lay pipe with the bell pointing ahead, and the cement joint is apt to be firmer. The only reason advanced for laying pipe down hill is that the lower end of the trench being ahead of the pipe, any ground-water will be kept drained away from the sewer construction.

Before a pipe is lowered into the trench a "bell-hole" should be dug where its bell will come, of such size that when the pipe is in position the jointer can pass his hand entirely under and around the front of the bell. It is convenient to have a stick exactly as long as two or three lengths of pipe, by which the location of each bell-hole is measured from pipe already laid, the bell-holes being dug for a few lengths in advance of the sewer.

Two men should be employed in laying sewer-pipe, one straddling the pipe last laid, the other in the trench just ahead of it. The latter as the pipe is lowered guides it into place and releases the hook on the lowering-rope, if one is used. The former, holding one end of a length of packing in each hand, places the loop thus formed under and around the pipe about an inch from the spigot end and guides this into the bell of the pipe last laid, taking care that the packing also enters the bell. With a yarning-iron he then pushes the packing up against the shoulder of the bell all round, being first sure that the pipe is "home" in the bell. The other pipe-layer meantime supports the pipe at the bell end and shoves it home. The grade-rod and plumb-bob are then used. If the bell end is too high (the spigot end should be all right since the previous pipe is) it may, if the soil is 1 am or loose clay or sand, be forced down a quarter of an inch, more or less, by standing and jumping upon the top of the pipe. (The ipe-layer should never rest his foot inside the pipe to force it down, as this is likely to break the bell or even the pipe.) If the sol is stiff clay or gravel

the pipe should be removed and the trench bottom lowered sufficiently with the shovel. If the pipe is too low it should not be raised by placing a stone or piece of wood under it, but should be removed and fine earth placed and rammed in the bottom of the trench. By means of the plumb-bob the pipe should be centred exactly under the grade-line. A convenient way of doing this is to suspend the bob from the cord at a grade-plank, being careful not to lower the cord by its weight. then, when the eye is so placed that the cord and plumb bob string coincide, the former is projected by the eye vertically into the trench and should cut the centre of the pipe. With a circular salt-glazed pipe, the centre is known by a streak of light reflected from the sky, and this streak should be bisected by the vertical projection of the grade-cord. Another plan for obtaining a vertical projection of the grade-cord is to stretch another cord a foot or two vertically below it. But this method is less accurate in practice than the other and is not recommended. The grade-cord cannot be stretched so tight that it will not sag 1-16 to 1/4 of an inch at the centre, but allowance may be made for this in using the grade-rod. The foreman or inspector who uses the graderod will need to have a short movable plank spanning the trench just ahead of the pipe beirg laid, on which t, stand.

As soon as a pipe is in position sufficient earth should be placed and rammed on each side of it just back of the bell to prevent its moving. The next pipe is then lowered and set, and so on.

At least two joints behind the pipe which is being set, is another man who cements the joints. The cement he usualy keeps in an iron pail of ordinary size (although one having the shape of a pan would be better) just enough being mixed at a time to permit his using it all before it stiffens. If there is any delay in laying the pipe the pail should be cleaned out lest the cement set in it. The jointer should wear rubber mittens, and a small trowel will be found more convenient than the fingers for getting the cement out of the pail. The cement mortar should ordinarily be about as stiff as putty, but if the trench is wet it should be as dry as it can be and have any cohesion. The jointer takes a handful of mortar in each hand and presses it into the bell all around, drawing his hands meantime around the joint. With a wooden or iron calking-tool he compacts the cement in the joint, adding more as is necessary, and with additional mortar he makes a neat bevel outside the bell, continually pressing the mortar firmly towards the bell. This bevel should not be flatter than 45°, since if too much mortar be outside the bell its weight may cause it to fall away

from the pipe and perhaps draw with it the mortar from inside the bell. The compacting of the cement is frequently omitted, but is necessary if tight joints are to be obtained.

Just behind the jointer should be another man, who, as soon as the joint is made, fills the bell-hole carefully with fine earth well tamped, and then fills and tamps the same material under and around the rest of the pipe up to at least its middle. His tamping bar should be of wood, there being danger of breaking the pipe if the ordinary iron ones are used, and with a face about 2 x 4 inches.

Maintenance of Roads.

Roads a e apt to receive very little attention except at the time of performing statute labor. Roads are very much more cheaply and easily kept in good condition, if repairs are made as soon as wear appears, for ruts and wheel tracks interfere with surface drainage, hold the water, and quickly cause the road to "break up' in wet weather. Repairs of this kind are of such a simple nature, requiring a little raking, filling a rut, the freeing of an obstructed drain, at the most a load of gravel, that every farmer could, with no loss of time, see that the half of the road allowance, passing his farm, was not neglected in such trifling matters. Atten-tion of this kind would result in an immense benefit to every resident of the townships.

Instead, however, of men having sufficient public spirit to volunteer work of this description, we find them adopting all sorts of means to avoid doing even their just amount of statute labor. These men, after idling away their time, will wait in deputations on the councils, complaining of the bad and dangerous condition of their roads, asking for municipal grants to do the work which they should, in justice to other taxpayers, have done by their statute labor. No encouragement should be given in such cases by making money grants where the ratepayers neglected to make good use of their statute labor.

A system has been adopted in some townships which has been productive of good results. Under a by-law of the municipality, where any section subscribes an amount of money for road improvement, the municipal council assists with an equal amount from the general funds. In other townships, no money is paid out for gravel unless the road division has first drained, graded and formed the roadway according to the set specifications of the municipal council.

If, however, a section of the people persists in looking on their statute labor as a joke, if the present waste and injustice continues, and the roads are permitted to remain in an unsatisfactory condition, a hindrance to individual and national progress; if, after a fair trial, it is found that the statute labor law cannot be operated on business principles, it will be the inevitable result that rate ayers will