

## MUNICIPAL DEPARTMENT

### TO MUNICIPAL OFFICERS.

The CONTRACT RECORD is desirous of publishing, as far as possible, advance information regarding projected works of construction in all parts of Canada, such as sewerage and waterworks systems, railways, street pavements, public and private buildings, etc. Municipal officers would confer a favor upon the publisher by placing at our disposal particulars of such undertakings which are likely to be carried out in their vicinity, giving the name of the promoter, character of the work, and probable cost. Any information thus furnished will be greatly appreciated.

### PORTLAND CEMENT CONCRETE CULVERTS FOR HIGHWAYS.

A suggestion that is worthy of more than a passing glance, says the Engineering Record, was made by Mr. George W. Bartholomew, jr., of Bellefontaine, O., in a paper read before the Ohio Society of Engineers last winter. This was in regard to the expense of maintaining the usual forms of small culverts along country roads, an item the steady and sturdy growth of which is well known to all who have had anything to do with road accounts. For about ten years Mr. Bartholomew has been driving almost daily over a country road on which there were about 30 culverts, nearly all of which had to be repaired during that time. Realizing the importance of these repairs in their effect on the annual road tax, Mr. Bartholomew made a study of the cost of these culverts for a long term as compared with Portland cement concrete culverts, a few of which had been tried with satisfactory results. A preliminary search showed that on 450 miles of pike there were about 2,700 culverts, an average of 6 to the mile. In addition to these there were about 600 miles of other roads having about the same number of culverts, but as data for these were lacking they were not considered. Examinations of the records and plans and specifications of these roads and inspection of these culverts showed that the 2,700 culverts were about equally divided among the four forms, wood, sewer pipe, stone-box and stone-arch. The stone was fairly good, having been taken from the bottom strata of the Coniferous or the top of the Heidelberg. The wooden box and sewer-pipe culverts were found to have an average life of about eight years, the stone-box about ten years, and the stone-arch about twenty years. Based on these figures, a table was made showing the cost of renewing these culverts for 100 years. Standard forms and sizes were used, but without wing walls, as the stone-box, wood and sewer-pipe culverts had no end walls and very few arch culverts had wing walls.

The average length of the culverts was 36 feet. The masonry, allowing an average haul for the stone of seven miles, cost about \$7 per perch. The oak lumber was estimated at \$20 per 1,000 and the sewer-pipe at about 75 per cent. off. To simplify matters repairs were not considered.

For the concrete culverts Mr. Bartholomew assumes a life of at least 100 years, basing his claim on the excellent condition at the present day of English structures, including the old Roman works, which have stood for 1,000 years. The cubical contents of the concrete masonry are estimated at about two-thirds of those of the stone, and the first cost at about three-fourths that of the limestone masonry. These figures make the cost of renewing the wood, pipe and stone culverts for 100 years about \$2,000,000 and the cost of the concrete culverts \$350,000. The omission of the cost of repairs and interest and the assumptions as to some of the other data make it necessary to consider the comparison only in the light of a suggestion, but one very pertinent to the well-known fact that small highway culverts are not given the care and good materials that are needed to make them durable. For instance, the short life of the pipe culverts as found by Mr. Bartholomew can only be assigned to inefficient workmanship in building the culverts or a false economy in making a proper foundation and suitable protection for the pipe at the ends of the culvert. If we remember rightly, the secret of success with small culverts is often summed up in the saying "The smaller the structure, the greater the care."

### EXCLUSIVE WATERWORKS FRANCHISES.

The possession of waterworks franchises by private parties probably has been the origin in one way or another of more business in court than any other one feature of municipal affairs. The whole difficulty lies in the fact that the intrinsic nature of the matter is such as to cause the interests of the owners of the franchise and of the public to be served to lie in different directions. The situation is quite unlike that of a well-founded private business designed to be permanently maintained in the face of actual or possible competition. Even in cases of patents it is frequently, if not usually, recognized that exclusive possession of the field is likely to be terminated in a

number of ways after a period rather short than long. Under such conditions it is obviously the part of the managers of a well-conducted business to maintain a high degree of excellence both in plant and product, so that the interests of the consumers are well conserved under policies dictated by selfish considerations regarding the conduct of the business. In the case of the private ownerships of waterworks the conditions are markedly different. Few, if any, waterworks companies can or do expect to maintain permanent ownership; indeed, it may be said to be usual practice where a franchise is obtained to stipulate for the possible purchase of the plant and franchise by the municipality. It is simply good business, under these conditions, to expend in construction and maintenance only such a minimum amount as will fairly well meet the expressed requirements. Now, if in addition to these features of the undertaking there be super-added doubts as to the exclusive character of the franchise, there will be created an admirable soil for an abundant crop of law-suits that can ordinarily be settled only by terms of purchase by the municipality, seldom reasonably satisfactory to both parties.

It is not to be supposed that the burden of the difficulties should be placed on the private owners of the franchise. The latter is generally secured in a proper manner and the requisite capital is invested in good faith. The municipal body or its authorized officials are hedged about by legal limitations not always recognized by those who acquire the franchise, and as the former always represent "the people," any doubts as to grants will almost inevitably be interpreted in their favor. Frequently private owners who have acted in the best of good faith will thus find themselves brought face to face with conditions radically different from those they originally contemplated—Engineering Record.

### TO PREVENT NOISE OF BRICK PAVEMENT.

A brick manufacturer and contractor suggests a new method of laying brick pavement by which it may be rendered practically noiseless. The brick are set on edge, separated by thin laths, and the joints filled with tar. The tar being of a viscous nature absorbs the vibration, which in other solid pavement creates the noise. Two laths are put in, one above the other. The street is then rolled, after which the upper lath is removed and the joint filled with tar and sanded. A street in Sandusky, O., laid in this manner is said to be noiseless.

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