Some Notes on Municipal Finance

(By T. BRADSHAW.)

Among the many problems confronting a municipality there is probably none which concerns its citizens more, and which so vitally affects its credit and future, as that of sound finance. This statement will be best appreciated when the large increase in our municipal debts, in our yearly borrowings and in our tax levies for interest and repayment of principal on these debts are considered.

In view of the disturbed financial conditions the world over, the important obligations of our municipalities, and the necessity for further heavy borrowings from time to time, it is believed that any practical suggestion which will have a steadying influence is worthy of attention, and without further preliminaries I will proceed to discuss three features of municipal finance:— (1) method of repayment of permanent loans, (2) rate of interest which loans should carry, and (3) administration of sinking funds.

1—Method of Repayment of Permanent Loans.

The three recognized methods of repaying moneys borrowed by municipalities for a long term of years are, (a) Sinking Fund, (b) Annuity Instalment, (c) Serial Instalment.

It is submitted that municipalities should, in practically every instance, adopt the instalment method, either annuity or serial, instead of the sinking fund method, chiefly because of the heavy financial loss involved in the sinking fund method. Many of the smaller Ontario municipalities issue only instalment bonds, and in this they have shown greater wisdom than our important cities, most of which still persist in obtaining their loans by the issue of long term Sinking Fund Bonds.

Let us consider the essentials of each method:—

(a) **Sinking Fund Method.**—Bonds are issued payable at the end of a certain term,—5 to 40 years,—according to the purpose for which the loan is required. Interest is payable half yearly or yearly throughout the whole term on the entire amount of the debt, and the principal is payable in one sum at the end of the term. In order that the municipality may be in a position to pay the principal at maturity, a certain amount, accurately determined beforehand, is annually laid aside by the municipality, which, with its interest accumulations from year to year, reckoned usually at 3 per cent., is sufficient to meet the amount of the loan. These annual amounts so laid aside, and their interest accumulations, constitute the Sinking Fund, hence the name by which the method of repayment is known. The moneys to pay the interest on the debt and to provide the Sinking Fund are, of course, obtained by levying a special tax, in accordance with the Municipal Act.

(b) **Annuity Instalment Method.**—By this method the loan created is gradually paid off each year instead of at the end of the period. No Sinking Fund is required to be established, but the annual levy for principal and interest is immediately applied in payment of principal and interest, and of course on that part of the debt so liquidated interest ceases to be paid. The annual levy, which exactly covers both principal and interest, is the same throughout the history of the loan. It is of course mathematically determined beforehand. Bonds are issued maturing in one, two, three, etc., years, according to the length of the period for which the loan is made, instead of all being issued payable at the end of the term, as under the Sinking Fund plan.

(c) **Serial Instalment Method.**—This method is very similar to the Annuity Instalment Method. It has, however, the advantage of liquidating the debt from year to year in round amounts instead of in odd amounts; (see illustrations below), while it has the slight disadvantage of calling for a levy slightly differing in amount each year. This plan, of course, admits of the loan being redeemed in larger or smaller annual amounts, but the repayments on account of principal can be made to so closely follow those of the Annuity Instalment Method that the annual levy varies very slightly from year to year. The first two are authorized by the Ontario Municipal Act; the last, viz. Serial Instalment, is not, but its popularity among investors and financial houses is such that it is fully expected that the legislature will at its next session adopt the suggestion made last year,— that the Act be so amended that municipalities may use it as an alternative plan.

Methods Compared.

From the foregoing it will be gathered that both instalment methods of repayment in effect contain within themselves a sinking fund which bears the same rate of interest as the loan which it is intended to discharge; whereas the Sinking Fund method necessitates the establishing of a separate sinking fund which is not calculated to earn (and in fact does not) as high a rate of interest as is payable upon the loan itself. What are the facts in the case of those municipalities which issue their bonds according to the sinking fund system? Loans are obtained by the issue of permanent debentures carrying interest ranging from 4½ per cent. to 5⅛ per cent., while the sinking fund to redeem such loans is assumed to earn only from 3 per cent. to 4 per cent., or from ½ per cent. to 2½ per cent. less, and, as a matter of fact, in many instances not much more than the assumed rate is earned.

In addition to this important difference between the rate of interest the municipality pays on its loans and that which the sinking fund, for their redemption, earns, considerable delay takes place in the investment of sinking fund moneys, and as a consequence a further loss in interest earnings inevitably ensues. In contrast to this, the genius of the instalment method is, that interest is being fully earned every day without exception.

Illustration of Each Method.

Let it be assumed that a municipality proposes to issue bonds for some important permanent work for, say, $1,000,000, the loan to be repaid in 20 years and to carry interest at the rate of 5 per cent., and the question arises as to which method is most economical and desirable.

Under the sinking fund method the annual levy for interest would be $50,000, and for sinking fund (assuming 3 per cent. as the sinking fund rate) $37,215.71, a total annual levy of $87,215.71.

Under the Annuity Instalment Method the annual levy required for repayment of principal and interest would be only $80,242.59, or $6,973.21 per annum less.

The present value of this annual saving for the lifetime of the loan is $86,900.42, and this amount represents the actual saving to the municipality in issuing Annuity Instalment bonds instead of Sinking Fund bonds.

Under the Serial Instalment Method, according to the illustration assumed, the annual levy would vary from $78,750 to $81,500 per annum, and the saving therefore would be practically the same as in the Annuity Instalment case.

The following tables, No. 1 illustrating the Annuity Instalment, and No. 2, illustrating the Serial Instalment Methods of repayment, set forth in detail year by year, the gradual and systematic liquidation of the loan we have been considering.

Annuity Instalment, Table No. 1.

Table illustrating the repayment of a loan of $1,000,000, with interest at 5 p.c. per annum, in 20 years, according to Serial Instalment Method.

End of	Payment	Interest	Part used in payment of Principal	Balance of Principal at end of year
		Original Loan ..		$1,000,000.00
1st year	$80,242.59	$50,000.00	$30,242.59	696,757,41
2nd year	80,242.59	48,487.87	31,754.72	938,757.41
3rd year	80,242.59	46,900.14	33,342.45	904,660.24
4th year	80,242.50	45,233.02	35,009.57	869,650.67
5th year	80,242.59	43,482.54	36,760.05	832,890.62
6th year	80,242.59	41,644.53	38,598.06	794,202.56
7th year	80,242.59	39,714.63	40,527.96	753,764.60
8th year	80,242.59	37,688.23	42,554.36	711,210.24
9th year	80,242.59	35,560.52	44,682.07	666,527.17
10th year	80,242.59	33,326.41	46,916.18	619,611.99
11th year	80,242.59	30,980.60	49,261.99	570,350.00
12th year	80,242.59	28,517.50	51,725.09	518,624.91
13th year	80,242.50	25,931.25	54,311.34	464,313.57
14th year	80,242.59	23,215.68	57,026.91	407,286.66
15th year	80,242.59	20,364.34	59,878.25	347,408.41

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