

## Serial Municipal Bonds

By THOMAS BRADSHAW

THERE are two classes of borrowings usually required by municipalities—

(a) For current purposes—chiefly to provide for ordinary expenditures in the early months of the year, in anticipation of the receipt of the current year's taxes and other revenue. These loans are obtained from the municipality's banker, should run only for a few months, and should be liquidated before the close of the fiscal year; (b) For capital purposes—such as erection of schools, municipal buildings, sewers, waterworks, purchase of parks, etc. These loans may run from 5 to 30 years, the term depending upon the character of the project and its serviceable lifetime, and are secured through the issue and sale of debentures in the open market to the highest bidder.

The almost universal principle recognized in connection with the incurring of a municipal capital debt is that, at its inception, definite provision, by way of a special yearly tax levy, is made for its complete repayment—principal and interest—within the period of the debt. From this it follows that a municipal debt should never have to be refunded, and to assist in ensuring this the plan adopted for its repayment should be both sound and economical.

It is the method of repayment of capital loans that I have been asked to discuss; that is to say, whether such loans should be repaid by regular yearly instalments, known as the instalment or serial method; or through the accumulation of an independent fund to liquidate the loan in one sum at the end of its term—10, 20 or 30 years hence—known as the sinking fund method.

In order that there may be clearly set forth the difference in operation of the two methods described and the status of the loan throughout the term, the illustration on page 00 is introduced:

It will be observed that under the serial method the loan is liquidated year by year, so that at the end of the 5th year it is reduced to about \$80,000; the end of the 10th 57,000; the end of the 15th \$31,000, and at the end of the 20th year completely liquidated. Under the sinking fund method the whole debt remains outstanding for the 20 years, while a uniform annual contribution to a sinking fund is made year by year, accumulated throughout the term at the theoretical rate of 3% interest, when at the end of the 20 years the sinking fund is sufficient to pay off the loan.

The serial method is in my opinion the soundest and most desirable, and in support I submit the following:

1. At the time the loan is established, as already premised, exact ways and means of repaying it are laid down. The by-law, the basis of the loan, authorizes the municipality to levy a specific yearly tax on the ratepayer for the whole term of the debt, sufficient to meet the yearly interest and to pay off such proportion of principal each year as will wholly liquidate it within the maturity date.

2. In the serial method of repayment, the proportion of yearly principal paid by the taxpayer is applied in the year received to the retirement of that much of the debt, and the original loan is reduced year by year until finally extinguished. In the sinking fund method, the same tax levy is made on the ratepayer, but instead of applying the principal part thereof year by year to retire a portion of the loan, it is accumulated year by year at interest and applied at the end of the term to liquidate the whole loan.

EDITORIAL NOTE: Thomas Bradshaw, C.A., of Toronto, President of the North American Life Assurance Company, is one of the best known Canadian experts on municipal finance. A previous paper by him, *A Discussion of Municipal Finance and Administration*, has been published in the *Dalhousie University Bulletin on Public Affairs* in 1937.

Amount of Loan—\$100,000.00; Term—20 years; Interest—3%.  
Annual Tax Levy—\$6,721.56.

Application of Annual Tax Levy for Debt Service, and Status of Loan according to:

| End of Year | Serial Method of Repayment            |                              |                 | Sinking Fund Method of Repayment      |  |                          |
|-------------|---------------------------------------|------------------------------|-----------------|---------------------------------------|--|--------------------------|
|             | Applied in payment of Annual Interest | Applied in Repayment of Loan | Balance of Loan | Applied in payment of Annual Interest | Applied towards Contribution to Sinking Fund | Accumulated Sinking Fund |
| 1           | \$3,000.00                            | \$3,721.56                   | \$96,278.44     | \$3,000.00                            | \$3,721.56                                   | \$ 3,721.56              |
| 2           | 2,888.35                              | 3,833.21                     | 92,445.23       | 3,000.00                              | 3,721.56                                     | 7,554.77                 |
| 3           | 2,773.36                              | 3,948.20                     | 88,497.03       | 3,000.00                              | 3,721.56                                     | 11,502.97                |
| 4           | 2,654.91                              | 4,066.65                     | 84,430.38       | 3,000.00                              | 3,721.56                                     | 15,569.62                |
| 5           | 2,532.91                              | 4,188.65                     | 80,241.73       | 3,000.00                              | 3,721.56                                     | 19,758.27                |
| 6           | 2,407.25                              | 4,314.31                     | 75,927.42       | 3,000.00                              | 3,721.56                                     | 24,072.58                |
| 7           | 2,277.82                              | 4,443.74                     | 71,483.68       | 3,000.00                              | 3,721.56                                     | 28,516.32                |
| 8           | 2,144.51                              | 4,577.05                     | 66,906.63       | 3,000.00                              | 3,721.56                                     | 33,093.37                |
| 9           | 2,007.20                              | 4,714.36                     | 62,192.27       | 3,000.00                              | 3,721.56                                     | 37,807.73                |
| 10          | 1,865.77                              | 4,855.79                     | 57,336.48       | 3,000.00                              | 3,721.56                                     | 42,663.52                |
| 11          | 1,720.09                              | 5,001.47                     | 52,335.01       | 3,000.00                              | 3,721.56                                     | 47,664.99                |
| 12          | 1,570.05                              | 5,151.51                     | 47,183.50       | 3,000.00                              | 3,721.56                                     | 52,816.50                |
| 13          | 1,415.50                              | 5,306.06                     | 41,877.44       | 3,000.00                              | 3,721.56                                     | 58,122.56                |
| 14          | 1,256.32                              | 5,465.24                     | 36,412.20       | 3,000.00                              | 3,721.56                                     | 63,587.80                |
| 15          | 1,092.37                              | 5,629.19                     | 30,783.01       | 3,000.00                              | 3,721.56                                     | 69,216.99                |
| 16          | 923.49                                | 5,798.07                     | 24,984.94       | 3,000.00                              | 3,721.56                                     | 75,015.06                |
| 17          | 749.55                                | 5,972.01                     | 19,012.93       | 3,000.00                              | 3,721.56                                     | 80,987.07                |
| 18          | 570.39                                | 6,151.17                     | 12,861.76       | 3,000.00                              | 3,721.56                                     | 87,138.24                |
| 19          | 385.85                                | 6,335.71                     | 6,526.05        | 3,000.00                              | 3,721.56                                     | 93,473.95                |
| 20          | 195.51                                | 6,526.05                     | .....           | 3,000.00                              | 3,721.56                                     | 100,000.00               |

Note—(1) Usually interest is computed half-yearly, but for simplicity of illustration annually is assumed.

(2) In practice the serial debentures are issued in round amounts—\$1,000 or \$500—the payments being adjusted to provide for this. For example, in each of the first 7 years bonds would be issued for \$4,000, in the next 6 years for \$5,000, and in the last 7 years for \$6,000.

3. Recent experience has demonstrated that debentures issued for a loan repayable serially will command a higher price than debentures issued under the sinking fund method.<sup>1</sup> A municipality with sound credit would to-day be able to obtain approximately par for such a loan as has been described if bonds were issued payable serially (20 yearly instalments), whereas if issued on the sinking fund method (payable at end

of 20 years) it would obtain a price of only about 97, or at a discount of about 3%. This difference would represent a saving of approximately \$3,000; or in term of cost the municipality would obtain the loan in one case (serial) at close to 3%, while in the other (sinking fund) at a cost of about 3.15% to 3.20%. The reason is that there is at present a strong demand for securities running for a short term, and as a consequence they command a higher price than long term securities. Thus the first 10 year maturities of the serial debentures could be sold at a price above par, while the later maturities could be sold at a slight discount, but taken as a whole the price would approximate par, as mentioned. On the other hand, a 3% security, not

(1) Guelph, Ont., recently sold \$210,000 3% 20 yr. instalment debentures at 100.052 or on a 2.99% interest cost basis.

Woodstock, Ont., recently sold \$229,800 3½% 20 yr. instalment debentures at 104.752 or on a 2.99% interest cost basis.

Summerside, P. E. I., recently sold \$50,000 3½% 15 yr. sinking fund debentures at 102.11 or on a 3.32% interest cost basis.

Newcastle, N. B., recently sold \$25,000 4% 20 yr. sinking fund debentures at 101.125 or on a 3.92% interest cost basis.

payable for 20 years, could not be sold except at a discount of several points below par.

4. It has been shown that through the issue of serial bonds the principal amount of the debt is consistently reduced year by year, and as a result the gross debt liability in the municipality's financial statements reflects such reduction. While it is quite true that in presenting the liabilities of a municipality the accumulated sinking fund is deducted from the gross debt, not infrequently the question arises as to the composition and value of the securities in the fund, and again whether it is in a thoroughly sound condition. The municipality's credit is consequently more soundly regarded when it is known that its funded debt is being absolutely liquidated year by year, rather than that provision through a sinking fund is being made for its liquidation some years in the future.

5. If there is any unsoundness in the financial structure of a municipality, it will come to light more quickly and the opportunity to apply a remedy more promptly will be afforded, when its funded debt is required to be retired annually, rather than by accumulating a sinking fund therefor, inasmuch as one of the first signs of weakness in a municipality will be revealed in its failure to retire serial bonds promptly as they fall due. On the contrary, payments to be made into the sinking fund may be delayed; in fact in a number of instances such payments have been delayed, not for a few months but for several years. In this way the muni-

cipality's failure to maintain its obligation is not immediately brought out in the open, and the true reason for the condition is not suspected until a crisis is reached. The ultimate result, of course, is that when the debt falls due at the end of the term of the loan, the sinking fund will be found to be insufficient, and either default will have to be acknowledged or some refunding scheme entered into, which will mean that the taxpayer will have to be taxed again for the same debt.<sup>2</sup>

6. The serial method of debt repayment eliminates all dangers and pitfalls associated with the investment of sinking fund monies. It is well known that many of the sinking funds of Canadian municipalities contain investments which are themselves in default, and others which are depreciated in value and could not be realized upon except at a sacrifice. In other words, at the present time if a valuation of such sinking funds were made, it would be found that they would reveal deficits. The following is the record, according to their last available annual reports, of nine important municipalities, selected from various Provinces across Canada, setting forth the amount and percentage of default securities, as well as depreciated securities at present held in the sinking funds.

(2) As an illustration the case of one of our most important cities may be cited. Practically all of its debentures were issued on the sinking fund plan. At the close of 1938 no less than \$8,045,549 of levies which had been made upon ratepayers had not been paid by the city into the sinking fund. In addition \$3,532,293 of levies which should have been made on taxpayers for sinking fund purposes were not levied. It is feared that the true situation is not realized by its creditors and taxpayers, inasmuch as the city is still continuing the payment of interest on its debt.

|   | Total<br>Investments<br>held in<br>Sinking Fund | Investments in<br>Default |       | Investments<br>Depreciated<br>in Value |      |
|---|---|---------------------------|-------|--|------|
|   |   | \$                        | %     | \$                                     | %    |
| A | \$17,411,513                                    | 1,245,973                 | 7.2   | 1,438,700                              | 8.3  |
| B | 1,513,967                                       | 1,049,940                 | 69.4  | 3,494                                  | .2   |
| C | 6,983,978                                       | 688,948                   | 9.9   | 3,137,322                              | 44.9 |
| D | 31,880,028                                      | 1,368,853                 | 4.3   | 1,866,814                              | 5.9  |
| E | 1,671,992                                       | 226,344                   | 13.5  | 330,198                                | 19.7 |
| F | 1,994,006                                       | 253,781                   | 12.7  | 37,000                                 | 1.8  |
| G | 5,150,396                                       | 40,000                    | 0.8   | 118,000                                | 2.3  |
| H | 858,132   | 39,004                    | 4.5   | 87,424                                 | 10.2 |
| I | 362,972   | .....                     | ..... | 45,000                                 | 12.4 |

It will be noticed that in one municipality no less than over \$1,000,000 of securities held, representing 69% of the total sinking fund investments, are in default. In another case no less than \$3,137,000 of securities, representing 44.9% of the whole of its sinking fund investments, are depreciated in value, although sound trustee securities were selling at the time at well above average prices.<sup>3</sup> While it is to be sincerely hoped, both for the sake of those who are investors in the bonds of these municipalities and for that of the taxpayers, that defaults will be remedied, and depreciated values restored, it is almost a certainty that heavy losses will be incurred.

The serial method of repayment obviates the necessity of selecting, buying and selling securities for sinking funds, and thus avoids the possibility of any loss. It is submitted that the investment of such funds is the work of those specially skilled in that branch of finance, rather than of municipal officers and those appointed by Councils, who in most instances have not had the experience or training for doing this. Even the wisest and most conservative investors of monies incur losses, but those who are inexperienced, as already demonstrated, are placed at a very great disadvantage. Why should all this risk of loss be involved, without any compensating advantage?

7. Again, the serial plan of repayment eliminates the necessity, as is the case where bonds are issued on the sinking fund plan, for the maintenance of elaborate investment records, with the necessary staff; for the provision for the safe keeping of the sinking fund securities; for drawing up yearly statements of revenue and disbursements, assets and liabilities; for the periodical auditing and checking of the securities; for time and trouble involved in cutting off and recording coupons of investments held, and the many other details associated with the proper care of securities. The more simply and economically the

affairs of a municipality can be conducted, the better is it for Council, officials and taxpayer.

8. With the serial method of repayment, there is practically no loss from the accumulation of uninvested sinking funds. In the operation of municipal sinking funds it is often found that there are considerable funds on deposit awaiting suitable investment. These deposits carry either a very low rate of interest or no interest whatever. In the Province of Ontario, according to the most recent statement, the amount of uninvested sinking fund cash on hand of municipalities was \$3,688,012<sup>4</sup>. Most of this should have been earning the minimum basic rate of interest (3 to 4½%). The longer such funds are allowed to remain uninvested, the greater is the loss to the sinking fund and the taxpayers.

9. Again there is the problem associated with the investment of sinking fund monies, of obtaining suitable investments the maturity date of which will exactly match the maturity date of the sinking fund debt to be liquidated. Taking the single illustration of the loan outlined on page 00, theoretically it would be essential to purchase annually a security or securities for \$3,721.56 running from 1 to 19 years. For example, when the first instalment of \$3,721.56 is received, an investment running for 19 years should be obtained; when a similar second instalment is received, one running for 18 years should be obtained; when the third is received, one running for 17 years should be obtained, and so on throughout the whole period of the loan. Those who are accustomed to the investment of monies know the great difficulty there is in purchasing suitable investments of a specific amount to mature at an exact period. This problem does not arise when the serial method of repayment is adopted.

10. The serial method does away with possible losses resulting from a lower interest rate being earned on the investments in the fund than the basic rate

(3) Ontario municipalities alone at the close of 1937 held \$4,390,628 of Western Provincial securities in their sinking funds.

(4) Part of this amount is deposited with the Provincial Treasurer, who no doubt allows interest thereon at a minimum rate.

upon which the fund was established. For example, if the fund was established upon the assumption that the investments acquired for it would earn 4%, and if they actually only earned 3%, a deficit in the fund would arise, which would assume greater and greater proportions as the years progressed. It is quite true that in some sinking funds, some years ago when interest rates were considerably higher than they are today, investments were acquired which earned a higher rate of interest than the basic rate. For example, where the fund had been established on say a 3% interest rate, and investments had been made for the fund to yield 4%, a surplus has arisen. But in the present period of low interest yields, especially on short term investments—and those are the ones now chiefly required by sinking funds—the possibility of making surplus interest earnings on new investments is most remote.

11. The serial method of debt repayment tends to greater efficiency and more business-like procedure in the conduct of a municipality's affairs, in contrast with the sinking fund method. The officials charged with the collection of revenue know that they have certain obligations to meet throughout the year, failing which there is the possibility of default, and they are therefore keenly alive to the necessity of promptly collecting the revenue required to meet such obligations. The instalment to be paid into the sinking fund may be delayed, but the retirement of debt when due cannot be dodged.

12. The serial method of repayment of municipal debt eliminates a most reprehensible practice which has crept into the conduct of a number of municipal administrations, of selling to the sinking fund the municipality's own securities when it was impossible to find a public market for them. Where a municipality has reached the place that its own credit has gone and it refuses to face the issue and the facts, and where it has a sinking fund built up out of taxes collected in past years from ratepayers for the specific purpose of liquidation of certain specified

outstanding debts, it has not once but several times resorted to the practice of incurring further capital debt and issuing debentures, and using either the cash in the sinking fund or selling some of the choicest securities of the fund for cash in order to supply monies to purchase the debentures issued for such new additional debt. Let me quote a recent illustration in this connection; the statement is taken from the *Montreal Daily Star*, 28th June, 1939, which was discussing a crisis in the affairs of one of our prominent municipalities:

"In regard to the purchase of city bonds out of sinking fund to cover the city's share of direct relief costs, the city pays about \$350,000 roughly, into sinking fund every month, and the city's share of relief costs amounts to about \$500,000. The city can therefore go on covering its direct relief bill by borrowing from its own sinking fund, \$150,000 short every month, until the shortages accumulate to a sufficient amount to force a halt.

"In a year there will have been just under \$4,000,000 of sinking fund payments and revenues, and something over \$5,000,000 of relief costs incurred, and a gap of over a million dollars to be covered somehow.

"A suggestion was heard at the City Hall this morning, that this use of sinking fund to buy city bonds could be carried still further, if the Executive decided to do so. They could sell bonds of other corporations at present held by the city sinking fund, and use the money to buy up an equivalent issue of city bonds, which would be issued in order to pay off part of the bank overdraft. This might be carried on, it was suggested, until the only bonds held in the sinking fund were City of \_\_\_\_\_ bonds, and then that measure of relief would end, since they could not sell their own bonds in order to buy more of their own bonds. No one would buy them.

"Just how long these temporary measures of financial relief can be carried on, no one would try to prophesy, either at the City Hall or in financial circles; but agreement was general, that it is a question of postponing the showdown, and that the longer it waits the worse it will be."

The instances of abuses of municipal sinking fund monies are not at all creditable to the administration of those bodies which have been involved. The most satisfactory view, however, to take of it is that year by year those bonds repayable by the sinking fund method are maturing, and that the tendency of late years has been to refrain from establishing new debts on that basis. Within

the next 5 to 10 years very few outstanding municipal loans will be of that type<sup>5</sup>.

In conclusion may I emphasize some of the reasons for believing that there can be no doubt whatever that the serial method is superior to the sinking fund in the creation, treatment and repayment of municipal debts.

1. It enables the municipality to sell its debentures at a higher price, and thus obtain its capital loans at a lower interest cost.

2. It improves the credit rating of the municipality through the systematic yearly reduction of its gross debenture debt.

3. It quickly reveals any financial weakness in the municipal structure, making it possible to apply a remedy promptly.

4. It obviates the necessity of selecting, buying and selling securities for sinking fund purposes, and consequently the possibility of losses—which in the past have been considerable—through faulty or unwise choices.

5. It eliminates the cost and labour of maintaining elaborate investment re-

ords, of looking after the securities, and of providing additional accounting and auditing facilities.

6. It simplifies the care and control of all debenture debt operations, and thus facilitates the routine of municipal administration.

7. It tends to urge the necessity of prompt collection, within each year, of the municipality's revenue.

8. It removes from the administrators of municipalities the temptation to misuse and misapply sinking fund monies.

9. It tends to lighten the ratepayers' burden of taxation, inasmuch as most of the factors mentioned involve lower costs, or elimination of possible losses, simplification of operation, etc., all of which represent savings.

In fact, in the light of the past operation and experience associated with the issuance of debentures on the sinking fund method, it is difficult to conceive how a municipal Council could justify such a method, unless there was doubt when creating debenture debt that the municipality would be able to meet promptly the yearly provision for debt repayment. If such a thought did exist, then it is submitted that under no circumstances should a municipal body create new capital debt.

(5) In 1915 the whole of the City of Toronto's debt was composed of bonds issued on the sinking fund method; to-day 74% is in serial bonds and only 26% in sinking fund bonds. Since 1916 only serial bonds have been issued.