A CAPITAL INVESTMENT PROGRAM
FOR
GLOUCESTER, MASS.

A THESIS
Submitted in partial fulfillment of
the requirements for the degree
MASTER IN CITY PLANNING
by
ALFRED EDWARDS
B. L. A. University of Pennsylvania - 1933.

Submitted by:

Approved by: Frederick J. Adams
Professor of City Planning

William W. Wurster
Dean of the School of
Architecture & Planning

Massachusetts Institute of Technology, Cambridge, Massachusetts.
September 1946.
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Massachusetts Institute of Technology, Cambridge, Massachusetts, 16 September 1946.

Professor Frederick J. Adams, 
School of Architecture and Planning, 
Massachusetts Institute of Technology, 
Cambridge, Massachusetts.

Dear Professor Adams:

I herewith respectfully submit this thesis, A Capital Investment Program for Gloucester, Massachusetts, in partial fulfillment of the requirements for the degree Master in City Planning.

Sincerely yours,
PREFACE

One of the most frequent criticisms of planners in general is that their plans are unrealistic and financially impractical. In too many cases this criticism has been well founded. This study has been undertaken to demonstrate a method of financial analysis and capital investment planning for urban communities as well as to explore the financial reasonableness of the master plan prepared for Gloucester by Alfred Edwards and Eric Grubb in May 1946.

In order to create a sound foundation on which to base a capital program for a city it is necessary to analyze its financial condition. Such an analysis is not intended to be an audit of the city's accounts. The purpose is to establish trends over a sufficient period of time to eliminate fortuitous circumstances that affect a city's economy. Usually a ten year period is sufficient for this purpose. In this study the period from 1935 to 1945 has been used to discover trends in order to project them through the present year 1946 into the period of 1947 to 1951.

Such trends are not a matter of book keeping exactitude. It is sufficient to know the direction and approximate degree of the trend. Perhaps more important than financial accuracy and certainly more difficult to attain is an understanding of the reasons for changes in income and expenditure patterns. Only through the analysis of these reasons for change can an intelligent estimate be made of future trends.
For these reasons no reaudit of accounts has been made for this study. Wherever figures were available, in published form or in city records, they have been used with the full knowledge that in many cases they are not absolutely comparable. Similarly all sums have been taken only to the nearest dollar for the sake of ease and clarity of presentation.

It should also be noted that the estimates of future income and maintenance costs are not based on the author's ideas of what they should be but on his interpretation of the personalities and economic forces that will determine what they will be. On the other hand the amounts given for future capital investment are the recommendations of the author of the amounts Gloucester can and should spend during these years.

In the preparation of this study I have become deeply indebted to many people, both personal friends and former strangers, for their help, information, and advice. The City Officials of Gloucester and the staff of the State Department of Corporations and Taxation have been unfailing in their efforts to answer the myriad questions asked them. Particular mention should be made of the special contributions of the following persons to whom hearty thanks are due:

The Honorable Weston U. Friend, Mayor of Gloucester, for his frank discussion of the financial condition of the city and his plans for its future.

Mr. Kenneth S. Webber, Auditor of Gloucester, for his untiring efforts to provide the financial information required and for his personal interest in this report.
Mr. Paul A. Polisson, City Engineer of Gloucester, for information about the city's highway program and costs of construction and paving.

Dr. Ernest G. Lake, Superintendent of Schools, Gloucester, for information concerning the school system and for his interest and encouragement.

Mr. Edward S. Degnan and Mr. Paul F. Lundberg, Board of Assessors, for their information on land values and probable trends in assessments in Gloucester.

Mr. Bernard A Landry, Secretary of the Board of Public Welfare and Miss Dorothy M. Harding, Secretary of the Bureau of Old Age Assistance, for information on past and probable future trends in Welfare.

Miss Catherine Purcell, Assistant Field Director and Instructor in Social Work, Fordham University, for advice on trends in Welfare and Health Service.

Miss Brenda Dissel, Attorney at Law, for information on the laws of Massachusetts affecting municipal finance and for proof reading the entire report.

And finally, in the sense that the last shall be first, to my wife for her unfailing encouragement and help as well as for the arduous task of typing the report.

Winchester, Mass.
16 September 1946.
5. Individual grants

Expenditures

1. Services that increase with population
   - General government
   - Protection
   - Highways
   - Libraries
   - Recreation
   - Cemeteries

2. Services increasing regardless of increase in population
   - Charities
   - Health and Sanitation
   - Soldier's relief
   - Schools
   - Pensions

3. Controllable expenditures
   - Debt Service
   - Capital outlay
   - Unclassified expenditures

Summary of Financial Analysis

The Capital Investment Program
   - Projects being carried out 1946
   - Future projects of city departments
   - Master plan projects
   - New borrowing
   - Proposed program
   - Schedule of investment
   - Schedule of capital projects
Conclusion

APPENDIX

Estimated cost of projects

Marina
Marina park
Class II Airport
Park opposite High School
Playground at Riverdale
Bridge across Annisquam (Blynman Bridge)
New Road from Route 128 to Annisquam Bridge
New Road from Route 128 to Airport
New Road from Magnolia to Route 128 and Route 128 to Ipswich Road
Sewage disposal plant

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INTRODUCTION

The city of Gloucester, like many New England cities, reached its peak of population about 1900. For the past 45 years it has been slowly and steadily declining in population and economy. To plan for capital development of a city under these circumstances calls for a very careful examination of probable future trends of population, property valuation, and costs of government. These, in part, depend on the basic economy of the city and the probable employment and income of its population.

The main industry of Gloucester has always been fishing. During the war years there has been an unprecedented demand for fish to relieve the extreme shortage of meat. This has brought about a tremendous increase in the earnings of all those employed in the fish industry and a consequent inflation of values in Gloucester. A great deal of real property has been bought and sold in the past three or four years at ever increasing prices. An example of this increase is a piece of residential property which in 1939 sold for $4,500 and in 1946 was sold for $14,000.

This high level of earnings and values cannot be expected to continue for very long. In fact the market for fish is already falling and may be expected to continue to drop until, with the return of a normal supply of meat, the price and demand for fish return to their pre-war level.
It might appear a dangerous possibility that, with the reduction of incomes, there will come an overpowering wave of mortgage foreclosures on the property bought at inflated prices. Fortunately this possibility has been eliminated by the very extremity of the rise in earnings. Most of the property bought by fishermen during the war years was paid for in full and in cash.

The general economy of Gloucester may be expected to fall slowly for the next five years. At that time, if successful efforts have been made to develop the recreation and other industries in Gloucester the economy may be expected to stabilize at reasonably high level. If no effort is made to develop industry other than fishing it is probable the decline that was interrupted by the war will be reestablished and continue until the population stabilizes at a level consistent with the normal demand for fish, glue, and the other industrial products of Gloucester: a level far below the present.

During the five years, 1947 to 1951, with which this report is concerned no great decline in the basic economy is expected. The municipal income may in fact be expected to increase. The major part of this income is derived from the property tax. The amount realized by this tax depends on the value of property determined by the assessors and the tax rate set by the municipal council.
In Massachusetts the assessed value of real property is set by law as its full and fair market value. The Supreme Court has further clarified this requirement by defining the full and fair market value as the price agreed upon by a willing buyer and a willing seller. The law also requires that all property be viewed and its value considered every year. In practice the value set on a property in Gloucester at the present time is a compromise between its market value today and in 1939 with some consideration of what it may be worth in the near future. If it were possible to review all property each year evaluations would soar during a period such as this and would drop as quickly when the market dropped. The best that can be done however is to revalue all properties which change ownership or which are improved. Therefore the assessors must try to determine a value that will be realistic over a period of years.

Under these circumstances it is reasonable for the municipal council to take into account the fluctuations in earnings in the city by increasing the tax rate in good times and reducing it when the tax burden becomes difficult.

On this basis the tax rate has been increased this year to $41.00 per $1,000 valuation and is expected to continue to rise for several years. This, coupled with a gradual rise in valuations, will mean an increase of municipal revenue. At the same time the costs of government are rising also. The general increase of wages and prices throughout
the country are reflected in the wages of city employees and the cost of all city purchases. The relation of income and expenditure will be more completely analysed in the section of this study devoted to financial analysis. It is well to note here, however, that unless a reasonable basis for an economic expansion and consequent increase in population and valuation is found, the city should beware of any large borrowing for capital improvement. Gloucester has been on a pay-as-you-go basis for several years and should examine her future with care before departing from it.

Chart number one of this report shows the trend in population in Gloucester from 1850 to 1945. On the basis of a reasonable development of industry, recreation, and communication in Gloucester, as set forth in the Master Plan, an annual increase of population of approximately 1/2 per cent may be expected for the next five years. This increase is shown on the same chart and is used as the population basis for all predictions and estimates throughout this study.

The assessed valuation of real and personal property from 1875 to 1946 are shown on Chart number two. The probable future trend in valuation on the basis of influences discussed above has been taken to be 1 1/2 per cent for the next 3 years and 1 per cent for the 2 succeeding years. These valuations also are used throughout the study as bases of estimates and predictions. On the same chart is shown the trend in the tax rate over the same period of years. The
GLOUCESTER CHART 2.
TOTAL ASSESSED VALUATION

MILLIONS OF DOLLARS

TOTAL VALUATION

REAL PROPERTY

PERSONAL PROPERTY

1875 85 95 05 15 25 35 45 1951

DOLLARS

TAX RATE

20 30 40 50
extrapolation of this rate for the next five years will largely determine the city's income. The rates shown have been based on the reasonable needs of the community and the probable ability of the property owners to pay.

The prediction of financial trends for the next five years is no easy matter. This period of transition from war-time to peace-time economy is one of very delicate balance with many factors that can jar the scales in either direction. In full realization of this fact, the attempt has been made to balance probabilities and weigh trends so as to arrive at some reasonable values for the future. These estimates are intended as guide posts only and should be revised from year to year as experience dictates. Used in this way they will help to guide the preparation of annual budgets and show the way to the realization of the Master Plan projects for Gloucester.
FINANCIAL ANALYSIS

There are two important sources of published information on the finances of cities and towns in Massachusetts. The first of these, the city or town's own Annual Report, varies in form not only between communities but frequently changes from year to year in the same municipality. The figures given also vary in accuracy and are seldom completely comparable. The figures given in the State's Report on the Statistics of Municipal Finances are very carefully checked and compiled by the Division of Accounts of the Department of Corporations and Taxation. The state's figures are also completely comparable for the financial structure of an individual city and for all the communities of the Commonwealth. For these reasons all possible information has been taken from these latter publications. Unfortunately this document has been published only up to and including 1942. Information reported for more recent years may be obtained from the Division of Accounts although the figures for the last preceding year normally have not been checked and verified.

Certain information given in the state report is so combined that it is not usable in an analysis of this type. The combining of incomes from personal and real property, poll, and income taxes as one total is an example of this drawback. To find these incomes in detail it is necessary
to go to the local collector's report in the annual report of the community. Another example is the reporting of charities costs. These are given as totals spent for the various forms of welfare but the shares paid by city, state, and federal governments are not clearly shown. In this case it may be easier and more satisfactory to go direct to the offices administering particular phases of welfare to get this information.

In examining the state report of municipal finances it should be borne in mind that this is primarily an accountant's document. Its purpose is to explain every fiscal transaction that took place in the communities of the state in a given year. Many of these transactions have little or nothing to do with the financial condition of the municipality. Items of that nature have been eliminated from this study for the sake of simplicity. In Gloucester the Water Department is financially entirely separate from the city. It pledges only its own income in payment of its bonds and any profit over and above its maintenance and outlay accrues to the department and not to the general fund of the city. Therefore the finances of the Water Department are entirely omitted from this study.

Temporary loans, made to provide ready cash on hand, are paid back from the revenue of the years in which they are made. Although in the case of Gloucester these loans generally extend from April to April instead of the calen-
Dar year they have no effect on the city's financial position except that the interest on them is a part of debt service. Taxes collected for the state and county and transfers between departments all consist of bookkeeping items balanced on each side of the ledger and are also eliminated from this analysis.

The effort has been to determine the source of true, expendible items of income and actual expenditures from this income. These are summarised for the years 1935 to 1945 in Tables one and two. The estimates for the present year, 1946, are based on those made by the city officials in preparing the budget. However, there are certain requirements of law that prevent these estimates from being wholly realistic. For example income derived from the state may not be estimated as being greater than for the preceding year. Wherever necessary these estimates have been corrected. The amounts shown for 1947 to 1951 are those estimated in the preparation of this study.

In order to estimate the amount of these items of income and expenditure for the five years 1947 to 1951 some further analysis must be made. The use of graphs to visually present trends in these several items is extremely valuable. Chart three shows the total expendible income of the city of Gloucester for the years 1935 to 1946 and the income estimated for 1947 to 1951 inclusive. This chart clearly indicates the important role of the property tax in the city's finances.
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The poll tax is a negligible amount in comparison and the income from municipal operations is only about 1/3 as much as the property tax. The grants from county, state, and federal government to the city in recent years approximate the same as the earnings from municipal operations.

The borrowed funds shown in this chart indicate to a large extent the amount by which the city's income failed to cover its necessary expenses during this period.

The cost of government in Gloucester is shown graphically in Chart four. Although the maintenance of municipal services for the current year definitely forms the major part of the city's expenditures there is also a sizeable amount spent each year in debt service. This is made up of the payments against principal for general debts and all interest paid out of general revenue. In Gloucester's case this is not a large amount. Outlay forms the third type of expenditure shown in this chart. This includes one large capital expenditure for the new high school building and many smaller items of a more or less permanent nature. Outlay tends to vary with economic conditions except as the federal government provides funds to reverse this procedure.

In order to form a basis for estimates of future income and expenditure many of the individual items of the city's financial structure must be examined in detail. These have been divided into groups on the basis of the method by which their future amount may be estimated.
GLoucester

Chart 4.

Total Expenditure

Millions of Dollars

Legend

- Outlay
- Debt Service
- Maintenance

1935 37 39 41 43 45 47 49 1951
1. Income proportionate to population.

Under this heading may be placed only the poll tax. This is a negligible part of income consisting of a two dollar charge against all voters. As the population increases the number of registered voters may be expected to increase also. Therefore this item of income has been assumed to increase \( \frac{1}{2} \) a per cent per year for the next five years.

2. Income dependent on economic conditions.

Vessel excise tax, income tax, corporation tax, municipal operations income, and privileges can be estimated on the basis of future economic trends.

**Vessel excise.**

Vessel excise is a tax based on the value of ships using Gloucester as their home port. Recently the fish market has been so lucrative that this income has increased over 300 per cent. However, to encourage shipping and fishing, the tax on vessels has been set at \( \frac{1}{3} \) of 1 per cent of the total value of the vessel. Therefore this is a negligible item of income even in relation to such a great increase. With the decrease in the fish market it is unlikely the Gloucester fishing fleet will expand further. But in spite of decreased fish prices fishermen are still making more than they have for many years. Therefore it is likely that the fleet will remain at its present strength and the
excise tax will remain constant. No annual depreciation in the value of vessels is allowed in computing this tax.

**Income Tax.**

Income tax is collected by the state and the total yield, except administrative expenses, is distributed to the cities and towns. This distribution is based partly on the state tax assessed against municipalities and partly on "educational encouragement". (Sec. 18, Ch. 58, General Laws; Ch. 70, General Laws). It is probable that Gloucester's share of the income tax will remain on its present basis for at least the next five years.

The state income tax in Massachusetts is small compared with that of the federal government. Mayor Curley of Boston and others have proposed a considerably higher tax on state incomes in order to raise sufficient funds for the state to underwrite a large part of the increased cost of municipal government. Mayor Curley points out that the tax paid to the state is deductible from the federal income tax and concludes that the individual would pay the same amount of tax but less would go to the federal government and more to the state. Unfortunately, tax paid to the state is only deductible from income, not from the tax payable. Therefore, while no federal tax is paid on the actual sum paid to the state, the two taxes, from a practical point of view, are both assessed against the total taxable income.

In any case, the needs of the cities and towns are so
pressing it is likely that the state income tax will be increased though probably not as much as Mayor Curley would like it to be. It may be reasonable to expect an increase in the income tax yield to Gloucester of 5 per cent per year for the next five years.

**Corporation tax.**

From the corporation tax collected by the state certain fixed sums are designated by law to be distributed to the cities and towns. The balance, if any, is divided 1/6 to the state and 5/6 to the cities and towns. (Ch. 362, of the Acts of 1936). As general economic conditions improve the yield of the corporation tax will increase. Gloucester's share of this tax rose from $13,183 in 1938 to $86,868 in 1945. On the basis of expected increased economic opportunity during the next five years it is reasonable to expect an increase in the corporation tax. This may be a very large amount as corporations of all sorts return to peace time production and strive to supply the pent up demand at home and abroad. For purposes of this study a conservative figure of five per cent increase per year has been taken.

**Municipal Operations.**

The income from Municipal Operations constitutes a multitude of small amounts from many different sources. Under this heading in this study have been placed the income from the sale of licenses and permits, fines and forfeits, premiums, interest, offsets to outlay, and income from departmental
operations. In general the larger the volume of business transacted the greater these items of income will be. On the basis of past trends and the expectation of an improving economy it seems reasonable to predict a two per cent increase in these income items each year for the next five years.

Privileges.

Privileges are those rights to the use of public property for which the individual must pay a fee. The right to build and maintain a vault under a city sidewalk, to haul trash through the city streets, or to maintain a fruit stand on city property are all classified as privileges. These items are very minor ones and need hardly be considered. The great bulk of the income under privileges is from the motor vehicle excise tax which is assessed to pay for the use of the public streets by the individual. This tax is based on the value of the car according to a standard set of values prepared by the state. The value is set on each make of car and for each years model, reducing with the age of the car until a minimum is reached.

During the war the taxable value of cars was tremendously reduced. The yield from this tax in Gloucester in 1945 was about 40 per cent of the 1941 yield. Obviously when these old cars are replaced the tax on new ones will be very much higher. At the rate that cars are being replaced it is probable that this tax will increase about 25 per cent
per year for the next five years.

3. Income dependent on other governmental units.

This phase of income consists of the grants from federal, state, and county sources. These grants are extremely difficult to estimate because of the divergent purposes for which the grants are made. The general philosophy of federal and state subventions is to bolster the economy of municipalities during periods of economic difficulty. Chart five shows graphically the pattern of these grants from 1935 to 1945. The federal grants for outlay are those made under W. P. A. the bulk of which was for the new high school building. The grants for regular expenses are more important in the city's financial picture and are later discussed at length.

County Grants.

The County Grants consist of the dog license tax which has little importance in amount or in purpose. With the prevailing high incomes it is likely this grant will increase about two per cent per year.

The state has, since the depression, made grants for education, highway construction, and for various types of welfare and relief. The federal grants are primarily for welfare and relief. It is important to note that these grants start close to zero in 1935 and rapidly rise to nearly $250,000 in 1944. Since these grants are based on a proportionate share of the welfare load it is necessary to analyse this expenditure before attempting to estimate the amount of future grants.
GLOUCESTER

CHART 5.
OUTSIDE GRANTS

THOUSANDS OF DOLLARS

1935  37  39  41  43  45  47  49  1951

LEGEND

FEDERAL: FOR OUTLAY
COUNTY
STATE-EXCEPT WELFARE
FEDERAL

14 a.
Welfare.

Welfare expenditures are shown on Chart six divided into Aid to Dependent Children, General Relief, and Old Age Assistance. The total of these expenditures has been increasing fairly steadily over the period from 1935 to 1945.

General Relief.

General Relief, however, has been considerably reduced from its high point in 1939. This is due to the nature of payments made under this form of welfare. These are for the most part given to people who are unemployed and not eligible for unemployment compensation. In Gloucester there are about 1,200 fishermen and a considerable number of gardeners and domestic employees of summer hotels and estates who are not covered by unemployment compensation. These are also seasonal and fluctuating occupations so that the relief rolls of Gloucester at times become very heavy. When the fishing industry is flourishing it not only supports the regular fishermen but employs out of season, a large percentage of those who are employed by summer hotels and estates. The reason for continued payments of close to $90,000 for general relief during the present times of full employment is that these rolls include approximately 100 unemployable persons. There is no federal or state aid included in payments to persons on general relief who are bona fide residents of Gloucester. The state reimburses
GLOUCESTER

CHART 6.

WELFARE EXPENDITURE

HUNDRED THOUSANDS OF DOLLARS

LEGEND:

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
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<td>OLD AGE ASSISTANCE</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1935 37 39 41 43 45 47 49 1951
cities and towns for payments to persons who have no settled residence and other municipalities reimburse for payments to their residents.

Aid to Dependent Children.

Aid to dependent children, formerly called Mothers Aid, has increased steadily during the past 10 years because of liberalization of payments. At present the federal government pays 1/2 of $18.00 for the first child and 1/2 of $12.00 for each additional child in any family on this type of welfare. The state reimburses 1/3 of the total amount paid out by the city. The federal and state governments are both planning to pay a larger share of Aid to Dependent Children and it seems probable that soon the city will pay only 1/6 of these charges as they at present do in the case of Old Age Assistance.

Old Age Assistance.

Aid to Dependent Children and General Relief in Gloucester in 1945 totaled about $150,000. Old Age Assistance however, came to more than $400,000. With a case load of 685 persons this was an average payment of $588 per case. It is anticipated that the case load on Old Age Assistance will stay about 700 persons with new cases being added as the old ones are closed. However, because of increased cost of living, individual payments are expected to increase about 20 per cent, on fifteenth September of this year. This will mean a 5 per cent increase for 1946 and a 20 per cent increase over 1945 for 1947. Payments for Old Age...
Assistance will thereafter remain at that level for the succeeding four years.

Of this large financial burden the federal government pays 1/2 of each individual grant up to a payment of $40.00 per month. This means a maximum federal payment of $20.00 per grant. However, there are cases in Gloucester in which it is necessary to pay as much as $80.00 per month to keep the recipient in something approximating his normal standard of decency. Of the more than 1/2 of the remaining cost the state pays 2/3 and the city 1/3. This means that Gloucester should pay somewhere near 1/6 of the cost of Old Age Assistance. Actually 1/6 of the cost for 1945 would be $67,141 while Gloucester's actual share was $84,960.

There is very little hope that this financial burden will be removed from the cities and towns. The liberalizing of requirements for eligibility for Old Age Assistance and the easing of statutory requirements for the support of needy parents coupled with the loss of the feeling of shame at accepting public charity is responsible for a more than 400 percent increase in cases of Old Age Assistance from 1935 to 1945. At present Gloucester has a larger per cent of Old Age Assistance in relation to its population than any other city in Massachusetts. The discharge of men from the armed forces and cutting off of allotments to parents has added to the rolls of Old Age Assistance. At the same time the elderly people, being better cared for, are living longer. There is every reason to expect that the total welfare case load, even
during a period of high economic productivity such as we expect during the next five years, will continue to increase by about 1/2 per cent per year and that the total cost will increase about 20 per cent in 1947 and then remain about constant until there is a decided reduction in the cost of living.

**Federal Participation.**

Chart seven shows the division of welfare cost between federal, state, and city. The Federal Participation in these expenses may be expected to remain proportionately the same as it is now. That is, the grants will increase about 20 1/2 per cent in 1947 and about 1/2 per cent each succeeding year.

**State Participation.**

The State Participation will be approximately doubled for Aid to Dependent Children but remain the same for Old Age Assistance. Since Aid to Dependent Children is at present about 1/8 as much as Old Age Assistance, doubling the state contribution toward Aid to Dependent Children will increase the state's total grant only about 4 per cent. This will mean an increase in state grants of about 24 1/2 per cent in 1947 and of 1/2 per cent per year thereafter.

**State grants for Education.**

State grants for education are determined by various methods depending on their purpose. The major state help for education is in the proportioning of the income tax to
CHART 7.

WELFARE EXPENDITURE
BY SOURCE OF FUNDS

LEGEND

- FEDERAL
- STATE
- CITY

HUNDRED THOUSANDS OF DOLLARS

1935 37 39 41 43 45 47 49 1951
cities and towns. Two hundred dollars per year per teacher employed in the local school system is included in the payments of income tax from the state. This amount is a part of the total shown in this report as "income tax". Other minor amounts for adult education, special English courses for foreign born students, and vocational training are given in the tables and charts as state grants. These, as can be seen, are minor amounts and will probably increase at approximately the same rate as the population (1/2 per cent per year).

**State grants for highways.**

State grants for highways are taken from the "State Highway Fund". This fund is made up of the gasoline tax (three cents per gallon), registration fees for automobiles ($3.00 per car), and driver's license fees ($2.00 per license). This fund is intended primarily for the state's use in constructing and maintaining highways. However, under Chapter 90 of the General Laws a part of this fund can be distributed to cities and towns to use in the construction or resurfacing of numbered routes (not state highways) in the municipality.

The amount to be distributed and the share paid to any community are determined by the legislature. There has been considerable variation in the total amount distributed in any one year. For example, $3.65 millions in 1936, $10 millions in 1942, and none in 1943.
Recently the trend has been to distribute about $10 millions each year. During the next five years there will be two influences pulling against each other in the determination of this amount. First, the very poor condition of the state highway system will call for a very large expenditure by the state from the highway fund, leaving little for distribution to cities and towns. On the other hand, the increase in automobile traffic will greatly increase the amount of the highway fund. It is probable that the amount distributed from the highway fund each year for the next five years will continue to approximate $10 millions.

The share of any municipality from this fund is determined by the legislature every two years. The population, miles of streets, and area of the city and town are given equal importance in apportioning these funds. It is likely that Gloucester's share in this distribution will be in the neighborhood of $50,000 annually for the next five years.

These funds may be used for streets within the city at the city's discretion. Besides these funds there are other distributions from the highway fund which must be matched by City and County. These grants are made for the improvement of important routes through the city, for which the state pays 50 per cent, the county 25 per cent, and the city 25 per cent.

4. Income controlled by the city government.

The tax on real and personal property and special assessments charged against property owners are the only
items of income fully determinable by the city government. The determination of the property tax will be worked out in detail in the summary to the fiscal analysis and need not be discussed here.

Special assessments in Gloucester are usually made to pay for the extensions of the water and sewer systems. Since the water department, being a separate financial entity, has been eliminated from this study we have only sewer assessments to consider. In general the city pays 1/2 the cost of sewer extensions and assesses the remainder against the abutting property owners or against the property owners served by the sewer. These assessments may be spread over a period of years and paid in equal yearly installments with interest on the unpaid balance. During the next five years Gloucester expects to spend $100,000 each year on sewer extensions and to assess $50,000 each year against the property owners.

5. Individual grants.

Each year certain sums are given to the city for specific purposes. There is no way of estimating how much these sums may be except by examining their past trend. From this trend it seems safe to assume grants of about $2,500 per year.

Expenditures.

The expenditures of municipal government can be divided into three classes for purposes of estimating their future amount.
1. Services that increase with the population.

These are the general government of the city, protection of persons and property, highway and street maintenance, libraries, recreation, and cemeteries. They are all services provided for the population and can be estimated on a per capita basis. This would indicate a very slight increase in these costs for the next five years. However, the general economic trend must also be taken into account. With the increase in cost of living it is inevitable that higher wages must be paid to city employees, and all city purchases will also be more expensive.

During the war years expenses in these departments did not rise at the same rate as the cost of living. This was due to reduced staff because of war service leaves and shortages of materials that prevented the purchase of even necessary articles. Now the absent personnel are returning and reclaiming their jobs. The city therefore will have a larger personnel than during the war years at larger salaries consistent with the increased cost of living. Materials needed by the city are available and must be purchased at increased prices.

Under these circumstances the 1/2 per cent increase in population per year is only a small part of the increase in governmental cost. Assuming that salaries and other expenses will be increased gradually and not immediately brought up to present day demands it is probable that the total costs of these departments will be increased about five per cent annually for the period 1947 to 1951.
2. Services increasing regardless of increase in population.

Charities, health and sanitation, soldier's benefits, schools, and pensions will increase even if the population is reduced. This situation has been gone into in some detail in the case of charities, under the heading of income from federal grants. The cost of charities to the city will increase in about the same proportion as outside grants except that Aid to Dependent Children will not be increased so far as the city's share of the cost is concerned.

Health and sanitation are becoming more expensive due to increased demand for these services. The extension of the sewer system, greater requirements for garbage collection and other phases of sanitation will increase this department's cost. Health services provided by the city will also increase with broader interpretations of public responsibility for health. Formerly public health was considered to be purely preventative in controlling sources of infection. Immunization has been developed to a high degree and forms an important part of public health work. In more recent years it has been learned that the best control of certain contagious diseases is the treatment of those who might spread them. This has introduced an entirely new field to the public health service. Since such treatment demands the services of professional personnel, doctors and nurses, the cost is considerable. Also the field of public health has been broadened to include providing appliances and other aids to help individuals to lead a more normal life. This includes providing
spectacles, artificial limbs, and other aids to normalcy for those unable to pay for them.

These increases in service will probably be responsible for an overall increase in health and sanitation costs of five per cent this year and two per cent each succeeding year.

Soldier's Relief.

Soldier's relief is divided into State War allowances, State Aid, Military Aid, soldier's relief, and general advice and aid in obtaining pensions and other assistance from the federal government. Of these various divisions of the cost of soldier's relief the state pays for state war allowances, state aid, and 1/2 the cost of military aid. This leaves 1/2 of military aid and the whole cost of soldier's relief for the city to carry. Soldier's relief, which is similar to general relief in its provisions, is by far the greatest expense. It amounted to $30,799 out of the city's total cost for soldier's benefits of $45,450 in 1944. Even this amount is considered to be held down at present due to the $20.00 weekly allowance being paid to veterans by the federal government for unemployment compensation. These payments will continue for 52 weeks and then many of the men now receiving these benefits may have to be included in the soldier's relief rolls.

There is no way to estimate how many such veterans will actually be added to the relief rolls. The opinion that many men now receiving unemployment compensation are simply
taking a vacation at government expense may have considerable foundation in fact. In any case it may be reasonable to assume that those who want employment will be able to find it and those who are unemployable will receive pensions from the federal government.

Because of these considerations the city's share of soldier's benefits is estimated to increase only 1 per cent per year during the next five years.

Schools.

The maintenance and operation cost of the school system in Gloucester is the second largest item in the budget and the largest payment made from the city funds. Before 1938 school cost was the largest budget item but since that time charities (welfare) have become the largest amount. Chart 8 shows an analysis of school expenditures from 1935 to the present. These are shown as a total expenditure and as cost per pupil for the high school and elementary schools. The trend in enrollment is also shown.

In studying school expenditures it is important to realize that in Massachusetts the School Board is an autonomous organization having final authority over expenditures for maintenance and operation of the school system. The Municipal Council is required to raise the sums required by the School Board for educational purposes. The construction of new school buildings or additions or substantial alterations to buildings is the province of Municipal Council while repair of buildings is under the control of the Board.
CHART 8.
SCHOOL EXPENDITURE

TOTAL MAINTENANCE COST

THOUSANDS OF DOLLARS

PER PUPIL COST

HUNDREDS OF DOLLARS

ENROLLMENT

THOUSANDS OF PUPILS
The meager salaries paid to school teachers make obtaining trained and able people very difficult. The Gloucester School Board has recently had a study prepared by the Center of Research and Service in Educational Administration, Harvard Graduate School of Education on Salary Policy for School Personnel. While this report has just been completed and has not yet been officially accepted by the School Board it is fairly definite that the schedule recommended in the study will go into effect very soon. For this reason the salary schedule projected by that study for the next five years has been accepted. Normally the salaries of Supervisors, principals, and teachers in Gloucester equal 70 per cent of the operating cost of the school system while janitors, supplies, and maintenance of buildings equal 30 per cent. This proportion has been applied to the salary schedule set by the Harvard study to arrive at the total cost of schools during the years 1947 to 1951.

Pensions.

Pensions authorized for municipal employees have been broadening consistently for a considerable time. Thomas L. Hinckley in "Legislation Affecting Municipal Finance in Massachusetts, 1906 - 1945", lists 16 references to pensions in the General Laws during that period. In Gloucester pensions have increased from about $12,000 in 1935 to over $56,000 in 1945, an increase of 466 per cent in ten years.
To what extent the legislature may consider it advisable to go in adding to the pension system is anybody's guess. At present all permanent municipal employees are eligible for a pension equal to half their salaries at the time of retirement. It seems unlikely that greater benefits will be considered necessary during the next five years.

The factors other than changes in regulations, causing increased expenditure for pensions are additional city employees and higher salaries. While these increases normally are not immediately reflected in the pension load the period of delay is not long. Already two veterans of World War II have returned to their jobs with the city of Gloucester and have gained retirement and pensions from the city because of disability. They are both working in private business while collecting their pensions. There seems to be no way to prevent this abuse that would not work a hardship on other retired persons.

It is likely that pension payments, because of higher salaries and larger number of employees will increase about five per cent per year during the next five years.

3. Controllable Expenditures.

Debt service and capital outlays are within the control of the Municipal Council to a reasonable extent. It is true that during the depression the city was forced to borrow funds for relief but normally there is no compulsion on the city to borrow or to make capital improvements. There are certain controls on the maximum allowable debt in any municipality.
In Massachusetts the debt limit for cities is set at 2 1/2 per cent of the average valuation for the three preceding years. Cities are also permitted to borrow outside the debt limit with special permission from the Emergency Finance Board of the state. This body approves loans of a definite amount for a specific project.

Chart nine shows the general debt of Gloucester from 1935 to 1946 and its reduction to 1951 assuming no additional borrowing. This is divided into debt inside and outside the debt limit. Because of its importance, the debt outside is further subdivided into funds borrowed for relief and those for other purposes. Superimposed on this chart is a line indicating the legal debt limit. It will be seen that except for relief borrowing Gloucester's total general debt has been within its debt limit since 1941. Dun and Bradstreet estimate the danger point for a city has been reached when its total debt equals 10 per cent of its valuation.* At the peak of its indebtedness in 1938 Gloucester's general debt was only 4 1/2 per cent of its valuation and this year is not much over 2 1/2 per cent. This policy of keeping the debt load well below the maximum is extremely wise in a city whose population and valuation are not growing rapidly.

*Bird, Frederick L. (Director of Municipal Service, Dun and Bradstreet), The basis of municipal credit. Municipal Finance Officer's Association, St. Paul, Minn., 1938.
CHART 9.
GENERAL DEBT

MILLIONS OF DOLLARS

1935 37 39 41 43 45 47 49 1951

LEGEND

OUTSIDE FOR RELIEF
OUTSIDE OTHER
INSIDE DEBT LIMIT

PROPOSED
DEBT LIMIT
EXISTING
Chart ten shows the trend in debt service during the past ten years and the amount the city is obligated to pay during the next five years. Debt service in this report equals the serial payments against the principle of debts incurred for general revenue purposes plus the interest on all debt which must be paid from general revenue. This completely eliminates the debt of the Water Department and principle payments on Temporary loans and Tax title loans.

It is interesting to note that the rate of reduction in debt service payments is steadily being reduced during the five future years projected in the chart. This is due to the many small loans made during the depression when the city was unable to see the possibility of reducing the loans quickly. Therefore the serial payments were made as small as possible. The more recent loans with larger serial payments are quickly paid in full but the smaller loans drag on for many years.

Charts nine and ten show a very sound picture of conservative and careful financing. As has been remarked above this policy should be continued in a city whose population and property valuation are increasing so slowly.

Capital outlays, as one would expect form an extremely erratic picture. The variation from $814,583 in 1939 to $3,317 in 1942 is indicative of the fluctuations that are possible. Here the wise policy of doing public work during times of depressed economy to provide work is a vital consideration. However, during the war years practically no capital improvements were made in Gloucester because of
shortages of materials and labor.

The projects now needed in Gloucester will be considered in detail in the next section of this report dealing with the capital investment program.

Unclassified expenditures shown on Table two are those expenses of the city which cannot be assigned to any one department of the government. Such items as provision and maintenance of a headquarters for the American Legion and Veterans of Foreign Wars come under this heading. While the nature of these vary from year to year it seems reasonable to suppose the total will increase in much the same way as other charges influenced by the rise in the cost of living. For that reason an increase of 5 per cent per year is shown in this amount although the Municipal Council can by making or withholding grants alter this estimate in either direction.
SUTTIIARY OF FINANCIAL ANALYSIS

In order to discover Gloucester's ability to pay for capital improvements it is necessary to relate the three elements of expenditure* to property tax levy, and income other than from property tax. If the estimated income from sources other than property tax is subtracted from the estimated maintenance cost and debt service of the city the result will be the part of maintenance to be raised by the tax rate. Dividing this sum into the estimated property valuation will give the tax rate necessary to raise this sum. The amount of money available for capital projects will be the levy that may be raised by increasing the tax rate above this established minimum.

The following table shows this worked out for the five years 1947 to 1951.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Maintenance and Debt Service</th>
<th>Income Other than Property Tax</th>
<th>Amount to be raised by Property Tax</th>
<th>Estimated Property Valuation</th>
<th>Minimum Tax Rate</th>
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<tbody>
<tr>
<td>1947</td>
<td>2,308,746</td>
<td>1,063,576</td>
<td>1,245,170</td>
<td>38,022,772</td>
<td>32.75</td>
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<tr>
<td>1948</td>
<td>2,365,894</td>
<td>1,086,362</td>
<td>1,279,532</td>
<td>38,768,703</td>
<td>33.00</td>
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<td>1949</td>
<td>2,413,645</td>
<td>1,111,107</td>
<td>1,302,538</td>
<td>39,523,461</td>
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<td>1950</td>
<td>2,452,290</td>
<td>1,138,167</td>
<td>1,314,123</td>
<td>40,111,263</td>
<td>32.76</td>
</tr>
<tr>
<td>1951</td>
<td>2,495,473</td>
<td>1,167,962</td>
<td>1,327,511</td>
<td>40,704,306</td>
<td>32.62</td>
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</tbody>
</table>

These are the tax rates necessary to pay the estimated maintenance charges of city government in Gloucester during the next five years. If we assume that Gloucester can afford

* Maintenance, debt service, and outlay.
to pay a tax rate of $40.00 per $1,000 of valuation during these years the difference between these tax rates and the $40.00 rate will give the amount that would be available for capital investment. The following table shows these differences in rates and the capital funds that would be raised.

<table>
<thead>
<tr>
<th>Year</th>
<th>Difference in rate</th>
<th>Capital funds</th>
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</thead>
<tbody>
<tr>
<td>1947</td>
<td>7.25</td>
<td>275,745</td>
</tr>
<tr>
<td>1948</td>
<td>7.00</td>
<td>271,381</td>
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<td>278,640</td>
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<td>290,407</td>
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<tr>
<td>1951</td>
<td>7.38</td>
<td>300,398</td>
</tr>
</tbody>
</table>

These approximations of possible available capital funds may be used as a scale against which to evaluate the lists of capital projects for Gloucester given in the following section of this study.
The Capital Investment Program.

Cities are seldom able to maintain a uniform annual investment in capital improvements over a long period of time. Usually they have a large program of improvement in one or several years then spend ten years or more paying off the investment. By that time their needs are again excessive so another large program is required entailing another large debt. A steady investment of a suitable amount each year, keeping the city's capital plant in good functional condition, would be a great deal more satisfactory than this lag and catch-up method.

Gloucester has been enmeshed in a contracting economy for nearly 50 years. This has placed her in the position of owning a too large, inefficient, and thoroughly outmoded capital plant without the means of replacing it. Added to this, the war has prevented any capital construction for four years. At present Gloucester is in need of a large investment to make her services reasonably modern and efficient.

The present list of needed projects, as accepted by the Mayor, includes extensive rebuilding and paving of streets, building sidewalks and curbs, extending the sewer system, building new school buildings, a new bridge across Lobster Cove, a municipal garage, rebuilding sea walls, and installing a new heating system in the City Hall.
During the year 1946 the following list of these projects is to be carried out:

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Cost</th>
<th>From Reserve</th>
<th>Borrowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road and Walk Construction</td>
<td>$100,000</td>
<td>-</td>
<td>$100,000</td>
</tr>
<tr>
<td>Sewer extension</td>
<td>100,000</td>
<td>-</td>
<td>100,000</td>
</tr>
<tr>
<td>Municipal Garage</td>
<td>55,000</td>
<td>-</td>
<td>55,000</td>
</tr>
<tr>
<td>Lobster Cove Bridge</td>
<td>35,000</td>
<td>35,000</td>
<td>-</td>
</tr>
<tr>
<td>Sea Walls</td>
<td>10,000</td>
<td>10,000</td>
<td>-</td>
</tr>
<tr>
<td>City Hall Heating System</td>
<td>10,000</td>
<td>10,000</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>310,000</strong></td>
<td><strong>55,000</strong></td>
<td><strong>255,000</strong></td>
</tr>
</tbody>
</table>

This leaves for future years the following projects deemed to be necessary by the various departments of the city government:

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Construction Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway Reconstruction Program</td>
<td>$200,000</td>
</tr>
<tr>
<td>Sewer Extensions</td>
<td>400,000</td>
</tr>
<tr>
<td>4 Elementary School Buildings</td>
<td>1,400,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,000,000</strong></td>
</tr>
</tbody>
</table>

Besides these departmental projects there are the projects proposed in the Master Plan prepared by Alfred Edwards and Eric Grubb for Cape Ann, a photograph of which is included in this report. Although the report accompanying this plan makes
certain joint proposals for Gloucester and Rockport the present study is restricted to Gloucester's own projects. Probably the largest change entailed in this report is that of developing the Gloucester School Department as a single unit instead of combining it with Rockport.

The following list of capital projects entail all of the master plan proposals that must be paid for by Gloucester. Route 128, Dogtown Common Reservation, and Dogtown Common Parkway would all be paid for by the state and therefore are not considered here. The methods of arriving at the cost of these projects is shown in detail in the appendix of this report.

MASTER PLAN PROJECTS

<table>
<thead>
<tr>
<th>Project</th>
<th>Land Cost</th>
<th>Construction Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport (Class II)</td>
<td>4,125</td>
<td>57,500</td>
<td>61,625</td>
</tr>
<tr>
<td>Marina</td>
<td>-</td>
<td>160,000</td>
<td>160,000</td>
</tr>
<tr>
<td>Marina Park</td>
<td>6,600</td>
<td>135,000</td>
<td>141,600</td>
</tr>
<tr>
<td>Park, opposite High School</td>
<td>43,560</td>
<td>10,000</td>
<td>53,560</td>
</tr>
<tr>
<td>Playground at Riverdale</td>
<td>500</td>
<td>11,100</td>
<td>11,600</td>
</tr>
<tr>
<td>Bridge across Annisquam</td>
<td>-</td>
<td>125,000</td>
<td>125,000</td>
</tr>
<tr>
<td>New Road, Route 128 to Annisquam Bridge</td>
<td>3,000</td>
<td>11,250</td>
<td>14,250</td>
</tr>
<tr>
<td>New Road, Route 128 to Airport</td>
<td>25</td>
<td>6,250</td>
<td>6,275</td>
</tr>
<tr>
<td>New Road, Magnolia to Ipswich Road</td>
<td>10,125</td>
<td>31,250</td>
<td>41,375</td>
</tr>
<tr>
<td>Sewage Disposal Plant</td>
<td>-</td>
<td>165,000</td>
<td>165,000</td>
</tr>
</tbody>
</table>

780,285
These two lists show the total desirable capital investment that Gloucester should make. Together they total $2,780,000. The debt limit for Gloucester in 1947 is estimated to be $932,241, and the city will owe on existing debts inside the debt limit $307,000 leaving a borrowing capacity of $625,241. With the permission of the Emergency Finance Board funds for certain of these projects might be borrowed outside the debt limit. On the basis of Dun and Bradstreet's estimate of 10 per cent of the valuation being the maximum safe debt load Gloucester could carry a debt of $3,728,924. Her total general debt for 1947 will be $934,000 leaving a maximum borrowing limit of $2,794,924. It has already been shown that in a city with an expectation of small increase in population and property evaluation there should be little borrowing. Gloucester would probably be safe in borrowing a million dollars in 1947, $600,000 within the debt limit and $400,000 outside, making a debt load of about 5 per cent of the total valuation.

If this million dollar loan were made for a period of ten years there would be a principal payment of $100,000 due each year. With interest of 1 1/2 per cent added the payments would be as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>1947</th>
<th>1948</th>
<th>1949</th>
<th>1950</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$115,000</td>
<td>$113,500</td>
<td>$112,000</td>
<td>$110,500</td>
<td>$109,000</td>
</tr>
</tbody>
</table>

Subtracting these payments from the amounts raised by a $40.00 tax rate over the maintenance requirements will give
the amounts that may also be used for capital investment.

<table>
<thead>
<tr>
<th></th>
<th>1947</th>
<th>1948</th>
<th>1949</th>
<th>1950</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital funds</td>
<td>275,745</td>
<td>271,381</td>
<td>278,640</td>
<td>290,407</td>
<td>300,398</td>
</tr>
<tr>
<td>Debt Service</td>
<td>115,000</td>
<td>113,500</td>
<td>112,000</td>
<td>110,500</td>
<td>109,000</td>
</tr>
<tr>
<td>160,745</td>
<td>157,881</td>
<td>166,640</td>
<td>179,907</td>
<td>191,398</td>
<td></td>
</tr>
</tbody>
</table>

These sums plus the million dollar loan make a total of $1,856,571 for capital investment in the five year period. This will leave projects amounting to $923,429 still unprovided for.

Gloucester's valuation of property is very low and, as has been shown, is not likely to be raised in keeping with high levels of prices and earnings. Under these circumstances it is reasonable to consider increasing the tax rate during a period of high earnings such as the present. If the tax rate were increased by another $5.00 for capital investment, making a total rate of $45.00 per $1,000 the extra yield would be $985,653. This would make a grand total of $2,842,225 available for purposes other than maintenance during the five year period.

Actually certain of the capital projects will add to the cost of maintenance in the city. The sewage disposal plant will require maintenance of about $23,000 a year and additional highways and parks will need more upkeep. In order to allow for this additional expense it would be wise to plan to spend only 2 1/2 millions of this amount on the capital program, leaving about $340,000 for other maintenance and contingencies.
Proposal of Program.

It is proposed, on the basis of the foregoing analysis, that Gloucester impose a tax rate of 45.00 per $1,000 valuation each of the next five years. Also that Gloucester borrow one million dollars in 1947 and make a capital improvement of 2 1/2 million dollars during the five year period.

Schedule of Improvements.

The available funds for capital investment for each of the years 1947 to 1951, with the proposed 45.00 tax rate, are shown in the following table:

<table>
<thead>
<tr>
<th>Estimated Valuation</th>
<th>Increase in Tax Rate for Capital Program</th>
<th>Increase in Levy</th>
<th>Reserve for Additional Maintenance</th>
<th>Capital Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947 38,022,772</td>
<td>12.25</td>
<td>465,779</td>
<td>65,779</td>
<td>400,000</td>
</tr>
<tr>
<td>1948 38,768,703</td>
<td>12.00</td>
<td>465,224</td>
<td>65,224</td>
<td>400,000</td>
</tr>
<tr>
<td>1949 39,523,461</td>
<td>12.05</td>
<td>476,258</td>
<td>66,258</td>
<td>410,000</td>
</tr>
<tr>
<td>1950 40,111,263</td>
<td>12.24</td>
<td>490,962</td>
<td>65,962</td>
<td>425,000</td>
</tr>
<tr>
<td>1951 40,704,306</td>
<td>12.38</td>
<td>503,919</td>
<td>78,919</td>
<td>425,000</td>
</tr>
<tr>
<td>Total</td>
<td>---</td>
<td>---</td>
<td>342,142</td>
<td>2,060,000</td>
</tr>
</tbody>
</table>

Borrowing a million dollars will change the picture of funds to be spent each year in the following way:

<table>
<thead>
<tr>
<th>Capital Funds</th>
<th>Debt Service on $1,000,000</th>
<th>Available Funds</th>
<th>Borrowed Funds</th>
<th>Total yearly Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947 400,000</td>
<td>115,000</td>
<td>235,000</td>
<td>1,000,000</td>
<td>1,285,000</td>
</tr>
<tr>
<td>1948 400,000</td>
<td>113,500</td>
<td>236,500</td>
<td>-</td>
<td>286,500</td>
</tr>
<tr>
<td>1949 410,000</td>
<td>112,000</td>
<td>238,000</td>
<td>-</td>
<td>298,000</td>
</tr>
<tr>
<td>1950 425,000</td>
<td>110,500</td>
<td>314,500</td>
<td>-</td>
<td>314,500</td>
</tr>
<tr>
<td>1951 425,000</td>
<td>109,000</td>
<td>316,000</td>
<td>-</td>
<td>316,000</td>
</tr>
</tbody>
</table>
We now have the funds that can be spent each year during the five year program. It is necessary now to decide which projects shall be done and in what order. Here certain facts become obvious, as that land must be acquired before construction can begin. Also, projects that will attract additional trade and income to the city should be given preference over those for the convenience of residents. The third consideration is based on the importance of the need for a project. For example, new school buildings should take precedence over parks not only because of the greater importance of education but because there is the possibility of recreation of sorts in Gloucester even without additional parks.

The Schedule of Capital Projects on page 40 shows the timing of projects during the next five years on the basis of the 2 1/2 million dollar program shown above.

This schedule leaves only $280,285 worth of work to be done after the end of the five year program. For this reason it might seem to be an excessive schedule to set for Gloucester. It must be borne in mind, however, that new projects will be added each year to the capital needs of the city. Within the next five years may be the most propitious time to catch up with the accumulated needs of the community.
<table>
<thead>
<tr>
<th>Project</th>
<th>1947</th>
<th>1948</th>
<th>1949</th>
<th>1950</th>
<th>1951</th>
<th>Total</th>
<th>Remainder</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 School Bldgs. @ $350,000</td>
<td>700,000</td>
<td></td>
<td>150</td>
<td>200,000</td>
<td>214,715</td>
<td>1,264,715</td>
<td>135,285</td>
</tr>
<tr>
<td>Highway reconstruction program</td>
<td>100,000</td>
<td>100,000</td>
<td></td>
<td>-</td>
<td>-</td>
<td>200,000</td>
<td>-</td>
</tr>
<tr>
<td>Sewage disposal plant</td>
<td>165,000</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>165,000</td>
<td>-</td>
</tr>
<tr>
<td>Sewer extensions</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td></td>
<td>400,000</td>
<td>-</td>
</tr>
<tr>
<td>Bridge across Annisquam</td>
<td>125,000</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>125,000</td>
<td>-</td>
</tr>
<tr>
<td>Route from 128 to Annisquam bridge</td>
<td>3,000</td>
<td>11,250</td>
<td></td>
<td>-</td>
<td>-</td>
<td>15,250</td>
<td>-</td>
</tr>
<tr>
<td>Playground at Riverdale</td>
<td>500*</td>
<td>11,100</td>
<td></td>
<td>-</td>
<td>-</td>
<td>11,600</td>
<td>-</td>
</tr>
<tr>
<td>Airport</td>
<td>4,125*</td>
<td>57,500</td>
<td></td>
<td>-</td>
<td>-</td>
<td>60,625</td>
<td>-</td>
</tr>
<tr>
<td>Road to Airport</td>
<td>25*</td>
<td></td>
<td>6,250</td>
<td>-</td>
<td>-</td>
<td>6,250</td>
<td>-</td>
</tr>
<tr>
<td>Marina</td>
<td>27,065</td>
<td>6,650</td>
<td>41,750</td>
<td>14,500</td>
<td>70,035</td>
<td>160,000</td>
<td>-</td>
</tr>
<tr>
<td>Road from Magnolia Ipswich Road</td>
<td>10,125*</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>31,250</td>
<td>41,375</td>
</tr>
<tr>
<td>Park opposite High School</td>
<td>43,560*</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>43,560</td>
<td>10,000</td>
</tr>
<tr>
<td>Marine Park</td>
<td>6,600*</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>6,600</td>
<td>135,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,235,000</td>
<td>286,500</td>
<td>298,000</td>
<td>314,500</td>
<td>316,000</td>
<td>2,500,000</td>
<td>280,285</td>
</tr>
</tbody>
</table>

* Land acquisition.
CONCLUSION.

The program outlined above will do much to bring Gloucester up-to-date in her capital investment. To stop at that point however, would mean to get behind in a very few years. There must be a constantly developing program of improvement and replacement to keep the city's capital plant in good functional condition.

The Municipal Council, or a committee designated by them, should assume the responsibility of continuing the capital program. Each year the program for that year will be translated into an actual budget and appropriations made to carry it out. This will of course require some adjustment of the program in the light of more recent information. At that time the four remaining years of the program should be reviewed and another year added. In this way there will always be a plan of capital investment five years ahead.

The buildings, roads, bridges, sea walls, piers, fire engines, and all the other items that make up the city's capital plant are constantly depreciating and moving toward obsolescence. Technologic and social developments require additions to or revisions of the capital plant. Only by a continuous effort at replacement and improvement can a city keep in condition to provide adequate, up-to-date service to its residents. The common practice of drifting for many years then trying to catch-up by means of a large capital expenditure, then drifting again has been mentioned above.
There are two great disadvantages to this system of development. The city's needs go unprovided for over a period of years until the propitious moment arrives for a large capital program. Also, the large new plant of which everyone is so proud will, before long, be a large obsolete burden, all needing replacement at the same time.

It is much wiser to have a continuous program of capital development spread out over the years so that the plant is constantly being improved and never needs to be completely replaced. In Gloucester an annual investment of $300,000 to $500,000 would provide for the constant replacement and modernization of public structures and capital equipment. Raising this amount each year in the tax rate would mean an added tax of $7.50 to $12.50 per $1,000 if the property valuation remains as low as it is now. This would not be a heavy burden during times of normal economic activity. If we are so unfortunate as to experience another great depression and taxes must be reduced such a program can be curtailed until times improve. A large debt incurred for capital improvement requires constant repayment and taxes must be kept high to meet it or risk default and bankruptcy. In an expanding economy it is safe and wise to mortgage the future for the sake of immediate expansion of municipal services. In a contracting economy such as Gloucester's the present must not look to the future for help. There is every reason to believe the future may be faced with worse financial problems than the present is.

Once the present serious needs accumulated during the war
have been met Gloucester will be wise to stick to a pay-as-you-go basis for capital improvement. A carefully studied program on this basis can keep the city in much better physical condition than large, infrequent programs based on borrowed funds. Certainly its financial health will be much less precarious.
APPENDIX
ESTIMATED COST

Marina.

(Based on information provided by A. J. Bone,
Assistant Professor of Highway Engineering).

1. Dredging to be done by U. S. Engineers. -
2. Retaining wall, 5,000 ft. @ $30.00 $150,000
3. Mooring posts, floating docks, etc. 10,000

Total 160,000

Marina Park.

A. Land, 264 acres @ $25.00 $6,600
B. Construction:
1. Grading, seeding, etc. 20,000
2. Planting 25,000
3. Walks and paths 5,000
4. Equipment 10,000
5. Road around park,
12,650 ft. X 24 ft. = 303,600 sq. ft. @ .23 75,000

Construction 135,000
Land 6,600
Total 141,600
ESTIMATED COST

Class II Airport.

(Based on figures from Aviation Construction and Maintenance. Conover-Mast, New York, February 1946).

A. Land, 330 acres @ 25.00
   (Land cost estimated by Mr. Paul F. Lundberg of the Assessor's Office, Gloucester).

   $ 8,250

B. Construction:

   1. Filling to be done by U. S. Engineers with material dredged from channel
      15,000

   2. Grading
      15,000

   3. Drainage
      5,000

   4. Turf
      15,000

   5. Administration Building
      50,000

   6. Repair hangar
      15,000

   7. Lighting
      10,000

   8. Miscellaneous
      5,000

Construction 115,000
Land 8,250
Total 123,250

Cost shared by C. A. A.
Gloucester's share probably 50 % 61,625
ESTIMATED COST

Park opposite High School.

A. Land, 20 acres @ .05 per ft. $ 43,560
B. Construction:
   1. Grading, seeding, etc. 5,000
   2. Planting 5,000
       Construction 10,000
       Land 43,560
       Total 53,560

Playground at Riverdale.

A. Land, 2 acres @ $250.00 500
B. Construction:
   1. Grading, seeding, etc. 600
   2. Planting 500
   3. Paved play areas, 5,000 sq. yds. @ $1.00 3,000
   4. Equipment 2,000
   5. Shelter and toilets 5,000
       Construction 11,100
       Land 500
       Total 11,600
ESTIMATED COST

Bridge across Annisquam (Blynman Bridge).

The present bridge in this location is considered to be beyond repair and is to be replaced by one of adequate width with electrically operated draw. Mr. Paul A. Polisson, City Engineer of Gloucester, estimates this bridge will cost ... $500,000 (Cost apportioned under Chapter 90, Gloucester's share 25 per cent equals $125,000).

NOTE: Land costs used in the following estimates of new routes are based on information supplied by the Assessor's Office in Gloucester. Road construction cost is based on information provided by Professor A. J. Bone.

New Road from Route 128 to Annisquam Bridge.

1. Land, 2,000 ft. long 60 ft. rt. of way equals 120,000 sq. ft. @ .10 12,000
   (Part of this land is already city property).

2. Construction, 4,850 ft. X 40 ft. wide equals 194,000 sq. ft. @ .23 45,000
   Total 57,000

(Cost apportioned under Chapter 90, Gloucester's share 25 per cent equals $14,250).
ESTIMATED COST

New road from Route 128 to the Airport.

A. Land, 4 acres @ $25.00 $  100

B. Construction, 2,700 ft. X 40 ft. equals 108,000 sq. ft. @ .23 25,000

Total 25,100

(Cost apportioned under Chapter 90,
Gloucester's share 25 per cent equals
$ 6,275).

New road from Magnolia to Route 128 and Route 128 to Ipswich Road.

A. Land, 13,500 ft. X 60 ft. = 810,000 @ .05 40,500

B. Construction, 13,500 X 40 = 540,000 @ .23 125,000

Total 165,500

(Cost apportioned under Chapter 90,
Gloucester's share 25 per cent equals
$ 41,375).
ESTIMATED COST

Sewage disposal plant for Gloucester.

Prepared by Professor Wm. E. Stanley.

(Based on population and sewage flow estimated by Alfred Edwards).

Basis of Design:

Population 20,000.

Sewage flow 2.5 million gallons per day.

Suspended solids 2 lbs. per capita equals

4,000 lbs. per day @ 60% removal equals

2,400 lbs. per day (dry).

1. Incoming sewer, 1,000 ft. 15 in. pipe @ 4.00 4,000
2. Connection with existing sewer 200
3. Pumping station, average 2.5 M G D
   maximum 5.0 M G D @ $ 4,000 20,000
4. Bar screens 1,000
5. Grit chamber 2,500
6. Sedimentation tanks, 2 1/2 hour retention
   \( \frac{2.5}{2.4} \times 2.5 = 260,000 \text{ gals.} \)
   \( = 35,000 \text{ cu. ft. @ .60} \) 21,000
7. Chlorination:
   a. Contact tank, 30 minute contact.
      \( \frac{3.5}{2.5} \times 35,000 = 7,000 \text{ cu. ft. @ .60} \) 4,200
   b. Equipment 3,000
8. Outlet connection into present pumping station 4,200
9. Sludge pumping equipment 10,000

ix.
10. Sludge digestion tanks, 2,400 lbs. (dry) solids equal 72,000 lbs. per month; tank vol. equals 3 lbs./mo./cu. ft. equals 24,000 cu. ft. @ .75 = 18,000

11. Sludge drying beds, 75 sq. ft. per capita equals 15,000 sq. ft. @ 11,200

12. Plant sewers approx. 500 ft. 15 in. @ $4.00 = 2,000 Plant pipes (water, sludge, etc.) = 3,000

13. Administration Building, Laboratory, office, etc. 30' X 40' X 20' equal 24,000 cu. ft. @ .75 = 18,000 Equipment and furniture = 5,000

14. Fences, work on site = 10,000

Total = 137,300

Contingencies, engineering fees, etc. 20 per cent = 27,700

Grand Total = 165,000

Note: $165,000 @ 20,000 population equals $8.25 per capita.

Operating expenses:

1. Labor:
   1. Superintendent $ 4,000
   4 Shift men @ $2,000 = 8,000
   Miscellaneous labor = 3,000 = 15,000

2. Chlorine @ 50 lbs. per million gals. equals 125 lbs. per day @ .08 equals $10.00 per day equals $3,560. Use slightly over 1/2 time = 2,000

3. Maintenance = 3,000

4. Miscellaneous supplies = 1,000

5. Sludge disposal (large part may be moved free for use as garden fertilizer) = 2,000

Total = 23,000
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