

ANNUAL REPORT OF THE ENGINEERING AND PUBLIC WORKS DEPARTMENT

1930



REPORT OF CITY ENGINEER
OF FREDERICTON ,N.B., FOR THE YEAR, 1930.

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REPORT OF THE CITY ENGINEER 1930

TO HIS WORSHIP THE MAYOR AND THE ALDERMEN
OF THE CITY OF FREDERICTON:-

This report is a statement of the work done in the different City Departments under the direct supervision of the City Engineer. It covers a period of time from the first of December, 1929 to the first of December, 1930.

ROADS AND STREETS.

This Department has a total net expenditure of \$34,556.33

This expenditure is made up of \$16,533.53 Pay Roll and \$18,022.80 paid for material and other charges such as Workmen's Compensation.

The item of \$16,533.53 for Pay Roll includes the wages of the City Engineer's Office Staff and is made up as follows:-

<u>Snow Ploughing Sidewalks</u>	\$326.01
<u>Snow Control</u> :- As shovelling roads, ploughing roads, scrapping roads, cleaning gutters from ice and snow, hauling snow or any other means of snow control.....	3047.00
<u>Surface Sewers</u> :- Flushing surface sewers, cleaning catch basins and repairing catch basins or sewers and building new surface sewers.....	593.25
<u>Streets</u> :- Cutting grass or weeds on side of streets, spreading dust layers, general work on maintaining streets and sidewalks and any item such as building culverts, curb and gutter or pavements which is not mentioned under some particular heading.....	1578.32
<u>Cinders from Maritime Electric</u> :- Cost of hauling when placed in storage piles.....	78.77
<u>Sanding Walks</u> :- Hauling, drying and storing sand in winter storage pile and spreading sand on slippery walks.....	142.47
Forward.....	\$5765.32

	Brought Forward.....	\$5,765.82
<u>Yard</u> :- Men working at repair work in City Yard putting away summer plant, taking out winter plant etc.....	1,527.15	
<u>Storing Gravel</u> :- Tallying and supervising gravel dug and delivered by Contractor of the City.....	71.98	
<u>Street Sprinkling</u> :-.....	739.85	
<u>Stone Crushing</u> :- Repairs to crusher and crushing stone....	1,165.56	
<u>St. John Road</u> :- All work done other than that done by the Power Maintainer, from Alexandra Street to the Eastern City Line.....	750.36	
<u>Doak & Wilsey Road</u> :- All work done these roads other than that done by the Power Maintainer.....	565.33	
<u>Woodstock Road</u> :- All work done on Woodstock Road from end of pavement of the Western City Line other than that done by the Power Maintainer.....	336.05	
<u>New Maryland Road</u> :- From C.P.R. Crossing to Southern City Line all work done, other than that done by the Power Maintainer.....	91.32	
<u>Outlying Roads</u> :- Hanwell Road, Cross Roads from Brick to College Hill, Brick Hill Road, Poorhouse Hill Road, College Hill Road, Forest Hill Road, all work done on these roads other than that done by the Power Maintainer.....	294.56	
<u>Street Cleaning</u> :- All cleaning and removal of dirt on streets.....	2,599.33	
<u>Tarvia Repair</u> :- Mixing patching material, patching and repairing side walks with tar or asphalt, patching tarvia or asphalt pavements, applying wearing coat of tar or asphalt to paved streets, applying light tar or asphalt to gravel or McAdam roads.....	453.29	
<u>City Road Patrol</u> :- Patrol of roads and streets within the City Limits with the Sawyer Massey Power Maintainer... .	1,143.78	
<u>Spreading Gravel</u> :- Spreading on the roads and streets within the City Limits, that is, on the roads and streets itemized above.....	1,029.15	
Total.....	\$16,533.53	

Although the above cost items are made up entirely of labor, they give a good idea of the amount of work done by the Roads and Streets Departments under the different headings as above listed. They can also be compared with the amount of

labor spent on the same items in previous years. This comparison is shown graphically by a chart on Plate #1.

This work done under the Roads and Streets appropriation can almost all be classed as Maintenance Work. It must be understood, however, that with the ever increasing volume of motor traffic which is constantly demanding better road surfaces, that maintenance work must not only keep the road up to past standard but must make this road standard higher each year.

When we remember that from year to year more roads are being opened up in the City it is plainly seen that our ordinary expenditure for roads and streets, as shown in the above listed items must increase from year to year. This increase in cost can be kept down considerably by the purchase of up to date equipment, but, even then the higher class of roads demanded each year by the public, will continue to raise the yearly cost in this department.

Snow Control:-

This year the labor charge for this item was about four times that of last year. This additional expense was caused by heavier snow fall and by the increased desire of the public to use the streets in winter for motor traffic. The City did not do any snow ploughing on the streets, but horse-drawn road machines were used to shape the snow roads and level ruts. Surplus snow was removed from the business parts of the City and around all street intersections.

Surface Sewers:-

The surface sewer on Regent Street was extended from Aberdeen to Scully Street, 375 feet of 10" Terra Cotta Pipe was laid and three catch basins installed, with a labor cost of \$103.44 and material cost of \$309.80, making a total cost of \$413.24, or a cost per lineal foot of \$1.10. This installation provided a much needed surface drainage for the district at the intersection of Scully and Regent Streets.

Four stone catch basins were installed at the intersection of St. John and Aberdeen Streets. This installation provided only absorbing sewers, but they can be used as catch basins when the St. John Street surface sewerage is extended south to join them up with the main sewer.

We now have some 266 catch basins in our surface sewer system in the City and these catch basins are cleaned out each year and the sewers themselves flushed. The labor cost for this work was \$268.20.

Streets:-

Two comparatively large pieces of work were done under this heading. The old log wall culvert in the City back drain on Victoria Street just west of York Street was torn out and replaced by a stone wall wooden top culvert at a labor cost of \$116.28. Old curb stone which had been removed and replaced by Concrete Curb

and Gutter during the last few years were used to make the walls of this Culvert.

Curb and Gutter was laid on St. John Street on both sides from Brunswick to King Street. This work totalled 716 lineal feet of curb and gutter. This work was completed at a labor cost of 50¢ a lineal foot.

The City purchased this year 47,200 lbs. or 23.6 tons of Calcium Chloride for dust laying purposes, this was used in the following locations:-

Woodstock Road	21,500lbs	equals	10.75 tons
St. John Road	19,900 "	"	9.95 tons
Market Place	1,800 "	"	.8 tons
Golf Club Road	800 "	"	.4 tons
Boat Landing and Regent Street	800 "	"	.4 tons
Stock on hand	2,600 "	"	1.3 tons

Storing Gravel :-

The City contract for gravel was this year held by the Canada Construction Company who delivered 3,730 cu. yds. at 82¢ a yard. This gravel was dug through the ice in the river and delivered by truck to the Storage pile on the City Hall Wharf. Delivery was made between January 24th and March 1st 1930.

Street Sprinkling :-

This summer the Motor Street Sprinkler was kept busy during all of the dry weather, sprinkling streets. For about two months during the driest time of the year the two horse water cart was also used in the central part of the city and for about three weeks it was necessary to have a single horse drawn water cart out. Altogether the water cart made 5,466 fills and used some 2,733,000 gallons of water. The Roads and Streets Department were debited and Water Department credited for this amount of water at 10¢ a thousand gallons.

As before stated under the heading of Streets, about 23 tons of Calcium Chloride was used this year as dust layer, last year we needed practically no dust layer but water. The labor cost of Street Sprinkling this year was about the same as last year. Comparing the two years it will be seen that this year one-fifth more water and 23 tons of Calcium Chloride was used. This extra effort to keep the dust down is partly accounted for by the fact that we had more dry weather this year than last, but I believe, most of the extra effort is caused by the increase in Motor Traffic and a higher standard of dustless streets demanded by the public.

Stone Crushing:-

At the end of 1930 season there was no stone in the

stone yard and a contract for 5,000 tons of Trap Rock at \$1.25 a ton delivered in the City Yard was awarded to Frank McMinniman.

During September and October of 1929 McMinniman delivered 942 tons and was paid \$1,177.50 for same out of 1929 moneys, and from 1st November 1929 to 31st of October 1930 he delivered 4044 tons and was paid out of 1930 moneys the sum of \$5,055.00 for same. Altogether from September 1929 to the 31st October 1930 the contractor delivered some 4,986 tons of stone. None of the stone of this contract was crushed in 1929.

During the winter and spring of 1930 the old bins were torn down and a new set built at a labor cost of \$210.35, the cost for material was low as we used mostly lumber which we had salvaged from other jobs.

In May 1930 we crushed some 469 tons, this stone was used up during our regular summer work. We again crushed from November 3rd to November 29th some 1,620 tons of stone. Therefor at the end of November 1930 we had in the City Stone Yard 1,620 tons of crushed stone and about 2,097 tons of uncrushed stone. Our labor cost for crushing stone including repairs and new bins was 43¢ a ton.

Saint John Road:-

This piece of road includes the River Road from Alexandra Street to the eastern City line, a distance of about four miles.

In April, \$102.15 in labor was spent on this road in spring repairs, consisting mostly of horse drawn road Patrol work.

In May, \$549.000 was spent in labor in spreading gravel. Most of the gravel used was taken from storage piles which had been piled along the road when the City was storing gravel in 1929.

In October \$58.65 was spent in labor in cleaning ditches and repairing riprap and in general putting the road in shape for winter and spring.

The Road Patrol work on this road was, after April, carried on by the Motor Road Patrol and the cost is in this report charged under the item of City Road Patrol..

Doak and Wilsey Roads:-

The horse drawn Road Patrol spent nine full days on these roads during the summer. Work was also done on the Doak Road by the Motor Road Patrol. That part of the Doak Road known as the Flanagan Road was skirted out and the brush partly burned. Three new corrugated iron pipes were put in in the travelled portion of the Flanagan Road.

According to agreement the Provincial Government paid \$219.77 of the expense put on the Flanagan Road.

The Wilsey Road besides having some horse Road Patrol

work done, had about one mile of the road gravelled with River gravel and had a few bad holes in the back part of the Road filled up and the log culverts repaired to make this road passable. I have, for the last few years refrained from putting the back part of this road in good shape for motor traffic as the bridge over the Baker Brook would not have stood up under any amount of this kind of traffic. Although the bridge is within the City limits the Provincial Government have undertaken to rebuild it this winter. It will probably be necessary next season to put the back end of the road in a fit condition for motor traffic.

Woodstock Road:-

This road was given a coat of gravel in the spring and was later treated with Calcium Chloride and kept in good shape during the season with the Motor Road Patrol.

Outlying Roads:-

The labor expenditure on these roads was made out as follows:-

Forest Hill Road.....	\$16.26
Brisk Hill Road.....	164.95
Hanwell Road.....	94.50
Poorhouse Hill Road.....	18.85

These amounts were expended in skirting, road machining and repairing culverts.

Tarvia Repairs:-

The labor charge of \$453.29 for this item was divided as follows:-

Patching Streets.....	\$217.40
Patching Sidewalks.....	65.05
Mixing Patching.....	30.79
Tarring Streets.....	140.05

The expense in this item of Tarvia Repairs was I think as light this year as it is ever apt to be, due to the good condition of our streets this spring and the renewal of bad asphalt sidewalks by new concrete ones.

The pavings receiving a coat of Tarvia B were:-

Woodstock Road
Waterloo Row
York Street from George to Charlotte Street.

The McAdam Roads on Church Street from King to Brunswick Street, Charlotte Street from end of paving east to C.N.R. tracks and York Street from Aberdeen to C.P.R. tracks were given two coats each of 1/10, one-tenth, of a gallon per square yard of Tarvia B. during the summer. George Street from York to Westmorland which had been treated last year was given one coat of 1/10, one-tenth, of a gallon per square yard. These McAdam Roads stood up in good shape with the Tarvia B. treatment.

The Bituminous material used during the season of 1930 is shown by the following table.

	<u>Tarvia X</u>	<u>Tarvia B</u>	<u>Tarvia K.P.</u>	<u>Asoholt K.P.</u>
Gal in stock				
Spring of 1930	720	240	0	0
Purchased 1930	<u>894</u>	<u>4096</u>	<u>450</u>	—
Available for season of 1930	1614	4336	450	0
Stock on hand fall of 1930	<u>748</u>	<u>1980</u>	<u>88</u>	—
Used season of 1930	866	2356	362	

City Road Patrol:-

This spring the city purchased a Sawyer Massey #44 Power Maintainer at a cost of \$3,716.40. During the season this machine used 18 new blades. All the patrolling in City Proper and practically all on the outlying roads of the city was done by this machine. This Power Maintainer enabled us to keep our gravel and dirt roads in a creditable condition at a reasonable cost. It would have been impossible to have done this without a machine of this nature.

In the spring of 1930 the Roads and Streets Department purchased one Chevrolet heavy duty truck with two yard dump body. This truck has been a very useful piece of equipment. The average load hauled in this truck was about two tons. On November 20th, 1930 the speedometer on the truck showed 6,464 miles.

Plate # 2 shows a graphical comparision of 1929 and 1930 Roads and Streets costs. These costs include both labor and material charges.

PUBLIC WORKS

With a total net expenditure of \$3,397.09 made up of gross pay rolls cost of \$2,278.82 and a cost of \$1,118.27 for material and other charges.

The pay roll cost of \$2,278.82 is made up as follows:-

Wages of caretaker on City Dump.....	\$587.55
Staking out and levelling winter roads on River.....	9.99
Repairs to surface sewers not directly on Street line.....	6.65
All labor on Gaiety Back drain.....	772.45
Wages paid to Samuel Rawlings before he was put on pension.	227.00
Unforseen account.....	<u>675.18</u>
Total.....	\$2278.82

The Unforseen Account is sub divided as follows:-

Skating Rink in Play Ground.....	\$243.18
Extra Office help.....	12.00
Work done for local improvement association.....	5.40
Breaking up old cars dumped on Flats.....	46.00
Cutting bushes on River Bank.....	37.95
Repairs to railing on Ketchum Bridge.....	12.15
Spraying pools with oil for mosquitoes.....	5.50
Work on City Play Ground.....	47.00
Building Reservoir for Golf Club.....	237.90
Work done for Exhibition and Race Track.....	28.10
Total.....	<u>675.18</u>

Of the \$772.45 labor and expenditure in back drain some \$420.00 was spent in February in cleaning drain from ice. At this time a quick thaw caught the drain and culvert full of ice and backed water up so that it filled cellars in the district of the city near the Hartt Shoe factory. The C.P.R. Yards were also covered with water which froze to ice. Both the C.P.R. and C.N.R. made expenditures at least equal and probably greater than ours.

An expenditure by the City on the back drain of some \$330.00 was made in August. At this time the C.P.R. and C.M.R. also worked on their section of the drain. The grass and weeds were cleaned out, the ditch deepened and widened in spots and some of the bad turns in the ditch were eased.

The \$237.90 listed as work done for Golf Club was paid back to the City by the Golf Club.

The material costs include one half the price of a Concrete Mixer purchased this year. The total payment for this machine, namely \$1,200.00 was first made out of Public Works but at the last of the year Public Works was credited and Cement Walks debited to the amount of \$600.00 thus having Public Works and Cement Walks each bearing one half the cost of the machine.

A comparision between 1929 and 1930 costs for Public Works is shown graphically by charts on Plate # 3.

TREES

Cutting and trimming trees this year had a total net cost of \$368.92 made up of a gross labor cost of \$359.23 and materials and other charges \$9.69.

The cost this year just about uses up the contribution of \$500.00 made last year by the Maritime Electric Company and the \$250.00 made by the New Brunswick Telephone Company. The money this year was used in removing dangerous or undesired trees and for trimming where the foliage was becoming too low or was interfering with wires and buildings.

CEMENT WALKS

With a total net expenditure of \$7369.01, made up of \$4,256.26 in pay rolls and \$3,112.75 in material and other charges. This pay roll charge is the total gross payroll charged against this account. The other charges are total net charges other than pay rolls charged against this account. Below is a list of the concrete walks constructed during the season of 1930 under the appropriation Cement Walks.

<u>Street</u>	<u>Location</u>	<u>Lin.Ft.of 5' walk,$\frac{1}{2}$paid by City,$\frac{1}{2}$paid by Property Owners</u>	<u>Lin.Ft.of 5' walk all paid by City</u>	<u>Total Lin.Ft. of 5' walk</u>
Aberdeen	South side Regent St to City Yard	595'5"	18'10"	614'3"
Aberdeen	North side, York to Westmorland	607'0"	12'4 "	619'4"
Aberdeen	North side, Northumberland to Smythe	630'0"	16'8 "	646'8"
Carleton	East side, King to Brunswick	231'0"	76'11"	307'11"
Charlotte	South side, Smythe to O'dell	431'0"	5'6 "	436'6"
Charlotte	North side, Smythe to O'dell	429'0"	8'2 "	437'2"
Church	West side, Charlotte to Union	330'0"	16'2 "	346'2"
George	North side C.N.R. tracks to University Ave	153'0"	0'8 "	153'8"
George	South side C.N.R. tracks to University Ave	184'0"	5'10"	189'10"
King	North side, Regent to Barker House Alley	266'0"	20'1 $\frac{1}{2}$ "	286'1 $\frac{1}{2}$ "
King	North side, Carleton to York	537'6"	35'9 "	573'3"
King	North side, Regent to Carleton	565'7"	19'0 "	584'7"
King	North side, York to Westmorland	599'3"	21'10"	621'1"
King	South side, Northumberland to Smythe	708'0"	18'3 "	726'3"
Northumberland	East side, Queen to King	283'0"	6'8 ""	289'8"
Northumberland	West side, Brunswick to George	333'0"	10'2 "	343'2"
Northumberland	East side, Brunswick to George	331'0"	6'2 $\frac{1}{2}$ "	337'2 $\frac{1}{2}$ "
Queen	South side, Northumberland to Smythe	549'0"	10'0 "	559'0"
Regent	West side, Queen to King	804'0"	43'9 "	847'9"
Regent	West side, Aberdeen to Valley track	353'9"	15'3 "	369'0"
Saunders	North side, Westmorland to Northumberland	591'0"	16'4 "	607'4"
Saunders	North side, Smythe to O'dell	426'0"	23'4 $\frac{1}{2}$ "	449'4 $\frac{1}{2}$ "
Westmorland	East side, Queen to King	325'0"	4'0 "	329'0"
	Totals	10,262'6"	411'8 $\frac{1}{2}$ "	10,674'2 $\frac{1}{2}$ "

From the above it will be seen that 10674 lineal feet of the 4" thick 5' walk was laid in 1930, of this 10262 lineal feet was partly charged against the Property Owners at 53¢ a lineal foot, 412 lineal feet was paid entirely by the City, this 412 feet was laid on city property such as street corners and in front of the old light station on Carleton Street.

Altogether this 10,674 lineal feet of 4" 5' walk makes a total of 5,930 sq. yds or 659 cu. yds. Using the total net cost of \$7,369.01 the unit cost to the City for cement walks this year is 70¢ per lineal foot; \$1.24 per sq. yd., or \$11.19 per cu. yd.

Last years cost for this class of work was 70¢ a lineal foot, \$1.23 a sq. yd; or \$11.00 per cu. yd.

The aggregate used in cement walk construction was:

River Gravel	2 parts
Crushed Stone	1 part
Sand	1 part

This gravel and crushed rock was obtained from the Roads and Streets Department who were credited for this amount of material. The Water Department was credited at the rate of 5¢ per cu. yd. for water used in mixing.

A new 7 S Smith cement mixer was purchased this year at a price of \$1200.00, of this \$600.00 is charged on the Public Works account of 1930 and the other \$600 is charged on the Cement Walks account of 1930.

Besides the above listed work the improvements around the Provincial Government Buildings were done under this account, but, as this work was paid for by the Provincial Government and credited to the cement side walks account it does not influence the above unit costs.

This work consisted of curbs and gutters on both sides of St. John Street from Queen Street to King Street, and a curb with a 5 foot gutter on Queen Street from St. John Street to Parliament Alley. The curb and gutter on St. John Street was put in at a contract price of \$1.00 a foot and that on Queen Street at a contract price of \$2.00 a foot. This price turned out to cover our costs and overhead.

STREET LIGHTS

With a total net expenditure of \$7,115.40. This cost is divided as follows:-

Current from November 26th 1929 to November 26th 1930 186060 K.W .H.....	\$5063.73
Maintenance of line and street lights at a contract price of \$20.00 a mile.....	330.96
Lamps purchased for replacement and for new installation 12 of 600 C.P. Lamps 336 of 250 C.P. Lamps 100 of 100 C.P. Lamps	704.66
Material purchased for replacement and for new installation and renewals of lamp fixtures (this includes only materials such as lamp brackets, head sockets, shades etc., that is material pertaining to actual light fixtures)	228.08
Forward.....	\$6,327.43

Brought Forward.....\$6,327.43

Material and extra labor used in line maintenance..... 302.99

Miscellaneous charges (including \$475.10 paid to Dr. John Stephenson for Professional services re Maritime Electric appraisal)..... 484.98

\$7,115. 40

The following table shows how charges for current were made up:-

Month bill for	K.W.H.	Demand in K.W.	Average Number of Burning Hrs. per Night	Nights in bill
			<u>Cost</u>	<u>bill</u>
Dec. 1929	20160	48.0	14.5	\$517.37 30
Jan. 1930	20100	46.2	14.0	511.96 30
Feb.	18780	43.8	12.9	479.30 31
March	14280	43.2	10.7	387.53 29
April	13800	43.5	9.1	378.83 30
May	12600	43.5	7.7	354.47 32
June	11040	45.6	7.25	327.53 32
July	9480	51.0	7.5	307.83 30
Aug.	12540	51.6	9.0	370.50 31
Sept.	16260	54.0	10.5 ~	449.63 35
Oct.	16080	50.0	11.75	437.88 25
Nov.	20940	52.8	13.8	540.90 32
Totals.....	186060			\$5063.73 367

Total K.W.H. consumed - 186060

Total Burning hours in this year of 367 nights - 3923

Total cost of Demand and Energy alone - \$5063.73

Average cost per K.T.H. for the year was - 2.722¢

Average cost of Demand and Energy per Burning hour

~~was - \$2.29~~ 11.29
Amano took down for me was 11.29 in m.

Average peak demand for year was - 47.73 K.W .
Average cost per hour for energy alone - 2.52

This year the city installed an average cost per hour for energy alone = \$3.75.

This year the city installed an ornamental lighting system around the Provincial Parliament Buildings. This system consisted of nine standards each with one 600 candle power lamp. The Provincial Government paid the entire cost of installation which amounted to \$ 1418.62. The city permitted this installation to be connected to their Street Light System and agreed to bear the cost of lighting and maintenance.

Plate # 4 compares graphically the 1929 and 1930 Street Lighting costs and consumption. It shows that in 1930 the city used about \$250.00 worth more current than in 1929. However, the total Street Lighting costs were about \$200.00 less.

BATHING BEACH.

With a total expenditure of \$333.10 made up of
\$322.08 pay roll and \$11.02 in miscellaneous charges.

Estimates 1930

Dat Feb. 22

	Estimat 1929	Spent 1929	Spent & date 1930	Estimate 1930
Snow plough Sidewalks	150.00	120.00	284.00	350.00
Snow Patrol	400.00	768.00	1616.00	2600.00
Streets + (Widening King St.) ^{671.00}	3500.00	1507.00	57.00	1000.00
Surface Sewers.	800.00	636.00	0.00	700.00
Cinders M.E	300.00	223.00	57.00	150.00
Sanding Walks	400.00	357.00	56.00	250.00
Yard	800.00	1266.00	499.00	1100.00
Storing Gravel.	150.00	128.00	58.00	75.00
Street Sprinkling	1300.00	726.00	0.00	700.00
Crushing Stone	600.00	0.0	80.00	600.00
St John Road	1900.00	1955.00	0.00	1900.00
Douk and Wilsey	800.00	238.00	30.00	300.00
Woodstock Road	500.00	255.00	0.00	250.00
New Maryland Road	350.00	390.00	0.00	600.00
Oulhing Roads.	900.00	836.00	0.00	900.00
Street Cleaning	1600.00	2893.00	0.00	3000.00
Tarvia Repairs	1000.00	1103.00	0.00	1100.00
PSG Road Patrol	500.00	673.00	0.00	500.00
Spreading Gravel	300.00	1259.00	0.00	400.00
Paving King St	1200.00	0.00		
	<u>17450.00</u>	<u>8533.00</u>	<u>3737.00</u>	<u>16475.00</u>

Material

	12700.00	14349.00	14306.00	15000.00
	<u>30,150.00</u>	<u>29,682.00</u>	<u>7,043.00</u>	<u>31,475.00</u>

Estimates 1930

Feb. Date 22nd/30

Public Works

	Estimated for 1929	Spent 1929	Spent to Date 1930	Estimated 1930
Trees.	1000.00	416.00	0.0	500.00
Pumps.	700.00	688.00	56.00	650.00
River Roads	40.00	19.00	9.00	40.00
Surface Sewer Repairs (N. Ton Street). 1000.00		82.00	0.00	500.00
Buck Drain	200.00	4.00	243.00	7500.00
Sam Rawlings	600.00	658.00	140.00	650.00
	<u>3546.00</u>	<u>1867.00</u>	<u>448.00</u>	<u>3840.00</u>

Material.

860.00	<u>1200.00</u>		1500.00
<u>4400.00</u>	<u>3067.00</u>		
<u>500.00</u>			<u>5340.00</u>

The city paid Charles Williams as caretaker and guard of the bathing beach at the West end of the City from the 7th of June to the 15th of September. This caretaker keeps things in excellent order as far as he is able. The bathing houses at the beach are very inadequate and, to quote from a report made by Miss Whittier are 'More avoided than used'.

During the month of July and August, Messrs Watson and Hachey two local U.N.B. college students were in attendance at the bathing beach in the afternoon as swimming instructors. In the morning they worked with the children at the City Play Ground. These men were paid by the Fredericton Y.M.C.A.

TOURIST CAMP GROUND

The City this year did not supply wood to the Tourist Camp Ground as in former years. We supplied free water and sewerage. The only item charged against the Camp Ground is an amount of \$3.35 for material to maintain sewerage.

The register at the Camp Ground shows as having registered:-

For the month of May.....	32 parties
For the month of June.....	83 parties
For the month of July.....	140 parties
For the month of August.....	146 parties
For the month of September.....	<u>103</u> parties
Total.....	504 parties

This total shows a decline of 48 parties registered as against last years of 552 parties.

CITY WHARF

The only expenditure this year against the City Wharf was \$19.85 paid to William Ross for labor and material supplied in fixing up ice damage to brick store house on wharf.

SEWERAGE CAPITAL ACCOUNT

The total cost of work done under this heading in 1930 is \$3,226.19 divided into \$1,592.04 pay roll and \$1,634.15 material and other costs. This Sewerage Capital Account is all to be taken care of by bond issue.

Under this expenditure the following amount of 8" Domestic sewer was laid:-

Maryland Hill from end of previous sewerage system south to Albert Street.....	202 Lin.Ft
Albert Street from Maryland Hill Road east to end of Street.....	1182 Lin.Ft
Albert Street extention from eastern end of present Albert Street south.....	<u>556</u> Lin.Ft
Total.....	1,940 Lin.Ft

In all 1940 Lin. Ft. of 8" Domestic Sewerage, extension was made under the above expenditure with a unit price of \$1.67 per Lineal Foot. This price includes all costs both labor and material.

The ground through which this extension was laid was hard digging consisting mostly of boulders and a gravelly clay hard pan. On account of the very dry season we had very little trouble with water. The pipe was laid with an average cover of about 5 ft. At the intersection of Albert Street and Maryland Hill Road the sewer had pipe laid 12 ft. deep. At this location we have an average depth of 10 ft. for about 300 lineal feet.

SEWERAGE DOMESTIC

With a total expenditure of \$2808.55 made up of pay roll charges of \$1470.42 and material and other charges of \$1338.13.

The above total is divided as follows:-

House connection.....	\$546.43
Dundonald Street Sewer Extension.	759.60
Sewer Maintenance.....	<u>1502.52</u>
Total.....	\$2808.55

House Connection:-

The expenditure of \$546.43 for house connection has all been returned to the City, as this cost is charged to the Property Owners. Eighteen house connections were made to the sewer system this year.

Dundonald Street Sewer Extension:-

In October of this year the Domestic Sewerage was extended to take in the residences on Dundonald Street between Westmorland and York Streets. This sewer extension was graded into Westmorland Street running under the City back drain in 8" cast iron pipes. The rest of the sewer was laid with 8" terra cotta pipe. Two man-holes were built on this job. The total length of this extension is 500 ft. For about 150 ft. of this distance the trench had to be cut through boulders and hard pan. The total cost of this extension being \$759.60, the unit cost per lineal foot is \$1.52.

Sewer Maintenance:-

Under this heading our total Sewerage System was flushed out twice during this year, once in the spring and once in the fall. All the man-holes in the paved portion of Queen Street and a number of the man-holes on York, Carleton and Regent Street were found to be shaky near their tops, this condition is due, I believe, to water and frost action in the brick, along with heavy traffic over the man-holes.

These places were repaired with hard brick and cement.

During this season besides the number of house connections that were cleaned out by sewer rods and water pressure, 25 sewer surfaces which could not be so cleaned had to be dug out and partially renewed. In almost every case these sewers were found to be plugged by the growth of tree roots in the sewer.

We have 1,200 feet of 5" terra cotta pipe, worth about \$298.56 in stock at the present time. As a rule we have very little of this pipe in stock at this time of the year.

WATER

With a total cost of \$22,752.37. This cost is divided into the following two charges:-

Water Ordinary.....	\$ 5,961.15
Water Pumping Station.....	<u>16,791.22</u>
Total.....	\$22,752.37

Water Ordinary:-

This item takes in all work done outside the pumping station and pumping station grounds and is divided as follows:-

City Pay Rolls for Hydrants.....	\$ 303.79
City Pay Rolls for Meters.....	1121.78
City Pay Roll for Distribution System.....	<u>2222.40</u>
Total City Pay Rolls.....	\$3647.97
Material and other charges.....	<u>2313.18</u>
Total.....	\$5961.15

Hydrants:-

We have in the City 142 Hydrants made up of 99-4" hydrants, 35-6" hydrants and 8-8" hydrants.

The Pay Roll charges against these hydrants is for inspection, maintenance and shovelling out after storms etc. This year most of the hydrants in the city were painted.

One hydrant was broken by a car this year. The owner of the car will pay the cost of the new hydrant as well as the labor cost of replacing.

Meters:-

We have in the City 1,022 meters in service and

510 customers on flat rate. During the year 52 of these meters in service were found to be stopped and were taken out and repaired or replaced. Nine new services were metered. This year no new meters were purchased, the old meters now in stock but not in use are:-

- 1 - 2" Trident Meter to be repaired
- 1 - 1½" Trident Meter to be repaired
- 30 - 5/8" Trident Meters to be repaired
- 6 - 5/8" Hersey Meters to be repaired
- 7 - 5/8" National Empire Meters to be repaired
- 8 - 5/8" National Empire used Meters fit for service

Distribution Service:-

During the year, 12 new services were put in, and 16 old services were relaid. Five water services were frozen and had to be thawed by use of steam thawing machine.

In July, a 1" water line was run above ground from the end of our water system at the east end of the bridge over Phyllis Creek to the Rural Cemetery extension. The total cost of this work for both labor and material was \$160.00

In September, the water main running up Woodstock Road was extended some 624 feet to give water to M. Ryan & Son Limited Brick Yard. This extension was made with 6" cast iron pipe. The extension started at the east end of Phyllis Creek Bridge and ran along the side of the embankment and under the bed of the brook, then up along the side of the embankment and west along the Woodstock Road to a point just about opposite the Brick Yard, here a blow off and Hydrant were installed. The 1" pipe which had in July been run to the Rural Cemetery extension was connected at the west end of this new water main, thereby salvaging some 600 feet of 1" pipe.

The total cost of this piece of work was \$1416.48 or \$2.27 a lineal foot.

WATER PUMPING STATION

This cost includes all labor and material used in Pumping Station and Pumping Station Grounds and is divided as follows:-

City Pay Rolls.....	\$6,223.81
Material and other charges.....	<u>10,567.41</u>

Total.....\$16,791.22

The item \$6223.81 City Pay Rolls is divided into salaries

of Engineers at Pumping Station.....\$ 5,580.00

Work done by City Employees in and around
Pumping Station..... 643.81

Total.....\$6,223.81

The item \$643.81 covers such charges as cleaning out coagulating basin, pump well, crib peer in river, and any repairs or improvements made to plant, building, or grounds. This cost also covers handling chemicals.

The partly buried storage tanks for fuel oil were this fall dug out, scrapped and painted.

The item \$10,567.41 for material and other charges is divided as follows:-

Item # 1	Light and Power supplied by the Maritime Electric 285,763 K.W.H.....	\$6,713.47
" # 2	Transformer Charges...	151.92
" # 3	Lime 5480 lbs.....	208.26
" # 4	Alum 67,200 tons lbs.....	950.21
" # 5	Coal 162.3 tons.....	852.08
" # 6	Fuel Oil none.....	000.00
" # 7	Engine Oil (Renown) 45 gallons.....	29.04
" # 8	Motor Oil (Gargolyne Moboloil B) 10 gals.	11.38
" # 9	Gasoline 125 gallons.....	31.25
" # 10	Maintenance and repair to buildings and machinery.....	433.66
" # 11	New Installments.....	000.00
" # 12	Supplies (packing, rags, etc).....	104.16
" # 13	Stationery (forms, charts, etc).....	28.56
" # 14	Workmen's Compensation Board.....	42.05
" # 15	Dr. Hagerman's Salary.....	900.00
" # 16	Hoisting chemicals.....	82.00
" # 17	Miscellaneous (telephone, etc).....	29.37

18

Total.....\$10567.41

Page 18 of this report consists of a table showing work done and material used in the Pumping Station. This table is compiled from the daily charts made out by the Pumping Station Engineers, which charts are kept on file in the City Engineers Office.

Examining this table on Page 18, it must be remembered that all the water pumped is pumped twice, once from the river to the coagulating basin from there it runs through the filters into the clear-water well and is then pumped from the clear-water well into the City mains. However, the figures under "Gallons of Water Pumped" shown in the table only deal with the water pumped into the City Mains. From this table it will be seen:-

To deliver 1,000 I.G. of water into City mains takes 1.4 K.W .H.

The Pumping Station costs for delivering 1,000 I.G. of water to the City Main is 8.2¢

The total water cost which includes everything but, depreciation, interest on bond issue and overhead for delivering 1,000 I.G. of water from the river to the City Main is 11.13¢ .

COMPARISONS OF WATER PUMPED AND COSTS FOR LAST 5 YEARS

Year	Imp. Gallons Water Pumped.	Yearly Cost of Pumping Station	Pumping Station cost per 1,000 gal.
1926	206,076,526		
1927	198,165,000	\$18,040.65	9.10 cents
1928	192,890,000	18,245.05	9.46 cents
1929	195,590,000	17,722.44	9.00 cents
1930	204,405,000	16,791.22	8.21 cents

At the end of this report I have affixed the yearly report of Dr. Hagerman, the City Analyst, and John Malloy, Chief Engineer at the Pumping Station.

Signed.
J D Mackay
City Engineer.
15th Jan 1931

Total Hours in use Month	Month of	Gal. of Water Pumped	Lbs. Coal Used	K.W.H. Used	Hours power Supplied by			#1	#2	#1	#2	Steam Fuel Oil Gas	Hrs. Run serv. Pumps			Oil Used			Gal Gas Used	
					Mari- time	Oil Eng	Eng Steam						Qts. Steam	Qts. Eng	Qts. Lubri.					
744	Dec 1930	14,630.000	54,350	22125	744	-	-	-	-	737½	6½	511¾	-	-	-	-	-	16	9	
744	Jan.	15,765.000	58,050	22236	744	-	-	-	-	744	-	539	-	-	-	-	-	16½	10	
672	Feb.	14,495.000	51,050	23886	670	-	-	-	-	670	-	501	-	-	-	-	-	14½	15	
744	March	16,755.000	38,950	21723	744	-	-	-	-	744	-	570½	2	-	-	-	-	16½	8	
720	April	15,470.000	24,650	23213	719½	-	-	-	-	719½	-	532½	-	-	-	-	-	15½	9½	
744	May	16,965.000	14,850	25836	744	-	-	-	-	744	-	585½	-	-	-	-	-	16½	9½	
720	June	17,690.000	1,850	25673	720	-	-	-	-	720	-	609½	-	-	-	-	-	15½	9½	
744	July	19,175.000	21864	743½	-	-	-	-	-	743½	-	650½	-	-	-	-	-	16½	10	
744	August	18,265.000	26367	744	-	-	-	-	-	744	-	623½	-	-	-	-	-	15½	8	
720	Sep.	18,960.000	2,750	24816	719½	-	-	-	-	719½	-	614½	-	-	-	-	-	16½	9½	
744	Oct.	19,235.000	16,725	23262	743	-	-	-	-	743	-	634½	-	-	-	-	-	15½	9½	
720		17,000.000	28,050	24765	720	-	-	-	-	720	-	521½	-	-	-	-	-	16½	10	
8760		204,405.000	292,275	285763	8755½	4½	8719¾	15¾	6894¾	56	187	103½								

YEARLY REPORT OF JOHN J. MALLOY
CHIEF ENGINEER
FREDERICTON PUMPING STATION.

December 20th, 1930.

J.D. MacKay Esq.,
City Engineer,
Fredericton, N.B.

Dear Sir:-

I herewith submit my report on the operation of the City of Fredericton Pumping Plant from December 1st, 1929 to November 30th, 1930.

The whole plant was operated by power from the Maritime Electric Plant with practically no shut downs throughout the year.

The water pumped from the Pumping Station to the City mains and recorded through the Venturi Meter, according to the monthly reading is as follows:-

December 1929.....	14,630,000 Gallons
January 1930.....	15,765,000
February	14,495,000
March	16,755,000
April	15,470,000
May	16,965,000
June	17,690,000
July	19,175,000
August	18,265,000
September	18,960,000
October	19,235,000
November	<u>17,000,000</u>
Total.....	204,405,000 Gallons

The amount of Raw Water pumped from the river to the Filter Plant by the low-lift system is the above amount of 204,405,000 gallons plus 5,000,000 gallons Wash Water equals the amount of 209,405,000 gallons.

The total amount of coal used for heating the whole plant and pumping out the pump-well was 146.2 tons.

The oils and gasoline used in keeping the auxiliary plant ready for emergency and also used in the service and low-lift motor driven pumps are as follows:-

Fuel Oil.....	25 gallons
Engine Oil.....	47 gallons
Gasoline.....	105 gallons

This year there were considerable repairs made to the buildings adjoining the Plant. The Chemical Shop was jacked up and straightened and a new foundation and roof added.

The Work Shop and garage was straightened up and repaired with a new foundation. A heating system was installed in the Work Shop.

The lawns around the front of the building were graded and seeded.

The crib-pier and pump-well were thoroughly cleaned and flushed.

The Fuel Oil Storage Tanks which had been installed about one-half buried under ground, were dug out, thoroughly scrapped and painted. The ground was then back filled against a wooden crib which was built around the tanks.

The roof of the old building is in need of repairs. At present it leaks in two or three spots around the valleys. The chimney stack has a large crack in the top, which should be repaired as soon as possible this spring.

Respectfully submitted,

(Signed) John J. Malloy
Chief Engineer.

REPORT ON FREDERICTON WATER SUPPLY
1930

John D. MacKay, Esq.,
City Engineer, Fredericton, N.B.,

Dear Sir:

Herewith please find my report on the operation of the Fredericton Water Purification Plant for the year 1930.

1. Total Bacteria by plate count on Agar.

~~XXXXXX~~ Twenty-three series of tests consisting of samples of raw water, water from the filters and water from a tap in the city were carried out during the year with the following results:

Average Bacteria per cubic centimeter for Year				
Year	Raw Water	Effluent	Tap Water	Per cent Removal
1925	1832	7.5	24.8	99.6
1926	1916	6.4	24.8	99.6
1927	1767	7.3	14.5	99.6
1928	1186	5.8	9.6	99.5
1929	1607	5.4	11.6	99.65
1930	1430	4.3	5.5	99.7

From the above it will be seen that the results for the past year compare favorably with results obtained in previous years. The average count of bacteria in both the Effluent at the filters and the samples taken from taps has been satisfactorily low and indicates satisfactory results in the treatment of the water.

2. Use of chemicals.

The usual routine procedure with reference to the use of chemicals has been followed- alum in doses of about 2.8 to 4 grains per imp.gallon and chlorine applied as hypo solution in doses varying from 0.75 to 1.5 parts per million according to conditions prevailing at different times. As has been customary for many years chlorine has been used continuously throughout the year and has again proved its value as a germicidal agent. We were able to operate the plant for a period of 74 days of the year without the usual application of alum.

3. Supervision and Chemical Tests

The usual regular supervision as well as the chemical and physical tests of solutions etc have been maintained throughout the year and this work has had its bearing on the uniformly good results obtained. Several improvements have been made in connection with the filtration section of the plant and on the whole 1930 may be regarded as a satisfactory year.

H.H. Hagerman.

Fredericton, N.B.,
January 1931.

8

3000

2800

2600

2400

2200

2000

1800

1600

1400

1200

1000

800

600

400

200

0

Snow Ploughing Sidewalks

Snow Control

Surfacing Streets

Streets

Planning Land Parks

Planning Walks

Yard

Steering Trams

Street Cleaning

Street Cleaning

Saint John Road

Dock and Willey Road

Woodstock Road

New Maryland Road

Outland Roads

Street Cleaning

Carrie Road

City Park Pattern

Street Cleaning Gravel

No. 334 - 2 TN, 10 X 10 TO THE HALF INCH.
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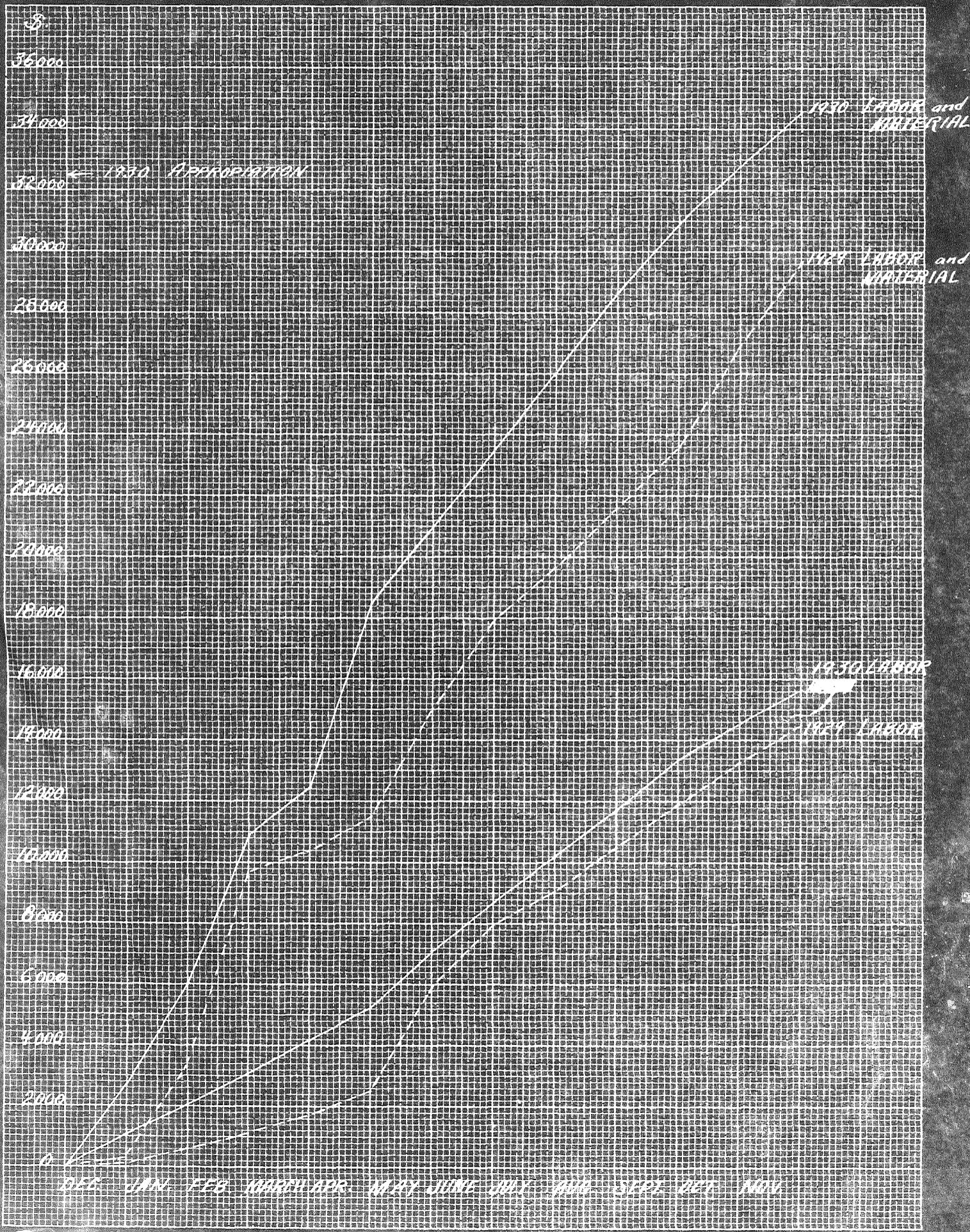


PLATE #2 - Roads and Streets Net Costs for 1929 and 1930.

No. 334 - 2 TN. 10 X 10 TO THE HALF INCH.
PRINTED IN U. S. A.

\$
5000 ← 1930 Appropriation

49000

40000

35000

30000

25000

20000

15000

10000

5000

1930 LABOR and
MATERIAL.

1929 LABOR and
MATERIAL.

1930 LABOR

1929 LABOR.

No. 334 - 2 TN, 10 X 10 TO THE HALF INCH.
PRINTED IN U. S. A.

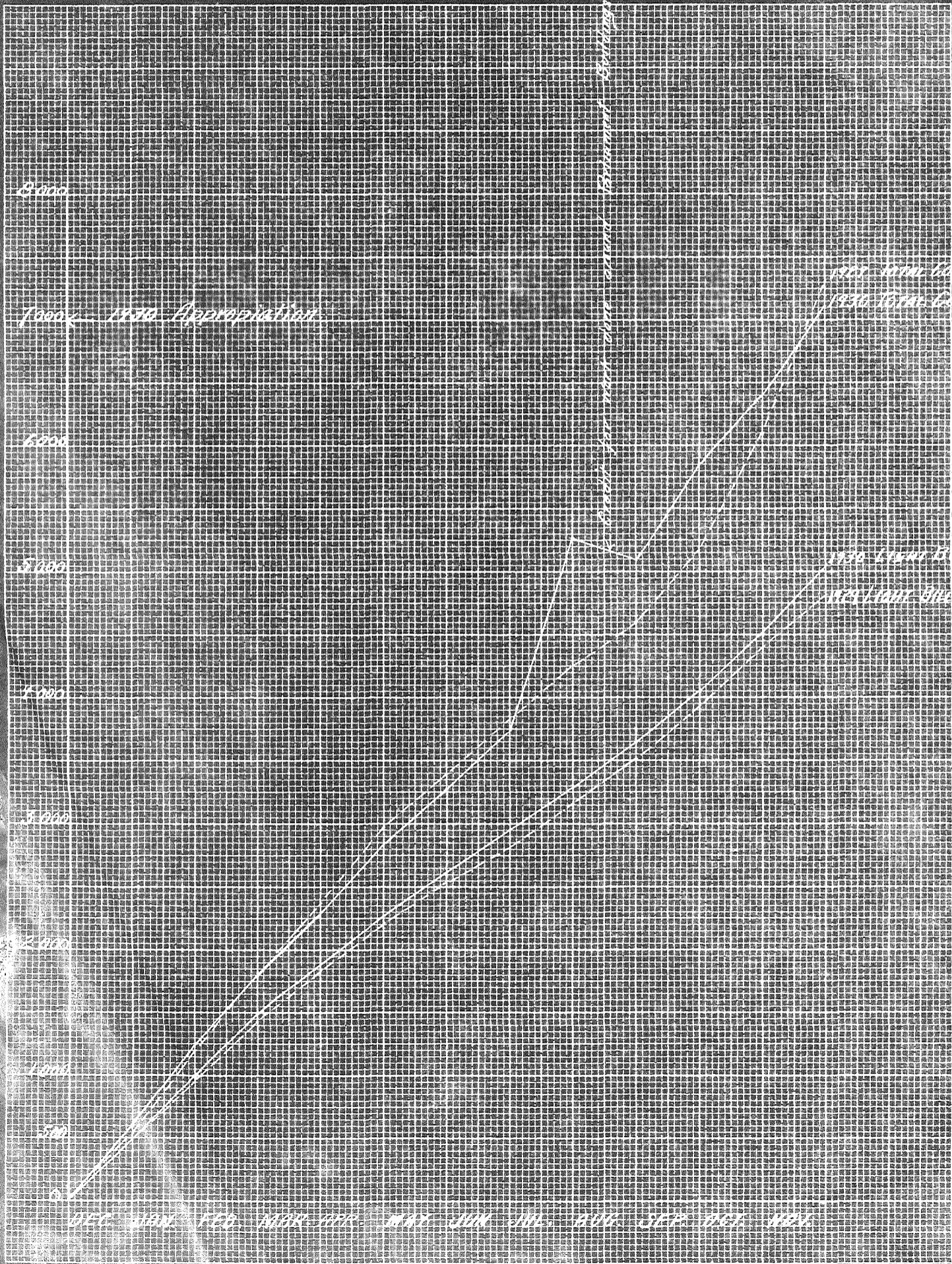


PLATE #4 - Street Light Costs 1929 and 1930.

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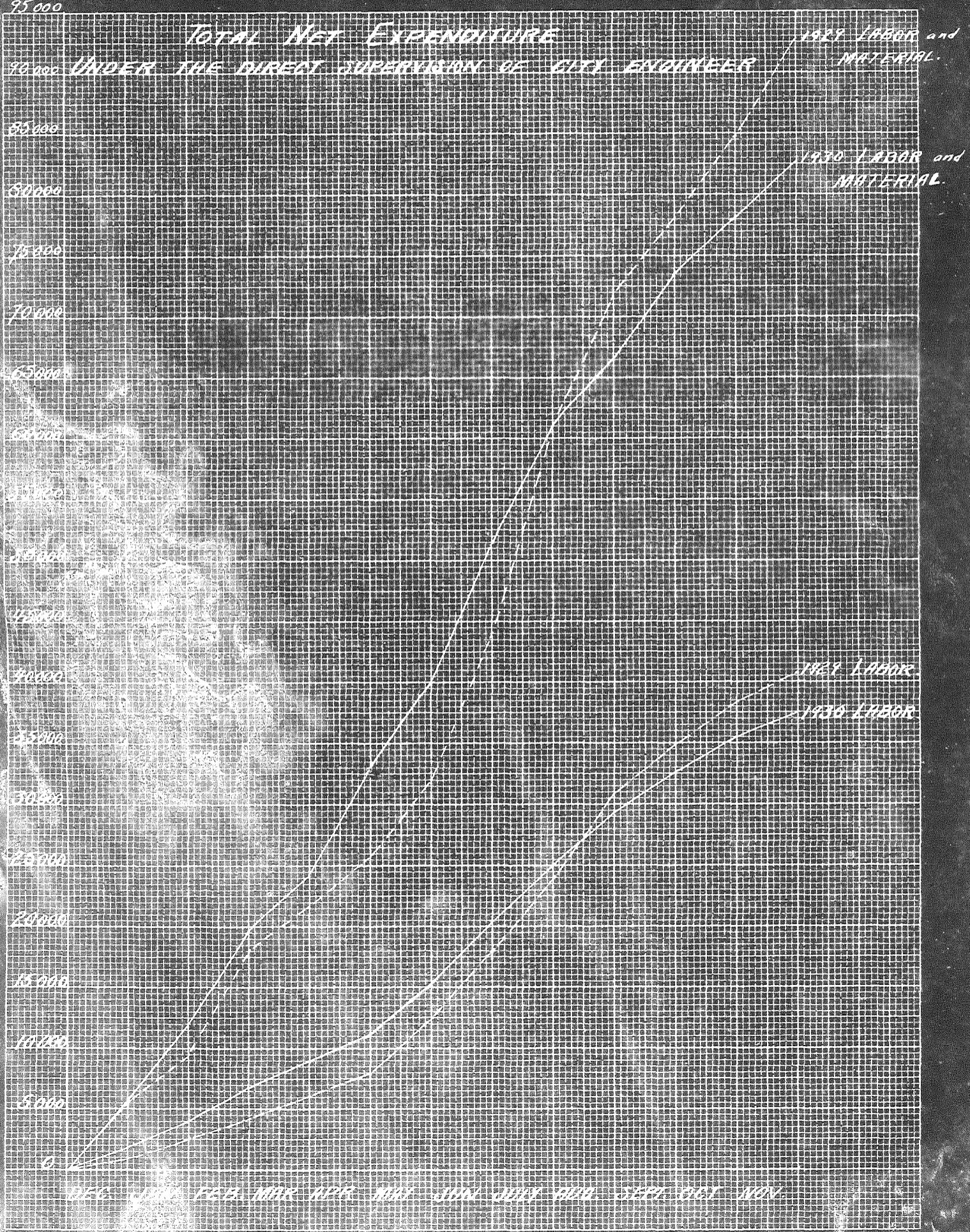


PLATE 5. Total Net Expenditure 1929 and 1930.