

ANNUAL REPORT OF THE ENGINEERING AND PUBLIC WORKS DEPARTMENT

1931



REPORT OF CITY ENGINEER
OF FREDERICTON, N.B., FOR THE YEAR 1931.

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*Household Streets { Cost of labor on Streets
" " " " Surface Driven,
" " " " Took 2 Whaley Roads
" " " " Road Village
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REPORT OF THE CITY ENGINEER 1931

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 the period of time from the first of December 1930 to the first of December 1931.

ROADS AND STREETS

This department has a total Net Expenditure of \$35,337.63

This Net Expenditure is obtained by subtracting \$15,511.97 the Gross Credit of the department from \$50,849.60 the Gross Expenditure of the department.

This department had an amount of \$31,000.00 assessed for it, thus making a debit of \$3,204.55 in Roads and Streets Department for the year 1931.

The Gross Credits of this department are made up as follows:-

Received or to be received from the New Brunswick Government according to agreements made between the City and the New Brunswick and Canadian Governments re unemployment relief work.....	\$12,814.17
Material purchased for Roads and Streets Department and sold to other departments or private parties.....	2,640.00
For work done for citizens on private property.....	57.80
Total.....	\$15,511.97

The Gross Expenditure of \$50,849.60 in this department is made up as follows:-

Labor.....	\$26,024.54
Material and Workmen's Compensation.....	24,825.06
Total.....	\$50,849.60

This labor charge of \$26,024.54 include wages of City Engineer's Office Staff but not the salary of the City Engineer. It is made up as follows:-

Snow Ploughing Sidewalks.....\$ 264.10

Snow Control:- Shovelling snow, ploughing roads, scraping roads, cleaning gutters from ice and snow, hauling away snow, and any other means of snow control.....3,619.50

Streets:- General work on maintenance of streets and sidewalks, and any other item such as building culverts, curb and gutter or pavement, which is not mentioned under some particular heading.....2,968.98

Forward.....\$ 6,852.58

	Brought Forward.....	\$6,852.58
<u>Surface Sewers</u> :- Cleaning, flushing and repairing surface sewers and building new surface sewers.....	1,609.15	
<u>Cinders from Maritime Electric</u> :- Cost of hauling and placing in storage piles.....	94.71	
<u>Sanding Walks</u> :- Hauling, drying and storing sand in winter storage piles and spreading sand on slippery walks.....	42.66	
<u>Yard</u> :- Men working at blacksmith and repair work in City Yard, taking out summer equipment, storing winter equipment, etc.....	427.98	
<u>Gravel</u> :- Tallying and supervising gravel dug and delivered by contractor to City, also all spreading of gravel on City Roads other than the roads listed under individual cost item headings.....	1,194.58	
^{labor cost of spreading on 84 1/2 Acre Road = 67¢ a yard " " " Outlying Rd = 53¢ "} <u>Street Sprinkling</u> :- Watering Carts.....	644.74	
<u>Stone Crushing</u> :- Repairs to crusher and crushing stone.....	522.44	
<u>Saint John Road</u> :- All work done on River Road, other than that done by Power Maintainer from Alexandra Street to the Eastern City Line.....	558.44	
<u>Doak and Wilsey Road</u> :- All work done on these roads other than that done by Power Maintainer.....	1,952.93	
<u>Woodstock Road</u> :- All work done on this road from end of paving to Western City Line, other than that done by Power Maintainer.....	43.04	
<u>New Maryland Road</u> :- From C.P.R. Crossing to Southern City Line, all work done on this road other than that done by Power Maintainer.....	237.12	
<u>Outlying Roads</u> :- Hanwell Road, Cross Roads, lying between Brick Road and College Hill, Brick Kiln Road, Poorhouse Hill, College Hill, and Forest Hill Roads, all work done on these roads other than that done by Power Maintainer..	1,053.83	
<u>Street Cleaning</u> :- All cleaning and removal of dirt from streets.....	2,366.01	
<u>Tarvia Repairs</u> :- Mixing patching material, and repairing sidewalks with tar or asphalt, patching tar or asphalt pavements, applying wearing coat of tar or asphalt on paved streets, and applying light tar or asphalt to gravel or McAdam Roads.....	775.62	
<u>City Road Patrol</u> :- Patroling all unpaved streets or roads within the City Limits with Sawyer Massey Road Maintainer.	921.09	
<u>Paving Woodstock Road</u> :- All paving work done on Woodstock Road.....	6,140.46	
<u>Permanent Road</u> :- All paving work done other than that done on Woodstock Road.....	587.16	
Total.....	\$26, 024.54	

The above cost items are made up entirely of labor, however they give a good idea of the amount of work done by the Road and Street Department under the different headings as above listed.

A graphical comparison of these labor items for 1931 with similar items of 1930, and 1929, is shown by charts on Plate # 1.

Streets:-

This year this item is made up very greatly of Curb and Gutter Expenditure for which the labor charges were \$2,217.11 for a total of 7,183 lineal feet of curb and gutter, making the unit cost per lineal foot of curb and gutter, for labor only, about 31 cents. The total cost per lineal foot of curb and gutter was this year about 85 cents a lineal foot.

The following list of curb and gutter was laid this year:-

✓ George Street, from St. John to Church, both sides	913' 7"
✓ King Street, St. John to Church, both sides	1077' 4"
✓ Queen Street, Church Street to Parliament Alley	254'
✓ Church Street, King to Queen, West side	132'
✓ Northumberland Street, King to Brunswick, both sides	623' 5"
✓ Saunders Street, Northumberland to Westmorland, both sides	1218'
✓ Saunders Street, Northumberland to York, both sides	1233'
✓ George Street, Northumberland to Westmorland, both sides	1207'
Carleton Street, Charlotte to George, both sides	524' 6"
Total Lineal Feet.....	7182 '10"

Another item under heading of Streets was the building of a 30 foot road way between Albert Street, and what is known as the Green Road in that part of the City known as English Settlement. The labor cost for this construction was \$405.66. The only other charges being for some sixty yards of gravel for gravel surfacing, small tools, etc.

Surface Sewers:-

Under this heading all catch basins in the City were cleaned and repaired and all surface sewers were flushed, by far the greater part of the expenditure was caused by the installation of a new Surface Sewer on Lansdowne Street, University Ave., and Grey Street. This installation totalled 2357 lineal feet of new sewer with 14 catch basins.

This 2357 lineal feet was made up as follows:-

Lansdowne Street from River to University Ave.

15" Sewer	1233'
10" Sewer	35'
4 Catch Basins	

University Ave. Between Grey and Lansdowne Street

12" Sewer	440'
10" Sewer (Cross Pipe)	109'
6 Catch Basins	

From Grey to Lansdowne Street along Winslow Street

10" Sewer	540'
4 Catch Basins	

Total..... 2357 '

The labor charges on this sewer construction including, hauling pipe and material to lot, digging trenches, laying pipe, building catch basins, back filling, instrument work and any other work pertaining to job, amounted to 46.2 cents per lineal foot.

Gravel:-

From January 5th, 1931 to February 23rd, 1931 some 5,458 cu. yds. of River gravel was dug from the St. John River and delivered at the City Hall wharf by Mr. Ray Burpee at a contract price of 77 cents a cu. yd.

In addition to the above River gravel, the City had to purchase 274 cu. yds. of bank gravel from the Devon Lumber Company to finish out their sidewalk program in the fall of 1931.

Street Sprinkling:-

During the summer, 2,760,000 gal. of water was used by the Watering Cart in street sprinkling. The cart made 6470 fills in using this amount of water. This water was charged to Roads and Streets and credited to Water at 10 cents a thousand gallons.

The Watering Carts were first out the 7th of April and ended their season 11th October. The Motor Watering Cart did all the sprinkling with the exception of eleven weeks when it was helped out by the single horse drawn watering cart.

Calcium Chloride was used along with the watering carts in dust control, 30 tons being purchased this year for that purpose. Most of the Calcium Chloride was used in districts which were difficult to keep sprinkled, such as Woodstock Road, Saint John Road, Phoenix Square, Court House Square, etc.

Stone Crushing:-

From December 1st, 1930 to November 27th 1931, some 1,210 tons of stone were delivered to the stone yard from the stone quarry on the other side of the river. The stone crusher ran 57 days this year.

A new 40 H.P. boiler was purchased from E. Leonard & Son at a price of \$1,100.00 F.O.B. Fredericton. The boiler was installed to replace the old crusher boiler which had split in the crown sheet and which was absolutely worn out and unrepairable.

Doak and Wilsey Roads:-

During December 1930 some \$225.00 was spent by the City in skirting out the Wilsey Road from Baker Brook in to the Doak Road. Any wood which was good in this skirting was cut up and hauled to the Municipal Home in the City. This piece of work was carried on as an unemployment relief measure.

During the winter the Provincial Government built a framed wooden bridge over the Baker Brook. This bridge is situated just within the City Limits. At the same time the Provincial Government constructed an eight foot concrete arch culvert in place of the old crib fill at Salamanca. This culvert permits what is known as the Fredericton Back Drain to pass under the Saint John Road. These two jobs were done by the Government as unemployment relief measures. The Government received no financial aid from the City other than the loan of a Concrete Mixer, small steam boiler and a few wheelbarrows and small tools.

In May, both the Doak and Wilsey Roads were put in fairly good condition by the small horse drawn Road Machine at a cost of \$50.00

During August the Wilsey Road from the City Line to the Jas. Finney house, a distance of about 1½ miles, was widened and ditched

by the Road Machine and had three pole culverts replaced by Galvanized Iron Pipe for a labor cost of \$490.00

From October 1st to November 14th, \$1,005.00 was spent in labor on the Doak Road and that part of the Flanagan Road which runs from the old school house to the farm of George Jeffreys, being a distance of about $\frac{1}{2}$ mile. This work was done by the residents of that particular district who met and recommended to the City a foreman to take charge of this work. The work being under the supervision of the City Engineer.

Mostly due to the unsatisfactory weather at that time, but partly due to the inexperience of the labor employed, the city did not get a good return for the \$1,005.00 thus expended.

New Maryland Road:-

Near the city limits this road runs through a piece of Bog and during the year the road generally settled about one foot for a distance of about 200 feet. This year the settlement was very pronounced and during a wet spell this fall this part of the road was submerged. This depression was brought up to grade with a rock fill covered with earth.

Outlying Roads:-

The money spent under this heading for labor charges was distributed as follows:-

Hanwell Road.....	\$471.16	156
Brick Kiln Road.....	118.32	
Cross Roads.....	103.90	
Poorhouse Hill Road.....	38.10	
Golf Club Road.....	65.40	
Maryland Hill.....	202.13	
Forest Hill.....	<u>54.82</u>	
Total.....	\$1053.83	

For the above expenditure in labor, the Hanwell Road was road machined, ditched and gravelled, and a small wooden bridge rebuilt with new stringers and floor. The Brick Kiln Road on which no money has been spent to my knowledge for the last six years at least, was partially ditched, and the surface partially covered with broken up asphalt taken from sidewalks. This road is not yet passable in wet weather for car traffic over its entire length.

Enough graveling, road machine and ditching work was done on these other outlying roads to keep them in as good condition as the traffic on the respective roads warrented.

Tarvia Repairs:-

The labor charges under this item are divided as follows:-	
Patching Streets.....	\$305.95
Patching Sidewalks.....	78.42
Mixing Patching.....	82.25
Tarring Streets.....	<u>309.00</u>
Total.....	\$775.62

The pavements receiving a light coat of tar or asphalt were, Queen Street, Waterloo Row, Regent Street, Carleton Street, Westmorland Street, two blocks on Charlotte Street and Woodstock Road.

Church Street which is a water bound McAdam, treated last year

with light tar, received two light tar treatments this year. York Street from Valley Track to C.P.R. was patched and surface treated twice, first time with Tarvia "B" and the second time with Odas.

City Road Patrol:-

Consists of a Sawyer Massey # 44 Road Maintainer. This machine ran during the entire season and was used to keep all City and Outlying Roads, other than paved streets in condition. It used during the season 29 blades at a total cost of \$301.00. The machine used 1596 gallons of gas during 1931.

Paving Woodstock Road:-

This road was paved this year, 30 feet wide from the gate of the Old Government House to the Hanwell Road a distance of 3,325 feet or about .63 miles, this distance contained some 10,608 sq. yds.

From the gate of the Old Government House for a distance of 1875 feet this pavement is what is known as a Tarvia X Penetration, the next 1450 feet or to the west end of the pavement was made with an asphalt binder using what is known as a 70/80 Penetration Asphalt. This piece of the pavement is of the type called Asphalt Penetration.

The total unit cost of this .63 mile of pavement was \$1.15 a square yard of pavement. This unit cost includes all costs of both labor and material except overhead and profit. This makes the price per mile of this 30 foot pavement about \$20,000.00

This price includes all costs for drainage, grading and paving and when it is remembered that the work was carried on between May 1st, and June 4th, and September 23rd, and November 7th, neither period being seasonable for the construction of this type of pavement, I think the costs can be considered quite satisfactory.

*Carried on under an unemployment Relief agreement with
the Provincial & Federal Governments. All labor was obtained
from Permanent Roads:-*

The construction under this sub heading consists of paving on Charlotte Street from University Ave., 450 feet west and paving on Brunswick Street from Church Street 525 feet east.

This amounted in all to 2980 sq. yds. of pavement. This pavement work was Tarvia Penetration but was not so costly as that on Woodstock Road as the grade and material of the old road made very little grading or sub base necessary. The work was carried on between June 5th and 20th when we had better weather for bituminous pavement construction.

Again the length of haul from our source of supply of stone and tar was shorter than that to Woodstock Road.

The total cost per sq. yd. for this pavement was 67 cents.

This cost item is here kept separate from that of the Woodstock Road pavement because unlike the Woodstock Road job the work was not carried on under any unemployment relief agreement with the Provincial or Federal Governments.

All Bituminous material used during the season of 1931 is shown by the following table.

	Heavy Tar or Asphalt	Light Tar or Asphalt	K.P.	Asphalt Emulsion
Gal. in stock Spring of 1931	748	1980	88	
Gal. purchased 1931	23386	2400	720	6983
Available for season of 1931	24134	4380	808	6983
Stock on hand fall of 1931	44	1848	616	0
Used season of 1931	24090	2532	192	6983

Plate # 2 shows a graphical comparison of Roads and Streets Gross labor costs, and Net labor and material costs for the year 1930 and 1931.

PUBLIC WORKS

This department has a total Net Expenditure of \$1920.96. This Net Expenditure is obtained by subtracting \$61.95 the Gross Credit from \$ 1982.91 the Gross Expenditure of the department.

The \$61.95 Credit of the department is the amount received or to be received from the Provincial and Dominion Governments for half work done under the unemployment relief account.

The amount assessed for this department for 1931 was \$2,500.00 the department therefore shows a credit for this year of \$680.00.

The total Pay Roll cost for Public Work amounts to \$1,574.17 and is divided as follows:-

Dump.....	681.07
River Roads.....	7.18
Back Drain.....	112.87
Unforseen.....	773.05
	\$1,574.17

The unforseen account takes in any work that has not been foreseen and assessed for.

The labor charge of \$773.05 for unforseen is divided as follows:-

City Hall.....	\$ 4.50
School Sign.....	2.20
Skating Rink.....	219.08
Forward.....	\$ 225.78

Brought Forward.....	\$225.78
Spraying to Destroy Mosquitos.....	5.40
Play Ground.....	93.15
Old Burial Ground.....	4.41
Tearing down and removing Roas House (Brick Kiln Road).....	11.65
Golf Club (spreading Calcium Chloride).....	9.90
Ketcham Bridge.....	229.81
Government Military Camp.....	4.20
Moving dead horse.....	5.50
Cutting bushes and cleaning up Flats.....	<u>183.25</u>
Total.....	\$773.05

A comparison between 1930 and 1931 costs for Public Works is shown graphically by charts on Plate # 3.

TREES

Cutting and trimming trees this year had a total expenditure of \$650.87, with a credit of \$88.15 caused by work done for and charged to private citizens.

This total expenditure was made up as follows:-

Pay Roll charges.....	\$584.81
Material.....	<u>66.05</u>
Total.....	\$650.87

This year the tree expenditure was charged to Contingent Account.

CEMENT WALKS.

This department has a Gross Expenditure of \$14,012.28 but shows a Net Expenditure of \$8,646.40 by reason of credit amounting to \$5,365.38

The credit herein shown are made up as follows:-

Paid or to be paid by Provincial and Dominion Government according to agreement re unemployment relief.....	\$4820.64
Private work done for citizens.....	<u>545.24</u>
Total Credit.....	\$5365.88

The Total Gross Expenditure of \$14,012.28 is made up as follows:-

Pay Roll.....	\$5730.83
Material.....	<u>8281.45</u>
Total Gross Expenditure....	\$14,012.28

LIST OF SIDEWALKS LAID THIS YEAR

Plan No.	Street	Location	Side	Private	City	Laid 1931
						Total
1.	Charlotte	York to Westmorland	North	605'	27'-3"	632'-3"
2	Charlotte	Westmorland to Northumberland	North	595'-2½"	16'-1½"	611'-3"
3	Westmorland	Charlotte to Saunders	East	330'	5'-1"	335'-1"
4	Westmorland	Saunders to Aberdeen	East	330'	4'-9½"	334'-9½"
5	Smythe	Saunders to Aberdeen	East	349'-8"	16'-4"	366'-0"
6	Saunders	Smythe to Exhibition Gate	South	198'-8½"	7'-2½"	205'-11"
7	Smythe	George to Brunswick	East	336'	13'-7"	349'-7"
8	Smythe	Charlotte to George	East	330'	19'-0"	349'-0"
9	George	Northumberland to Smythe	North	598'	54'-2½"	652'-2½"
10	Northumberland	King to Brunswick	West	309'	6'-8½"	315'-8½"
11	Northumberland	Queen to King	West	282'	6'-7½"	288'-7½"
12	King	York to Westmorland	South	596'	34'-10"	630'-10"
13	Carleton	King to Brunswick	West	334'	5'-2"	339'-2"
14	St. John	King to Brunswick	West	270'	12'-8"	282'-8"
15	St. John	Brunswick to George	West	337'-10"	15'-9"	353'-7"
16	St. John	Charlotte to Union	East	335'	14'-5½"	349'-5½"
17	St. John	Union to Aberdeen	East	327'	17'-9"	344'-9"
18	University Ave.	Lansdowne to City Back Drain	West	539'	-----	539'-0"
19	University Ave.	Small strip opposite Lansdowne	West	61'-10"	-----	61'-10"
20	Brunswick	Church to C.N.R. track	South	555'-1½"	4'-10"	559'-11½"
21	Regent	Charlotte to Needham	West	241'	12'-1½"	253'-1½"
22	University Ave.	C.N.R. to George	West	275'-3"	11'-0"	286'-3"
23	York	Saunders to C.N.R. track	West	330'	27'-1"	357'-1"
24	Woodstock Road	O'Dell Avenue to Smythe	South	456'	5'-2"	461'-2"
		Also on this plan 10' of concrete laid on Smythe Street, City				10'-0"
25	Carleton	Queen to King	East	328'	1'-9"	329'-9"
26	Carleton	Queen to King	West	329'-11"	2'-10"	332'-9"
27	Brunswick	Regent to St. John	North	603'	19'-9"	622'-9"
28	George	St. John to Church	North	602'-1½"	7'-8½"	609'-10"
29	George	St. John to Regent	North	601'-8"	21'-2"	622'-10"
30	Regent	George to Charlotte	West	330'	1'-2"	331'-2"
31	Regent	King to Brunswick	West	329'-4"	20'-6"	349'-10"
32	York	King to Brunswick	East	334'-3"	4'-6"	338'-9"
33	York	Brunswick to George	East	327'-4"	28'-8½"	356'-1½"
34	York	Brunswick to George	West	339'	4'-6"	343'-6"
35	York	George to Charlotte	West	331'	6'-1½"	337'-1½"
36	Northumberland	Saunders to Charlotte	East	330'	4'-6"	334'-6"
37	Northumberland	George to Charlotte	East	330'	9'-0"	339'-0"
38	Northumberland	King to Brunswick	East	331'-6"	10'-9"	342'-3"
39	King	Northumberland to Westmorland	South	599'	8'-2"	607'-2"
40	Westmorland	Queen to Campbell	East	99'-6"	2'-4"	101'-10"
41	Grey	University Ave. east	North	188'-2"	1'-6"	189'-8"
42	Campbell	Westmorland to Phoenix Square	South	461'-2"	14'-6"	475'-8"
43	Campbell	Regent to Court House Square	South	128'-3"	1'-6½"	129'-9½"
44	York	King to Brunswick	West	260'-6"	4'-0"	264'-0"
45	Lansdowne	University Ave. to Waterloo Row	North	908'-8"	6'-8½"	915'-4½"
46	York	Opposite City Hall on York St.	East	88'-2"	-----	88'-2"
				17102'-2"	529'-2½"	17631' 1½"

This total footage of 17,631 lineal feet of 5' walk equals 9,795 sq. yds. of 4" pavement or 1,088 cu. yds. of concrete.

The total expenditure for this amount of work was \$13,467.04 that is, the total Gross Expenditure minus the cost of the private work laid for citizens.

Therefore the sidewalk cost this year:-

Per lineal foot of 5' walk..... 77¢
Per sq. yd..... 1.38
Per cu. yd..... 12.38

A graphic comparison of 1930 and 1931 costs and amounts laid are shown on Plate # 4.

STREET LIGHTS

This department has a total Net Expenditure of \$6,672.23.

The amount assessed for the department was \$10,000.00. The department therefore shows a credit balance of \$3,327.77.

The expenses of the department are made up as follows:-
Current from Nov. 26th 1930 to Nov. 27th 1931 189,840 K.W.H... \$196.52
Maintenance of line at a contract price of \$20.00 a mile
16.548 Miles..... 330.96
Lamps purchased for replacement and new installation
24 - 600 C.P. Lamps
360 - 250 C.P. Lamps
110 - 100 C.P. Lamps..... 714.56
Material purchased for new installation and maintenance
of lamp fixtures (this includes only such material as lamp
brackets, heads, sockets, shades, standards, etc)..... 177.83
Material and extra labor used in line maintenance..... 252.36
Total..... \$ 6,672.23

TABLE SHOWING CHARGES FOR CURRENT FOR THIS YEAR

Date of Bill	Demand in K.W.	Average No. of burning hrs. per night	Cost \$	Burning hrs. in each bill
Nov. 26th to Dec. 27th 1930	21900	50.4	14½ hours	557.23
Dec. 27th to Jan. 27th/31	21000	49.8	14½ hours	537.96
Jan. 27th to Feb. 25th/31	18660	50.0	13 hours	491.31
Feb. 25th to March 26th/31	15060	46.8	11½ hours	411.59
March 26th to April 27th/31	14460	46.8	9½ hours	399.81
April 27th to May 30th/31	12240	48.0	8 hours	357.61
May 30th to June 29th/31	11700	51.6	7½ hours	354.32
June 29th to July 27th/31	10260	49.2	7½ hours	320.35
July 27th to Aug. 27th/31	12780	49.8	8 hours	372.24
Aug. 27th to Sept. 25th/31	14700	56.4 *	10 hours	425.08
Sept. 25th to Oct. 27th/31	17220	48	11¾ hours	458.22
Oct. 27th to Nov. 27th/31	19360	48	12½ hours	510.80
	189840			\$5196.52
				3879

* Demand high this month on account of Exhibition load.

The following facts are correct for 1931
Total K.W.H. consumed.....189,840 K.W.H.
Total burning hours in this year of 366 days.3,879 Hours
Average cost per K.W.H. for demand and energy.2.74 Cents
Average cost for demand and energy per burning
hour.....1.34 Dollars
Average cost per burning hour for energy alone..99 Cents

The electricity for the city lighting system was supplied this year as formerly by the Maritime Electric Co. at a contract price which has been in force for several years. The Maritime Electric Co. up until September 1st, 1931 generated their electricity by a coal burning plant located in Fredericton at the corner of Shore and University Ave. Since September 1st, 1931 this plant has not been running, the Maritime Electric Co. buying their electricity at a contract price from the New Brunswick Power Commission. This electricity is generated at New Castle Landing, near Minto by a coal burning plant and is delivered to the Maritime Electric Co. at Devon.

Plate # 5 compares graphically the 1930 and 1931 street lighting costs and electrical consumption.

In 1931 the City paid \$132.79 more for current than in 1930, but the total street lighting cost was in 1931 some \$443.11 less than in 1930.

BATHING BEACH

With a total expenditure of \$349.68 made up of \$327.10 for pay roll and \$22.58 for other charges.

Charles Williams was paid by the City and was in charge of the beach from June 3rd, to September 8th. In my opinion Mr. Williams is an excellent man for this job.

SEWERAGE DOMESTIC

This department has a Gross Expenditure of \$6,628.47 but shows a Net Cost of \$3,769.52 by reason of Credits amounting to \$2,858.95.

These credits are made up as follows:-

Paid or to be paid by Provincial and Dominion Governments according to agreement re unemployment relief.....	\$2,465.99
Sewerage installation made on private property and charged to private citizens.....	392.96
Total Credit.....	\$2,858.95

The total Gross Expenditure of \$6,628.47 is made up of \$3,036.42 pay roll and \$3,592.05 of material and other charges.

This year the following domestic sewerage extensions were made:- Lin. Ft.

On Northumberland Street from C.N.R. tracks to Victoria Street 8" Terra Cotta Sewer.....	239
On Woodstock Road just west of Old Government House to Hanwell Road 10" Terra Cotta Sewer.....	3072
Grey Street, connecting University Avenue with Grey Street, Sewer, 8" Terra Cotta	50
Alexandra Street, Waterloo Row to Windslow Street 8" Terra Cotta.....	503

During the year 10 new sewerage connections were made.

A number of house connections were reported from time to time as being stopped. 41 of those reported had to be dug out and repaired

on account of growth of roots in pipes. The other, we were able to clean out with sewer rods.

The whole Domestic Sewerage system was flushed out twice during this year. Once in May from the 19th to the 29th and once in the fall from September 24th to October 5th.

We have only 50 feet of 5" Terra Cotta pipe in stock at the Water Works as against 1,200 feet in stock this time last year.

A comparison between 1930 and 1931 costs for Sewerage Domestic is shown graphically by charts on Plate # 6.

TABLE SHOWING PRINCIPAL PURCHASES OF MATERIAL USED BY DEPARTMENTS
HERE BEFORE MENTIONED

Material	Amount purchased 1931	Amount in stock 1st.Jan. 1932
15" Terra Cotta pipe	1190 lineal feet	35 lineal feet
12" Terra Cotta pipe	1500 lineal feet	760 lineal feet
10" Terra Cotta pipe	3737 lineal feet	215 lineal feet
8" Terra Cotta pipe	1030 lineal feet	257 lineal feet
6" Terra Cotta pipe	36 lineal feet	0
5" Terra Cotta pipe	200 lineal feet	50 lineal feet
4" Terra Cotta pipe	8 lineal feet	0
Portland Cement	8199 bags	None
Brick	28100 Brick	None
Stone	2025 tons trap rock	1100 tons crushed stone
Gravel (River)	5458 cu. yds.	None
Gravel (Pit)	274 cu. yds.	None
Calcium Chloride	30½ tons	4½ tons
10' Road Machine Blades	29	4
Heavy Tar	16384 Imp. Gal.	44 Imp. Gal.
Asphalt	30.95 tons of 71/80	None
Asphalt Emulsion	6983 Imp. Gal. Colas	None
Tar K.P.	720 Imp. Gal. Rotar K.P.	616 Imp. Gal.
Light Tar	2400 Imp. Gal. Rotar "B"	1848 Imp. Gal.

WATER

I have divided the expenditure in this department into two headings namely, Water Ordinary and Water Pumping Station.

WATER ORDINARY

This item takes in all work done for water outside the Pumping Station and Pumping Station grounds.

The Net Cost for this item is \$7,933.55 and is made up of a Credit of \$279.65 and a Gross Credit of \$8,213.20.

The Credit of \$279.65 is made up of bills amounting to \$151.64 for work done and stock used on property other than City Property, and a bill of \$128.01 against Dr. H.S. Wright for repairs to a hydrant which Dr. Wright broke with his car.

The Gross Expenditure of \$8,213.20 is made up by:-

City Pay Roll for hydrants.....	\$ 260.13
City Pay Roll for Meters.....	1,098.98
City Pay Roll for distribution system.....	<u>2,477.22</u>
Total City Pay Rolls.....	\$3,836.33
Material and other charges.....	4,376.87
Total.....	<u>\$8,213.20</u>

Hydrants:-

We have installed in the City:-

4" Hydrants.....	106
6" Hydrants.....	39
8" Hydrants.....	<u>6</u>
Total Hydrants.....	151

This given as a labor cost per Hydrant per year, for inspection and maintenance of \$1.73.

Meters:-

We have in the City 1017 meters in service and 498 customers on flat rate.

This given as a labor cost per meter per year for, reading, testing, repairing, etc., of \$1.08

All meters are read four times a year, we also have 27 customers whose meters are read once a month.

Meters found stopped during year.....	59
New Services metered during year.....	12
No new meters were purchased this year.	
Meters in stock room, 1st. January 1932:-	

1 - 2"	Compound fit for service
1 - 1"	Compound fit for service
27 - 5/8"	Not fit for service but can be repaired
1 - 1"	Not fit for service but can be repaired

Distribution System:-

New Water services put in this year.....	8
New Water services stubbed to street line..	3
Old services relaid.....	20
Services lowered to avoid frost.....	2
Services which froze and had to be thawed.	5

The water was extended east along St. John Road from end of line at Alexandra Street a distance of 730 feet, to a point just west of the concrete culvert which carries the Fredericton Back Drain under the St. John Road. This extension was made with a 6" Sand Spun Cast Iron Water Main. One new 4" hydrant was installed near the east end of this extension.

A water extension was made in Albert Street extension, that is, from the east end of Albert Street a 6" main of Cast Iron Sand Spun pipe was run south for a distance of 600 feet. A 6" hydrant was installed near the south end of this extension.

The one inch water line running on top of the ground from the end of the water main on Woodstock Rto the Rural Cemetery Extension was relaid underground.

A graphical comparison of the 1930 and 1931 Water Ordinary Costs are shown on Plate # 7.

WATER PUMPING STATION

This cost includes all labor and material used in pumping station and pumping station grounds.

The Net Cost for this item is.....\$13,017.64
Made up of a Credit of..... 3,405.91
And a Gross Cost of..... 16,423.55

The Credit is made up as follows:-

Coal charged to Pumping Station and sold to workmen or other City Departments.....	\$ 79.61
Water charged Sewerage Domestic for flushing services.....	64.70
Fire Department for hydrant charges at \$20.00 per hydrant...2,800.00	
Water for City Hall building.....	50.00
Water for Municipal Home.....	25.00
Water for City Ward.....	10.00
Water for old streetlight building, Carleton Street.....	25.00
Water used by Water Carts and to mix concrete for curb and gutter.....	292.35
Water used in mixing cement walk @ 5¢ per cu. yd. of concrete.	59.25
Total Credit.....	\$3405.91

The Gross Cost of \$16,423.55 is made up by:-

City Pay Roll.....	\$5,119.08
Material and other charges.....	10,304.47
Total Gross Expenditure.....	\$16,423.55

The City Pay Roll item is made up of salaries of Engineer at Pumping Station..... \$5,580.00
Work done by City employees in and around Pumping Station..... 539.08
Total City Pay Roll..... \$6,119.08

The work done in and around Pumping Station consists of, cleaning out coagulating basin, low lift pump well, and cleaning and repairing intake crib in river.

This year the chimney of the Pumping Station, which has been in bad condition for a number of years was repaired. The chimney was staged and the top and bell removed and replaced with new brick and a reinforced concrete top. The chimney was pointed up for a distance of about 30 feet down from the top. Minor repairs were also made to roof.

The item \$10,304.47 for Material and other charges is divided as follows:-

Item	# 1 Light and power supplied by the Maritime Electric Co. 276,408 K.W.H.....	\$6259.46
"	# 2 Transformer charges.....	1151.92
"	# 3 Lime 7732 lbs.....	170.32
"	# 4 Alum 73,440 lbs.....	973.96
	Forward.....	\$7555.66

Brought Forward.....\$7,555.66

Item	# 5	Coal 168 tons.....	846.04
"	# 6	Fuel Oil (None).....	000.00
"	# 7	Engine Oil (Renown) 47 Gallons	20.56
"	# 8	Motor Oil (None).....	000.00
"	# 9	Gasoline (None). <i>(Should Have been 80 Gallons \$8.80)</i>	000.00
"	# 10	Maintenance and repairs to building and machinery	445.97
"	# 11	New Installations.....	000.00
"	# 12	Supplies (Packing, rags, etc).....	41.15
"	# 13	Stationery (Forms, charts, etc).....	217.20
"	# 14	Workmen's Compensation Board.....	33.48
"	# 15	Dr. Hagerman's Salary.....	900.00
"	# 16	Hoisting chemicals.....	82.00
"	# 17	Miscellaneous (Telephone Etc).....	<u>161.41</u>

Total.....\$10,304.47

Page 16 of this report consists of a table showing water pumped and material and machinery used in pumping for this year. This table is compiled from the daily charts made out by the Pumping Station Engineers, which charts are kept on file in the City Engineer's office.

This table shows under heading "Gallons of Water Pumped" only the water pumped into city main. It must be remembered that this water is first pumped from the river into the coagulating basin from where it flows through the filters to the clear water basin and is then pumped into city mains.

The table shows that to deliver 1,000 Imperial Gallons of water to the city main took 1.48 K.W.H.

The Pumping Station cost this year for delivering 1,000 Imperial Gallons of water to the city main is 8.8 cents.

The total water cost for the year including pumping station and distributions, cost of delivering 1,000 Imperial Gallons of water to the city main and making it available to the customers is 13 cents. This cost does not include bond interest and sinking fund, overhead or profit.

Table compiled of Daily pumping Station Charts, showing Water pumped and machinery and material used in pumping.

Total Hours in Month	Month of pumped	Gal. of Water pumped	Lbs. Coal Used	K.W.H. Mar- time	Oil	Stm.	Gas	Hours Power Supplied by		Hrs. Run Serv. Pumps		Hrs. Run Low Lift Pumps		Oil Used			
								# 1 Motor	# 2 Motor	# 1 Motor	# 2 Motor	Stm.	Gal. Fuel	bts. Stm.	Qts. Eng.	Qts. Lub.	Gal Gas
744	Dec. 1930 <u>1931</u>	16,205,000	49,100	24,495	744			742	2	561				16½	4	5	
744	Jan.	15,085,000	53,590	22,483	744			742	1	741 $\frac{3}{4}$	134			15	3		
672	Feb.	14,065,000	50,150	22,633	672			742		485 $\frac{3}{4}$				14½	4	4	
744	Mar.	14,640,000	37,270	21,042	744			742		499 $\frac{1}{4}$				18			
720	Apr.	14,915,000	21,550	23,921	720			742		505 $\frac{1}{4}$				15½			
744	May	16,865,000	10,700	23,383	744			742		566 $\frac{1}{4}$				10			
720	June	*17,165,000	620	25,076	719 $\frac{1}{4}$			742		560				15			
744	July	17,180,000	--	21,318	743			742		610 $\frac{1}{4}$				10			
744	Aug.	16,004,000	--	24,138	720	P 3		742		559 $\frac{3}{4}$				15			
720	Sept.	*16,285,000	5,200	21,256	719 $\frac{3}{4}$			742		512 $\frac{1}{4}$				10			
744	Oct.	14,960,000	13,375	20,441	743	1		742		511 $\frac{1}{2}$				12½			
720	Nov.	13,795,000	29,050	26,222	717	3		742		494				15			
8760		187,164,000	270605	276408	\$729.50	27		6.40	\$747.15	24½	6409.40	5½	20	177	8	71	
					135,												

* 8 days in June and 10 days in September, the water consumption was estimated because of breaks in the Venturi Meter lead pipes which put the meter out of commission.

COMPARISON OF WATER PUMPED AND COSTS FOR LAST SIX YEARS

FOR PUMPING STATION ONLY.

Year	Imp. Gallons Water Pumped	Yearly Cost of Pumping Station	Pumping Station Cost per 1,000 Gal
1926	206,076,526	\$18,040.65	9.10 cents
1927	198,165,000	18,245.05	9.46 cents
1928	192,890,000	17,722.44	9.00 cents
1929	195,590,000	16,791.22	8.21 cents
1930	204,405,000	16,425.55	8.8 cents
1931	187,164,000		

A graphical comparison of Water Pumping Station Costs for 1930 and 1931 is shown by chart on Plate # 8.

J.D. Mackay
CITY ENGINEER.

January 30th, 1932

NO. 334 - 2 TIN, 10 X 10 TO THE HALF INCH.
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PLATE # 1 Comparing 1929, 1930 and 1931 Itemized Roads and Streets Labor Costs

NO. 334 - 2 TN, 10 X 10 TO THE HALF INCH.
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1930 LABOR

1930 MATERIAL

PLATE # 2 Roads and Streets Net Costs, for 1930 and 1931

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

5000 ← 1930 Assessment

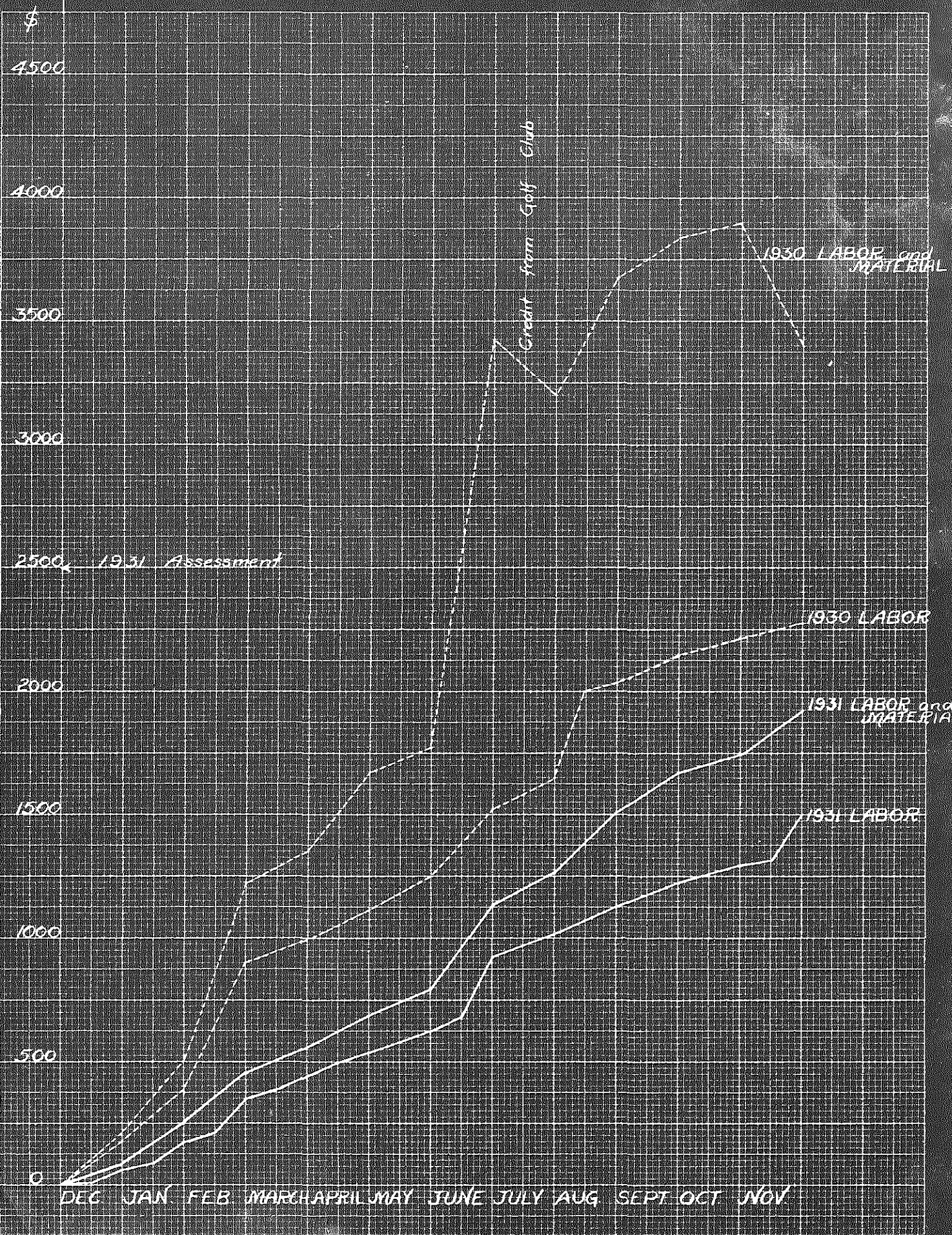


PLATE # 3 Public Works Costs 1930 and 1931

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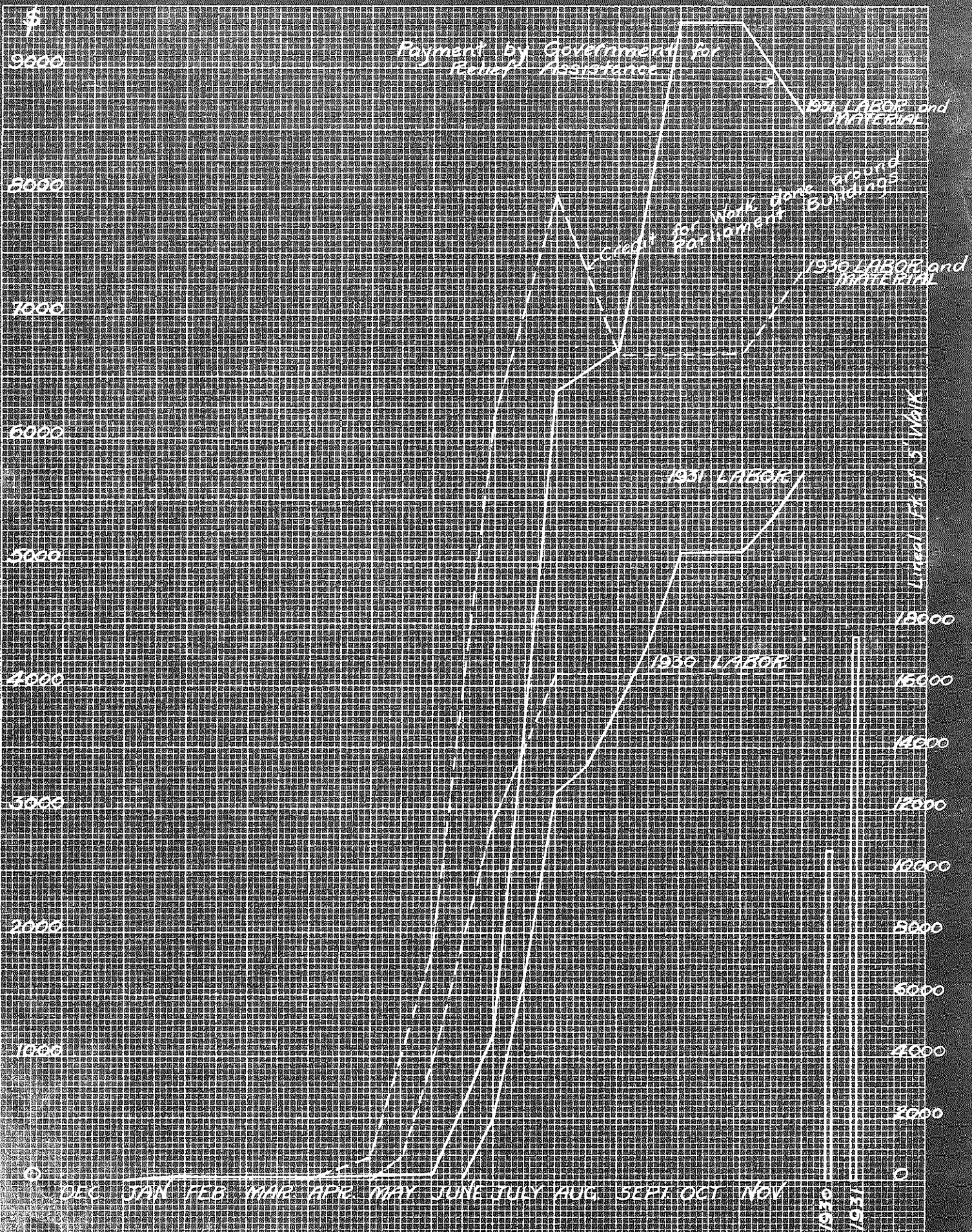


PLATE #4 Cement WALK Costs for 1930 and 1931

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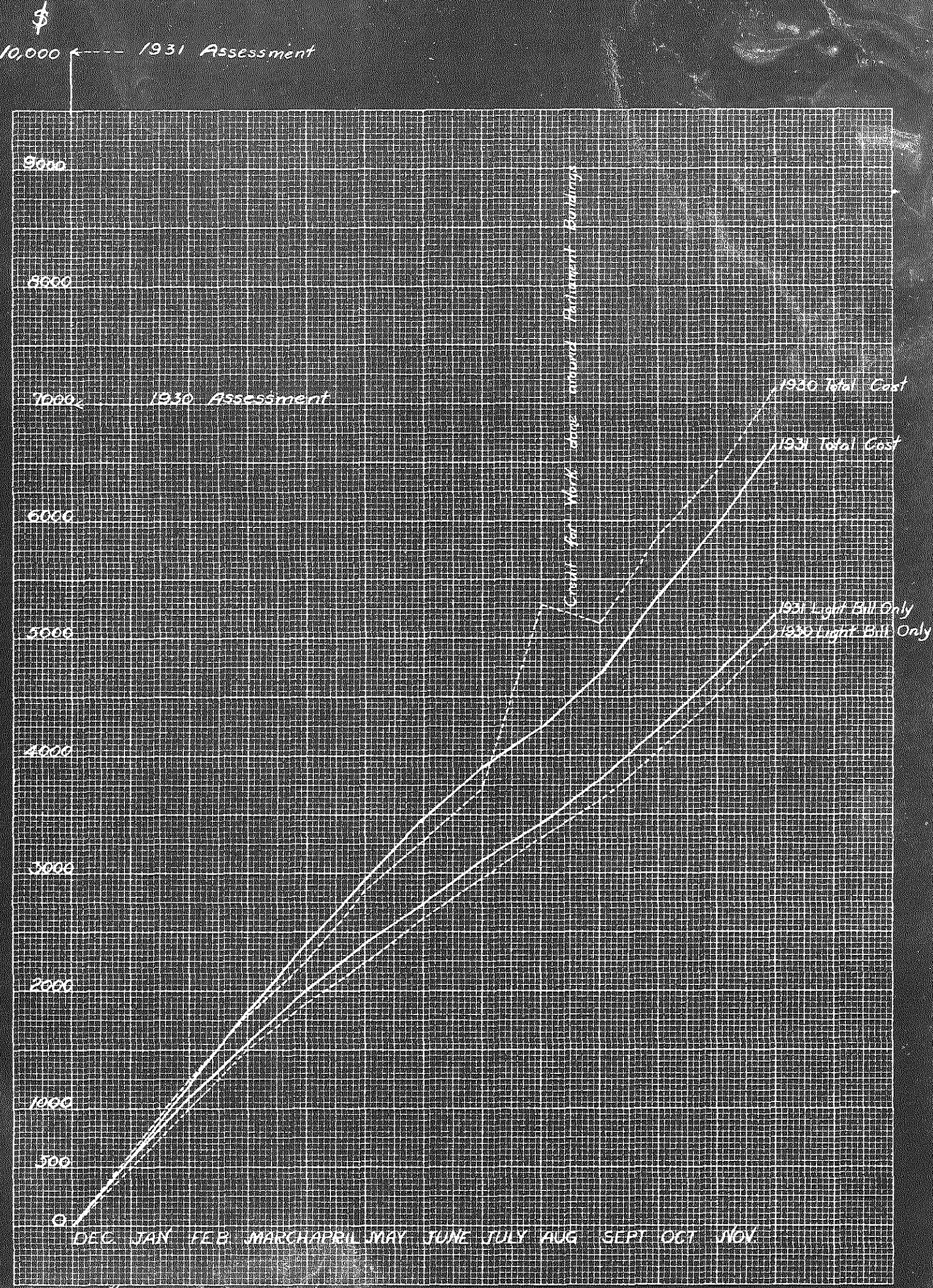


PLATE #5 Street Light Costs 1930 and 1931

No. 334 - 2 TN, 10 X 10 TO THE HALF INCH.
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5000

4000

5000

2000

1000

500

PLATE #6 Sewerage Domestic Costs 1930 and 1931

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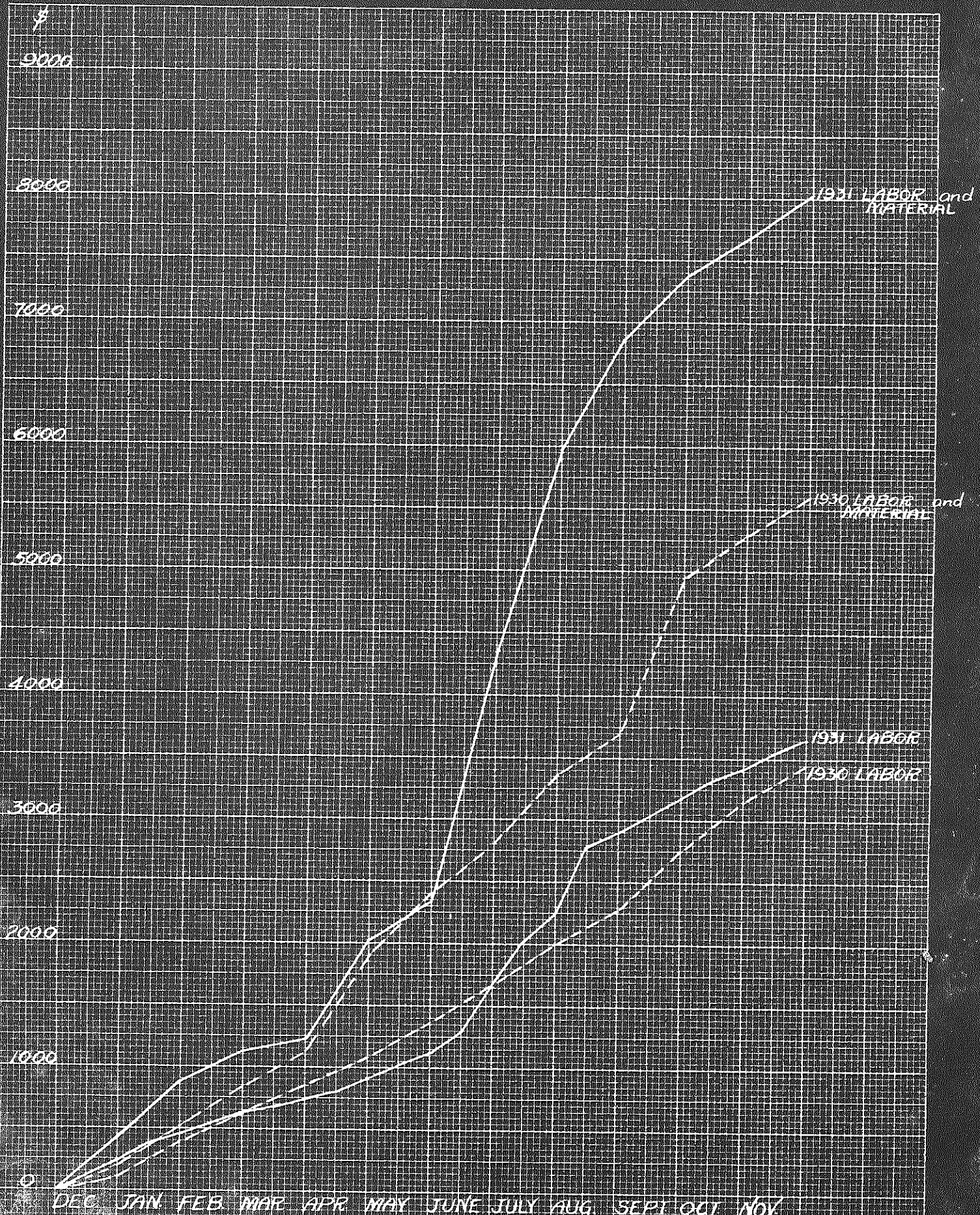


PLATE #7 Water Ordinary Costs 1930 and 1931

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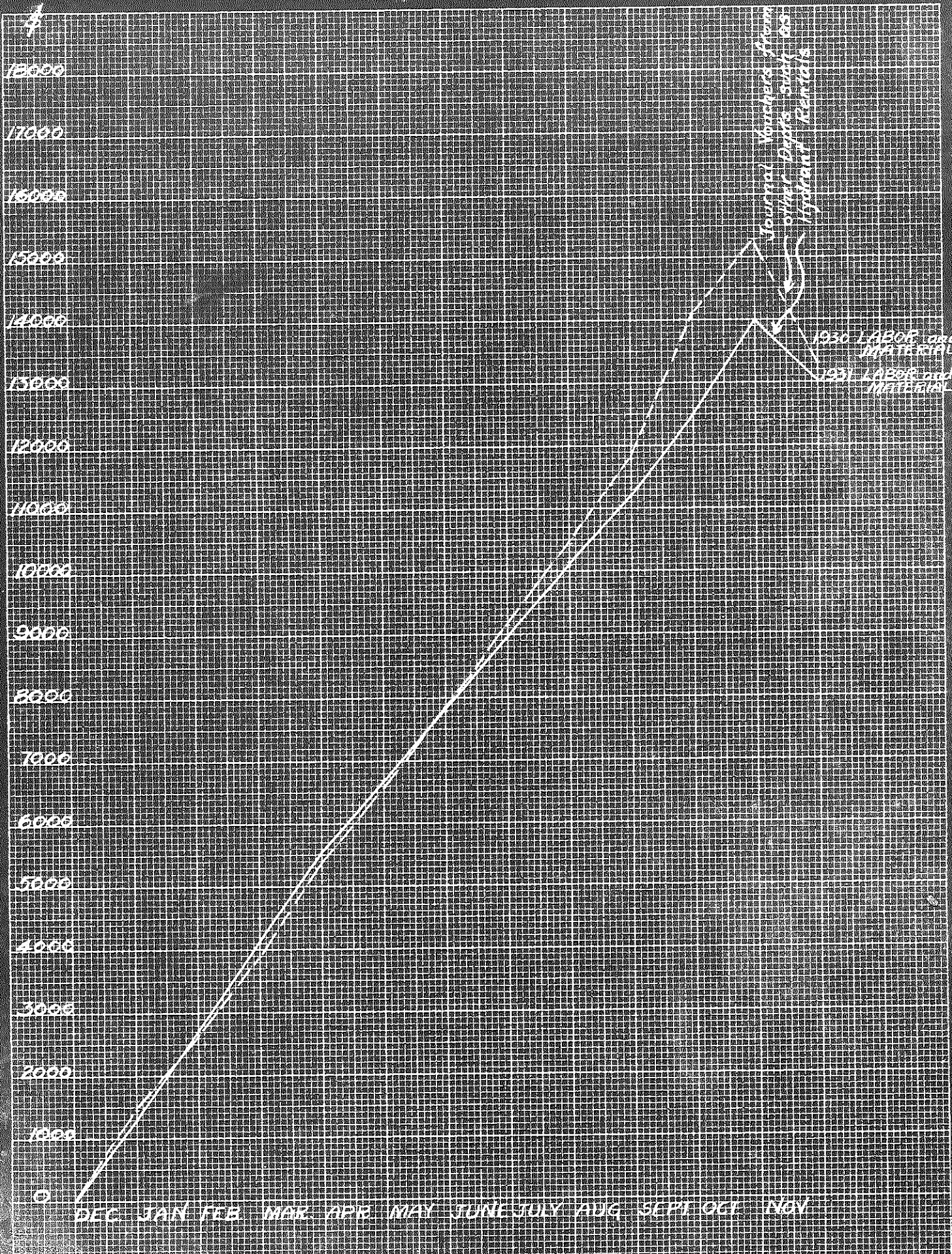


PLATE #8 Water Pumping Station Costs 1930 and 1931.

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

\$
95000

PLATE # 9 Total Net Expenditure 1930 and 1931

DOAK AND WILSEY ROADS

1931

<u>Date</u>	<u>Doak Road</u>	<u>Wilsey Road</u>
Dec. 17 to 27/30		224.84
Apr. 30/31		35.10 Thos. McDonough
May 2/31		24.00 " "
May 13	27.30 Thos. McDonough & Jas. Finney	
May 30	10.80	10.80 Thos. McDonough
June 30	5.40	5.40 " "
July 15	5.40	5.40 " "
Aug. 25 to 29		224.10
Aug. 31 to Sep. 15	5.40	262.35
Sep. 16 to 30	5.40	5.40
Oct. 1 to 15	318.60	19.20
" 16 to 31	616.40	7.80
Nov. 1 - 14	70.20	5.40
	1064.90	829.79

~~1005.20~~~~827.79~~~~7794.69~~~~1952.72~~~~1894.69~~~~58.24~~~~1064.90~~~~33.24~~~~1098.14~~~~854.79~~~~1952.93~~~~828.79~~~~25.00~~~~854.79~~

STREETS

Cost of Labour on Streets from Dec. 1st 1930 to Nov. 25th 1931

..... \$ 2879.26

Distributed as follows:

Cutting grass and bushes on sides of streets	\$ 62.40
Repairs on streets	92.43
Spreading ashes on sidewalks	32.21
Repairs to culvert	2.10
New curbing at corner of Westmorland and George St.	8.70
Unloading and Spreading Calcium Chloride	56.25
Fred Murdock	2.40
English Settlement (Green Lane	405.66
Gement Curbing (Relief Acct.	<u>2217.11</u>

2879.26

Nov. 27, 1931

Cost of Labour on Surface Sewers from Apr. 6, to Nov. 26, 1931

.....\$ 1559.54

Flushing Surface Sewers	\$ 78.35
Cleaning Catch Basins	339.10
Repairing Catch Basins	10.25
Laying New Surface Sewer (Carleton St.)	2.40
Laying New Surface Sewer at F'ton High School	37.80
Repairing Barrels	1.20
Surface Sewer (Releif Acct.)	<u>1090.44</u>
	1559.54

155
235 ~~1090.44~~ 46.3
9428
14764
14142
6220
4714
4506

2347
46.3
4714
14142
4728934
4506