

# ANNUAL REPORT OF THE ENGINEERING AND PUBLIC WORKS DEPARTMENT

# 1934



YEARLY REPORT OF CITY ENGINEER

FREDERICTON, N.B.

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

Gentlemen:-

This report is a statement of the work done in the different City Departments under the direct supervision of the City Engineer, and covers the period of time from the 1st of December, 1933, to the first of December, 1934.

All figures, and statements derived from them, appearing in this report, have been carefully compiled and, I believe are correct and fit to be used in working out costs for future expenditures.

This report is written with the purpose of reporting to the Council on the costs of the various construction works carried out during the year, and on the maintenance and repair costs of the different City Departments under the supervision of the City Engineer. It is also written with the idea of having on file an accurate record of these activities and costs.

The various City activities which come particularly under the supervision of the City Engineer, are:-

- Roads and Streets, construction and maintenance.
- Public Works, construction and maintenance.
- Water System, operation and maintenance.
- Domestic Sewerage System, operation and maintenance.
- Surface Sewer System, operation and maintenance.
- Street Lighting, operation and maintenance.
- Shade Trees, pruning, removal, etc.

Following in the body of the report is a detailed statement of work done, comparative expenditures, and unit costs under the different Departments. This detailed report of any particular department can be readily found by referring to the Index appearing on Page 1.

# ROADS AND STREETS

Gross Expenditure.....	\$	23,665.94
Credits.....		<u>2,311.58</u>
Net expenditure.....	\$	21,354.36
1934 Appropriation.....		20,000.00
1934 Roads and Streets over expenditure.....	\$	<u>1,354.36</u>

The above credits are made up as follows:-

Received from other City Departments for work done or materials sold by Roads and Streets Department.....	\$	1,348.17
Work done for or material sold to private parties by Roads and Streets Department.....	\$	<u>963.41</u>
		<u>\$2,311.58</u>

In the money received by Roads and Streets Department from other City Departments appears an item of \$990.17 for Trap Rock, field stone and gravel sold to Paving Capital Account.

In the money received from private parties, appears the item \$858.49 received from the Brantford Carritte Company. This item is for crushed rock sold by the City from our storage piles to the Brantford Carritte Company and was used on the Marysville Paving job, and also for stone taken by this Company from the City Quarry. The account was made up as follows:-

Stone taken from City Quarry at MacLeod Hill @ 5¢ per cubic yard royalty	
4322 cu., yds., @ 5¢ per cubic yard	= \$216.10

Stone from City Yard, already crushed	
227 cu. yds. = 261 tons @ \$1.50 ton	= 391.50

Stone from City Yard for recrushing	
589 3/4 cu. yds., = 675.85 tons at \$1.35 ton =	= <u>912.39</u>

Total	\$1519.99
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Stone weight:- 2292 lbs. = 1 cu. yd.

Less:- Credit for 4725 gallons of Colas asphalt emulsion in drums ex Marysville at 14¢ per gallon.	<u>661.50</u>
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Balance due	\$ <u>858.49</u>
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Prices charged for stone were the actual cost prices of this stone to the City, the idea being that the City could turn their storage pile of stone into money and later turn the money back into the storage pile of stone thus making additional labour for City men during the winter months. The credits shown in this account for 4,725 gallons was for Colas supplied to the City from Tank Cars on the Marysville Road job. We were able to buy this Colas at 14¢ a gallon from these Tank Cars, where the same material delivered to the City from less than Tank Car shipments has cost us 17¢ per gallon at our cheapest price. This Colas was used in seal coating and patching City Streets which were badly in need of this treatment.

The above gross expenditure of \$23,665.94 is made up as follows:-

Labour.....	\$	13,332.51	
Material used, and Workmen's			
Compensation.....		10,333.43	<u>\$23,665.94</u>

The labour charge of \$13,332.51 is made up as follows:-

<u>Snowploughing Sidewalks:-</u> .....	\$	329.78
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<u>Snow Control:-</u> Shoveling and hauling snow, ploughing or scraping roads, clearing gutters of ice or snow, and any other means of snow control.....		4,999.27
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<u>Streets:-</u> General work on maintenance of streets and sidewalks and any other item such as building culverts, curbs and gutters, or pavements which is not mentioned under some particular heading.....		940.39
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<u>Surface Sewers:-</u> Cleaning, flushing and repairing surface sewers and building new surface sewers within street limits.....		241.33
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<u>Sanding Walks:-</u> Hauling, drying and storing sand in winter storage piles and spreading on slippery walks.....		73.20
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<u>Yard:-</u> Men working at blacksmith and repair work in City Yard, taking out summer equipment and storing winter equipment, etc.....		1,134.39
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<u>Street Sprinkling:-</u> Watering Carts.....		813.20
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<u>Stone Crushing:-</u> Repairs to crusher and crushing stone.....		65.66
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<u>Saint John Road:-</u> All work done on river road from Alexandra to eastern City line, other than work done by power maintainer.....		240.25
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<u>Doak and Wilsey Road:-</u> All work done on these roads other than work done by power maintainer.		<u>99.90</u>
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Forward.....	\$	8,937.37
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Brought Forward.....\$ 8,937.37

Woodstock Road:- All work done on this road  
other than that done by power maintainer.....\$ 35.54

New Maryland Road:- From C.P.R. crossing to  
southern City line, all work done on this  
road other than that done by power maintainer..... 69.87

Outlying Roads:- Hanwell Road, Cross Roads  
lying between Brick Kiln Road and College  
Hill Road, Brick Kiln Road, Poorhouse Hill  
Road, College Hill Road, and Forest Hill  
Road, all work done on these roads other  
than work done by power maintainer..... 172.12

Street Cleaning:- All cleaning and removal  
of dirt from streets..... 2,409.02

Tarvia Repairs:- Mixing patching material  
and repairing asphalt and tar sidewalks  
and pavings, and applying seal coat of  
light tar or asphalt to pavements or to  
gravel and McAdam roads..... 782.82

City Road Patrol:- Patrolling all unpaved  
streets and roads within the City limits  
with power maintainer..... 715.92

Quarry:- Quarrying and hauling trap  
rock from City Quarry to City Yard..... 209.85 \$13,332.51

The previous items are made up entirely of labour costs. They give a good idea of the amount and kind of work done by the Roads and Streets Department for this year. Below is a table comparing Labour expenditures in these items from 1929 to 1934.

Brought Forward.....\$ 8,937.37

Woodstock Road:- All work done on this road  
other than that done by power maintainer.....\$ 35.54

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TABLE COMPARING YEARLY COSTS IN ROADS AND STREETS

LABOUR ITEMS

Item	1929	1930	1931	1932	1933	1934
	\$	\$	\$	\$	\$	\$
Snow ploughing						
sidewalks	113.95	326.01	264.10	234.13	121.71	329.78
Snow control	726.55	3,047.50	3,619.50	1,548.55	918.95	4,999.27
Streets	1,425.01	1,578.32	2,968.98	617.40	1,292.66	940.39
Surface Sewers	601.55	593.25	1,609.15	450.20	351.75	241.33
Sanding Walks	328.16	142.47	42.66	203.02	242.07	73.20
Yard	1,196.92	1,527.15	427.98	995.31	844.42	1,134.39
Street Sprinkling	686.35	739.85	644.74	693.45	758.18	813.20
Stone Crushing		1,165.56	522.44	713.71		65.66
Saint John Road	1,848.50	750.36	558.44	2,812.73	259.45	240.25
Doak and Wilsey						
Roads	225.30	565.53	1,952.93	2,390.52	218.69	99.90
Woodstock Road	241.00	336.05	43.04	238.83	28.98	35.54
New Maryland Road	388.85	91.32	237.12	6,941.61	1935.44	69.87
Outlying Roads	770.70	294.56	1,053.83	1,317.08	518.26	172.12
Street Cleaning	2,735.15	2,599.33	2,366.01	2,256.16	1,937.02	2,409.02
Tarvia Repairs	1,042.70	453.29	775.62	453.66	346.33	782.82
City Road Patrol	636.80	1,143.78	921.09	750.61	723.09	715.92
Quarry				1,892.10		209.85
Cinders from						
Maritime Electric	210.98	78.77	94.71			
Paving			6,727.62			
Totals	\$14,490.47	\$16,533.53	\$26,024.54	\$25,430.96	\$10,607.99	\$13,332.51
Paving not paid out of regular Roads and Streets Appropriation	4,525.10					
	\$19,105.57	\$16,533.53	\$26,024.54	\$25,430.96	\$10,607.99	\$13,332.51

These labour items may be somewhat better understood by the following explanations:-

Snow Control:-

Snow control along with Snow ploughing side walks together make up a total of \$5,329.05 Labour charge. This total is divided as follows:-

Snow ploughing.....	\$	329.78	
Snow ploughing roads and streets.....		454.71	
Shovelling and hauling snow off streets.....	2,901.37		
Doak Road.....		117.15	
Wilsey Road.....		9.52	
Scarafying side walks.....		33.79	
Hauling snow off side walks.....		158.24	
Shovelling snow from Hospital.....		20.64	
Removing ice and snow from catch basins.....		154.07	
Removing snow from Queen's Square (skating rink)		53.08	
Saint John Road.....		23.04	
Maryland Hill Road.....		146.28	
Draining Streets and cutting ice in streets....		520.21	
Hanwell Road.....		13.35	
Thawing catch basins.....		215.21	
General expenses, time keeper, etc.....		178.61	\$5,329.05

#### Streets:-

##### Summary of labour costs:-

Spreading Calcium Chloride.....	\$	18.72	
Cutting grass on sides of Streets.....		39.48	
Repairs on York Street between King and Queen Streets.....		70.90	
Painting streets for parking cars.....		33.42	
Spreading loam on Smythe Street green.....		48.64	
Repairing side walk with gravel and cinders...		39.98	
Spreading gravel on streets.....		447.43	
Labour on Beaverbrook Street.....		57.44	
General expenses on streets.....		150.78	
General expenses, time keeper, etc.....		33.60	\$ 940.39

The curb, gutter and side walk on York Street between King and Queen had sunk out of shape, this flag-stone curb was built up to proper alignment and the street and sidewalk made to conform with this alignment.

The labour here shown against Beaverbrook Street was mostly for survey work, although a small fill was made on this street between Regent Street and Saint John Street.

#### Surface Sewers:-

##### Summary of labour costs:-

Cleaning and repairing catch basins.....	\$	119.52	
Flushing surface sewers.....		70.40	
Obtaining catch basin measurements and drafting them up.....		42.80	
General expenses, time keeper, etc.....		8.61	\$ 241.33

Saint John Road:-

This labour item of \$240.25 is for ordinary maintenance work, such as spring patrolling by horse drawn machine to get frost out of roads, such small items as cutting bushes and weeds, patching with gravel, and the repair of culverts and catch basins.

Doak and Wilsey Road:-

This item of \$99.90 is almost all taken up by patrolling work, done by the horse drawn road patrol along with a small amount for culvert maintenance and cutting bushes.

Outlying Roads:-

Summary of labour costs:-

Hanwell Road.....	\$	1.68	
Forest Hill Road.....		11.32	
College Hill Road.....		47.56	
Flanagan Road.....		6.60	
Cross Roads.....		14.50	
Brick Kiln Road.....		84.32	
General expenses, time keeper, etc.....		6.14	\$ <u>172.12</u>

Street Cleaning:-

At a labour expense of \$2,409.02 is some what larger than this cost for the last few years. This is accounted for by the fact that the leaves were not cleaned up until the Spring of 1934 as the snow fall in 1933 caught us before this work had been completed. This street cleaning item takes up quite an amount of our Roads and Streets appropriation, the work is all done by the old fashioned hand method. The labour charges could be materially cut down by the purchase of modern Street Cleaning machinery. I do not believe, however that the purchase of this machinery is warranted yet, I think that depreciation and running charges on the machinery would more than over balance the saving in labour charges.

Tarvia Repairs:-

Summary of labour costs:-

Patching streets.....	\$	212.80	
Patching side walks.....		101.20	
Seal coating streets.....		440.89	
General expenses.....		27.93	\$ <u>782.82</u>

This year we were able to get Colas at a Tank Car price of 14¢ a gallon from the Marysville paving job and we took the opportunity of seal coating practically all of the Bituminous Streets in the City which showed signs of wear.

The asphalt side walk on Queen Street between Westmorland and St. John Streets were given a seal coat application of Colas and sand. This application cost about \$205.00 for both labour and material and I believe very well paid for itself in the improvement which it made to the side walk.

The following table shows the Bituminous material used in 1934:-

	<u>Heavy tar or asphalt.</u>	<u>Light tar or Asphalt.</u>	<u>K.P.</u>	<u>Asphalt Emulsion.</u>
Gallons in stock Spring of 1934	44	0	0	90
Gallons purchased 1934	0	0	0	9678
Available for season 1934	44	0	0	9768
Stock on hand fall of 1934	44	0	0	132
Used in season of 1934.	0	0	0	9636

TABLE SHOWING COMPARATIVE COSTS OF ROADS AND STREETS,

YEARS 1927 to 1934:-

Year	Expenditure for Labour	Gross Expenditure Labour and Materials	Credit	Net Costs Labour and Material	Approp- riation.
	\$	\$	\$	\$	\$
1927	15,692.00			25,245.00	26,000.00
1928	17,122.45			26,058.70	26,000.00
1929	14,490.47			26,682.98	31,000.00
1930	16,533.53			34,556.33	32,500.00
1931	26,024.54	50,849.60	15,511.97	35,337.63	31,000.00
1932	25,430.96	39,101.62	4,822.19	34,279.43	25,000.00
1933	10,607.99	19,161.38	333.28	18,829.10	19,000.00
1934	13,332.51	23,665.94	2,311.58	21,354.36	20,000.00

### PAVING CAPITAL ACCOUNT

Gross Expenditure.....	\$ 11,653.18	
Credits.....	<u>5,826.59</u>	
Net Expenditure by City.....		<u>\$ 5,826.59</u>

The above credit is made up of money paid by the Provincial Government to the City according to the agreement between the City and the Provincial Government, whereby the Government were to pay one-half the cost of the work.

The gross expenditure is made up as follows:-

Labour.....	\$ 1,998.29	
Material.....	<u>9,654.89</u>	<u>\$11,653.18</u>

This work consists of a piece of paving laid in Fredericton, New Brunswick on Woodstock Road starting at the Hanwell Road and running to the western City Line (a distance of about one-half mile) This pavement consisted of a 5" rock base and a 4" asphalt pre-mixed top. The stone base along with the changes in alignment, grading, ditching etc., was constructed by the City with their own labour, and a 4" asphalt top was laid by 'Currier and Seymour' under contract with the City. This asphalt was laid in two courses a 3" pre-mixed base course and 1" sheet asphalt top. This is a similar type of pavement to that laid by "Currier and Seymour" for the Provincial Government on the Woodstock Road and joining our pavement at the City limit. The price paid to the contractor was the same as paid by the Provincial Government namely \$5.50 per ton laid in place.

The Provincial Government in making this type of road did not use a stone base beneath the 4" asphalt as they had already in place what they considered to be a sufficient gravel base. However in our section we had practically no gravel base and we also have had considerable trouble on this section from frost boils and heaving from frost action an account of poor drainage and clay sub-soil. It was considered necessary to under-lay our asphalt with at least a 5" rock base and also to lay some 1200 feet of tile and rock filled side ditches as well as some open ditching. These costs on this job are itemized as follows:-

All invoices and bills listed below may be found in the City files.

City Pay Roll, Sept. 5th to 30th, 1934.....	\$	1,660.75
City Pay Roll, Oct. 1st to 18th, 1934.....		337.54
J.S. Neill & Sons, Ltd. (Sept. 1934).....		1.31
J.S. Neill & Sons, Ltd. " " .....		9.65
Imperial Oil Ltd. " " .....		2.23
Imperial Oil Ltd. " " .....		.67
Thomas Hughes " " .....		104.16
H.A. Burt " " .....		3.36
J.C. Risteen Co. Ltd. " " .....		1.59
Alfred Horsnell " " .....		108.84
M. Ryan & Son, Ltd. " " .....		109.71
City Hall Dept. " " .....		68.62
Currier & Seymour, Ltd. (Oct. 1934) .....		122.25
Currier & Seymour, Ltd. " " .....		7,736.06
A.H. VanWart & Son " " .....		48.75
Milton Hersey Co. Ltd. " " .....		171.72
Thomas Hughes " " .....		59.97
J.C. Risteen Co. Ltd. " " .....		3.82
Devon Lumber Co. Ltd. " " .....		51.30
Dept. Public Works, Highway Division " " .....		15.22
City Roads and Streets Department " " .....		990.17
City Roads and Streets Department " " .....		18.00
Total.....	\$	<u>11,625.69</u>

Facts about this pavement:-

Length of pavement.....	2405 feet
Width of pavement at widest place.....	25.6 feet
Width of pavement at narrowest place.....	20.0 feet
Average width of pavement.....	20.9 feet
Total area of pavement.....	5724 square yards
Total area of compressed 5" stone base laid on road before pavement put down.....	6739 square yards
Total length of rock filled tiled ditch.....	1222 feet
Unit price per square yard finished pavement.....	\$ 2.03
Unit price per square yard of Asphalt Pavement alone (including Milton Hersey Company bill).....	1.38
Unit price per square yard finished pavement of all work done other than the actual asphalt construction (this work includes new alignment, grading, stone base, ditching, and gravel shoulders)	.65
Cost per mile of the above type of pavement with stone base 5" thick after compression and where a similar amount of stone filled tiled ditching is necessary.....	23,818.00

# PUBLIC WORKS

Gross expenditure.....	\$ 4,929.00
Credits.....	<u>1,302.36</u>
Net expenditure.....	3,626.64
1934 Appropriation.....	4,000.00
1934 Public Works under expenditure.....	373.36

The above credits are made up as follows:-

Wood cut on College land and hauled to City Yard by the Public Works Department and sold to the Municipal Home Department. This wood was billed as follows:-

231½ cords cut and hauled in the season of 1933-34 and billed at \$3.50 per cord.

100 cords cut and hauled in the fall of 1934 and billed at \$4.00 per cord.

Altogether this 331½ cords cost and was billed to the Municipal Home Department at.....\$ 1,210.25

Work done for and charged to private parties by the Public Works Department, such as cutting trees on private property, etc..... 92.11 \$1,302.36

The above gross expenditure is made up as follows:-

Labour.....\$ 3,734.85  
Material and Workmen's Compensation..... 1,194.15 \$4,929.00

The labour account of \$3,734.85 is divided as follows:-

Wood lot.....\$ 2,088.02  
Dump..... 741.07  
Surface Sewer Repairs..... 1.39  
Back Drain..... 61.54  
Unforeseen Account..... 419.92  
Trees..... 422.91 3,734.85

#### Wood Lot:-

This year the Public Works Department delivered to the Municipal Home Department at the City Wood Yard, 231½ cords of wood cut on College land during season of 1933-34. This wood was cut and paid for, both stumpage and labour charges, by the Public Works Department and later billed to the Municipal Home Department at \$3.50 per cord. In the season of 1934-35 the City again cut wood on the College land, however only 100 cords had been hauled in before the end of our year 1934. This wood like last season was cut by the Public Works and recharged to the Municipal Home Department. Our costs this year were found to be \$4.00 per cord and the wood was billed at this price to the Municipal Home Department.

This year we paid 75¢ for stumpage, the same as last year and paid the men \$1.50 per cord for cutting as against \$1.30 per cord paid in 1933-34.

NOTE:- At time of writing, February 1st, 1935, our wood operations have been completed for the season 1934-35. This season we cut and hauled from College land 792 cords.

#### Dump:-

The City Dump at present located on the river bank at the end of Westmorland Street, has a dumpsman constantly in charge during the day. In the spring after the freshet, it is generally necessary to send a crew of a few men and a team to the dump for a couple of days to straighten it out. There has been considerable complaint from the nearby residents about the location of this Dump, and I believe in the near future the City will have to make some different arrangements. I think the Dump has been kept in a very excellent condition but it is impossible at this location to altogether do away with a certain amount of nuisance.

#### Back Drain:-

No work done on the Back Drain this year other than the removal of deposits which had accumulated around some of the culverts.

#### Trees:-

The usual tree pruning and cutting of dangerous trees was carried on this season. Our expenses running slightly over that of last year.

The City has done no tree planting for a number of years. This work has in the past been carried on by the Local Improvement Society, but for the last two or three years the Local Improvement Society has done no tree planting. This is a matter which should be considered. In my opinion some tree planting should be done in the coming season.



Unforseen Account:-

The labour account is divided as follows:-

River Roads.....	\$ 2.16	
Play Grounds.....	57.21	
Langmaid House, painting and papering....	57.05	
Children's Home.....	3.52	
Trotting Park.....	41.22	
Cleaning up City Flats.....	16.24	
Local Improvement Society.....	56.00	
Investigating incinerator site.....	25.00	
Mosquito control.....	1.12	
Fencing Public gardens, Woodstock Road...	12.24	
Grappling river for Cole boy.....	15.68	
Repairs to Street light building, Carleton Street.....	11.52	
Repairs to City Whare House and Wharf....	9.24	
Cutting bushes on river bank.....	57.60	
Historical Society.....	2.90	
Repairs to Logan House, University Avenue	39.84	
General expenses, time keeper, etc.....	11.38	<u>\$419.92</u>

The Langmaid House besides the \$57.05 labour item had a cost for material of \$199.70, making a total cost against this house, \$256.75. The house was papered and cleaned and a new roof put on.

The Logan House besides the \$39.84 labour charges, had a material charge of \$125.58 making a total cost against this house \$165.42. A new steel roof was put on this house and a few minor repairs made on the verandah roof and also to some broken windows.

The cost for the repair work done on these Housing Board Houses, appear under our Public Works account as there seems to be no other account to which they could be charged.

TABLE SHOWING COMPARATIVE YEARLY COSTS OF PUBLIC WORKS.

Year	Expenditure for Labour	Gross Expenditure Labour and Materials	Credits	Net Costs Labour and Material	Approp- riation.
1927	1,204.90			2,520.00	4,000.00
1928	2,470.39			3,156.87	3,000.00
1929	1,685.59	2,626.00		2,626.00	5,000.00
1930	2,279.82	3,397.09	237.90	3,159.19	5,000.00
1931	1,574.17	1,982.91	61.95	1,920.96	2,500.00
1932	3,797.65	4,992.98	322.35	4,670.63	2,500.00
1933	3,948.39	5,394.06	474.89	4,919.17	4,500.00
1934	3,734.85	4,929.00	1,302.36	3,626.64	4,000.00

### CEMENT WALKS

No cement walks were laid this year and only a small item of \$2.16 was spent in repairs to existing walks.

### STREET LIGHTS.

Gross expenditure.....	\$ 6,065.28
Credits.....	000.00
Net expenditure.....	<u>6,065.28</u>
1934 Appropriation.....	6,000.00
1934 over expenditure.....	65.28

The expenditure was made up as follows:-

Current from Nov. 27, 1933 to Nov. 17, 1934		
188,640 K.W.H.....	\$ 5,053.79	
Maintenance labour under contract to the		
Maritime Electric on 16.548 miles of line		
at \$20.00 a mile.....	330.96	
Lamps purchased for replacement and new		
installation:-		
12 - 600 C.P. Lamps at \$2.45.....	\$29.40	
216 - 250 C.P. Lamps at \$1.50.....	<u>324.00</u>	353.40
Material purchased for new installation		
and maintenance of lamp fixtures,		
(including only such articles as standards,		
lamp brackets, heads, sockets, shades, etc.)..	71.70	
Material and extra labour used in line		
maintenance.....	126.53	
Miscellaneous, as telephone, ground rent,		
City Pay Rolls, etc.....	<u>128.90</u>	<u>\$6,065.28</u>

TABLE SHOWING CURRENT CHARGES FOR 1934.

Date of Bill	K.W.H.	Demand in K.W.	Average No. of burning hrs. per night.	Bill per month	Days per bill	Burning hours in each bill
Nov.27/33						
to Dec.29/33	20100	45	14 $\frac{3}{4}$	509.53	32	472
Dec.29/33						
to Jan.26/34	18000	45	14 $\frac{1}{4}$	467.02	28	399
Jan.26/34						
to Feb.28/34	19140	45	13	489.90	33	429
Feb.28/34						
to Mar.27/34	15480	45	11 $\frac{1}{4}$	416.38	27	303.75
Mar.27/34						
to Apr.27/34	14940	45	9 $\frac{1}{2}$	405.33	31	286.75
Apr.27/34						
to May 28/34	12480	45	8	355.92	31	248
May 28/34						
to June 27/34	10800	45	7 $\frac{1}{4}$	321.94	30	217.50
June 27/34						
to July25/34	10260	45	7 $\frac{1}{4}$	311.25	28	203.00
July 25/34						
to Aug.27/34	13500	45	8	376.48	33	264
Aug.27/34						
to Sep.28/34	16080	45	10	428.08	32	320
Sep.28/34						
to Oct.26/34	17580	45	11 $\frac{3}{4}$	458.76	28	329
Oct.26/34						
to Nov.27/34	20280	45	12 $\frac{1}{4}$	513.20	32	392
	188640			\$5053.79	365	3864.0

The following statements are interesting:-

	<u>1931</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>
Average monthly demand in K.W....	49.57	45.9	45.6	45.0
Total K.W.H. consumed by street lights.....	189,840	175,980	180,780	188,640
Number of nights streets lighted.....	366	364	367	365
Total hours light burnt.....	3,879	3,852	3,893	3,864
Total cost for year for demand and energy.....	\$5,196.52	\$4,824.99	\$4,912.89	\$5,053.79
Average cost for year for demand and energy per K.W.H.....	2.74¢	2.72¢	2.72¢	2.67¢
Average cost per burning hour for energy alone.....	.99¢	92.5 ¢	.94¢	.98¢
Total cost per year for street lighting all charges included....	\$6,672.23	\$6,532.51	\$6,425.87	\$6,065.28

The total per capita charge for Street Lighting for 1934, (assuming population of 9000 persons) equals  $\frac{6065.28}{9000} = 68\frac{1}{2}$ ¢

TABLE SHOWING COMPARATIVE YEARLY COSTS IN STREET LIGHTING

<u>Year.</u>	<u>Total Yearly Cost</u>	<u>Yearly Appropriation</u>
1927	\$8,088.41	\$8,000.00
1928	7,323.41	7,000.00
1929	7,434.72	7,000.00
1930	7,115.40	7,000.00
1931	6,672.23	10,000.00
1932	6,532.51	6,000.00
1933	6,425.87	6,000.00
1934	6,065.28	6,000.00

BATHING BEACH

A Municipal Bathing Beach was maintained near the Water works at the end of Smythe Street with a caretaker, Mr. Charles Williams in charge from June 18th to September 5th. The cost to the City was \$215.06. The caretakers' wages amounted to \$207.20 with a balance of \$7.86 being made up of miscellaneous items such as bandages, iodine, etc.

MUNICIPAL HOME ACCOUNT

Under this heading the amount of \$2,719.47 appears on my books. It is readily seen that this is not the entire Municipal Home Account expenditure for the City, it is that part of the Municipal Home expenditure which passed through my department and is made up as follows:-

Labour.....	\$ 1,444.22	
Material Costs.....	<u>1,275.25</u>	<u>\$2,719.47</u>

This labour was expended on sawing, splitting and delivering wood to persons on Relief and to persons under the care of the Poor Commissioner together with some maintenance and repair done to the City Poor House.

From the 1st. of January 1933 to the last of November 1934, we delivered 952 loads of wood of one cord each on orders from Mr. Armstrong and Mr. Niles.

Most of this wood was cut on the College land by the Public Works department and resold at cost to the Municipal Home Department as previously explained in this report under the heading Public Works.

\$126.80 was spent on labour at the Municipal Home, which was given one coat of paint and had a coat of roofing cement applied to the roof. We also made a few minor repairs to the furnace and inside walls and repaired broken shingles and outside woodwork. The total cost for this work at the Poor House for both labour and material amounted to \$277.89.

#### WHARVES

Gross expenditure.....\$ 498.84

This expenditure is made up of \$465.00 the contract price paid to John Simms for repairing the Brick Whare House on the wharf. This Whare House was destroyed by the ice flow in the spring. The additional expense of \$33.84 is for survey work and drawing up of plans required by the Government when they took over the City Wharf property. The City this year deeded this Wharf property from the lower side of Carleton Street to the Upper side of Regent Street and including the wharves, whare house site and whare house to the Federal Government. The Federal Government are making extensive repairs to this wharf.

#### SEWERAGE DOMESTIC

Gross expenditure.....	\$ 2,167.63
Credits.....	721.70
Net expenditure.....	<u>1,445.93</u>

The credit of \$721.70 is made up of work done on Domestic Sewers for private citizens and has been billed to those citizens.

The gross expenditure is made up as follows:-

Payroll.....	\$ 1,223.69	
Material Charge.....	<u>943.94</u>	<u>\$2,167.63</u>

Four new sewer extensions were made this year.

MacLeod Avenue, where the 8" Main sewer was extended 246 feet in a westerly direction.

Alexandra Street from Winslow Street, in a westerly direction a distance of 75'6".

Winslow Street between Lansdowne Street and Grey Street a distance of 250 feet.

Beaverbrook Street from Regent Street in an easterly direction 251 feet.

This year 27 new customers were connected to the City Sewerage system and four old surfaces had to be dug out and relaid on account of growth of roots in the pipe.

The entire Domestic Sewerage System was flushed out three times during the year. Once in May, once in August and once in September.

The labour charges for these flushes were respectively \$134.05 and \$158.84 and \$94.88.

From January 23, 1934 to March 31, 1934 the main sewer on Argyle Street between Westmorland and Northumberland Streets had to be thawed four times. Three other Domestic Sewerage Surfaces had also to be thawed out.

#### SEWERAGE CAPITAL ACCOUNT

Gross expenditure.....	\$ 10,532.01	
Credits.....		6.30
Net expenditure.....		<u>10,525.71</u>

This expenditure was financed by a \$10,000.00 bond issue.

The credit above shown is for a piece of 24" Terra Cotta pipe sold by the Chestnut Canoe Factory.

The net expenditure is divided as follows:-

Labour.....	\$ 4,483.22	
Material.....	<u>6,042.49</u>	<u>\$10,525.71</u>

This Sewerage Capital Account item consists of construction of a surface sewer laid on Smythe Street. This sewer took the place of an old wood sewer which had in the last few years failed in a number of places. The sewer ran from the river south to Victoria Street a total length of 2,997 feet and consisting of 2,332 feet 24" Terra Cotta pipe, 509 feet of 36" concrete pipe and 156 feet of 20" pipe. From the river to Aberdeen Street is 24" Terra Cotta pipe. From Aberdeen Street to about 100 feet south of Argyle Street is 36" concrete pipe and the next 100 feet is of 24" Terra Cotta pipe. All the remainder of the sewer to Victoria Street is of 20" Terra Cotta pipe. The 36" concrete pipe and 20" Terra Cotta pipe was salvaged from the old sewer and relaid in the new sewer at a proper grade. Besides the amount relaid, 137½ feet of 20" Terra Cotta pipe was salvaged from the old sewer.

This sewer was laid using a minimum grade of .25, that is, 3" a 100 feet, although for the first 400 feet we were able to get a considerably better grade. This grade enabled us to drop the old sewer at the Valley Railway Crossing, three feet. The sewer was carried south under the Railway track to Victoria Street. A branch was laid east under Smythe Street at Victoria Street. This sewer besides being much more efficient for surface water will be I think, a considerable help to the sub-drainage in this back area.

Practically all the excavation, except the last 600 feet was dry. For the last 600 feet we had some trouble with wet clay excavation. However, on account of the depth of the sewer and the sandy nature of the material through which we passed the entire length of the sewer had to be timbered and sheathed.

The total cost of this sewer for all labour and material charges was 3.51 per lineal foot.

The total cost for labour charges only, that is, for digging, pipe laying, back filling, surveying and all labour of whatever kind pertaining to the job was 1.49 per lineal foot.

### WATER

The expenditure in this department is divided into two headings, namely, Water Ordinary and Water Pumping Station.

### WATER ORDINARY

This account takes in all expenditures for water outside the Pumping Station and Pumping Station grounds.

Expenditure under this heading is made up as follows:-

Gross expenditure.....	\$ 7,359.85
Credits.....	891.23
Net expenditure.....	<u>6,468.62</u>

The credits are made up of work done for and material sold to private parties when installing water services over ground other than City property. There was one particularly large item some \$680.65, which is the total cost of an 8" connection for a sprinkler system, put in from Saint John Street to the Provincial Government Building.

The gross expenditure is made up as follows:-

City Payrolls for hydrants.....	\$ 305.14	
City Payrolls for meters.....	976.06	
City Payrolls for Water ordinary.....	<u>1,966.31</u>	
	<u>3,247.51</u>	
Material and other charges.....	<u>4,112.34</u>	<u>\$7,359.85</u>

We have in the City some 1,057 meters in service and 485 customers on flat rate.

The labour cost this year per meter for reading, repairing and testing, etc. is 92¢..

All meters are read four times a year, but bills are sent out twice a year. We have also about thirty customers whose meters are read once a month, although they are billed only twice a year.

Meters found stopped during the year.....	66
Services metered first time this year.....	21
New meters purchased this year.....	25
Meters in stock room at 1st. of January 1935:-	

5/8" meters repaired and fit for service.....	0
5/8" meters that can be repaired and made fit for service.....	6
New 5/8" Leeds Meters.....	5
New 1" meter.....	0

### Distribution System:-

New Water Services put in this year.....	21
Old Water Services dug up and repaired or relaid.....	16
Services which froze and had to be thawed.....	32



This year we started using Copper Tubing in place of lead or iron for water services.

Eighteen of the frozen services were thawed by the Steam Thawing Machine and fourteen by the Electrical Thawing Machine.

The labour charges for thawing by Steam, amounted to \$15.67 per service.

Labour charges for thawing with Electrical machine amounted to \$2.99 per service.

This year we purchased a boiler from the Canada Construction Company. This was a second hand boiler but in good condition. We paid \$183.50, which was one half the listed price of the boiler, and installed it in place of the worn out one on the Steam Thawing Machine. We also purchased a thawing transformer at a price of \$286.87. This along with necessary wire, switches etc., and a covered sled to haul it around, made an Electrical Thawing Machine at a total cost, for labour and material of \$480.00.

A new Chevrolet  $\frac{1}{2}$  ton delivery truck with body was purchased for the Water Department from J. Clark & Son at a price of \$755.00. The City were made an allowance of \$105.00 for their old 1929 model truck, making the cost to the City of this new unit, \$650.00

TABLE SHOWING COMPARATIVE YEARLY COSTS, WATER ORDINARY.

Year	Labour	Material	Gross Expenditure	Credits	Net Expenditure
	\$	\$	\$	\$	\$
1929	3,236.77	2,203.13	5,439.90		5,439.90
1930	3,647.97	2,313.18	5,961.15		5,961.51
1931	3,836.33	4,376.87	8,213.20	279.65	7,933.55
1932	2,666.30	1,854.06	4,520.36	122.47	4,397.89
1933	2,333.25	1,604.17	3,937.42	30.27	3,907.15
1934	3,247.51	4,112.34	7,359.85	891.23	6,468.62

WATER PUMPING STATION

This cost includes all labour and material used at Water Pumping Station and grounds.

Gross expenditure.....	\$ 15,999.50
Credits.....	3,532.78
Net expenditure.....	12,466.72

This credit of \$3,532.78 is made up as follows:-

Coal charged to Pumping Station and sold to workmen and other City Departments.....	\$	57.78	
Water charged to Sewerage Domestic for flushing Domestic Sewers.....		65.00	
Fire Department for hydrant rental on 150 hydrants at \$20.00.....		3,000.00	
Water for City Hall building.....		50.00	
Water for Municipal Home.....		25.00	
Water for City Yard.....		10.00	
Water for old street light building Carleton Street....		25.00	
Water used by Roads and Streets Department to sprinkle streets and flush surface sewers.....		250.00	
Water used in Wilmot Park.....		50.00	\$3,532.78

The gross expenditure is divided as follows:-

City Payroll for salaries of Engineer at Pumping Station.....	\$	5,022.00	
Work done by other City Employees in and around Pumping Station.....		414.07	
Total Payroll.....		5,436.07	
Material and Workmen's Compensation.....		10,563.43	\$15,999.50

During the year 1934 the Pumping Station and Pumping Station grounds as well as all machinery, etc. within the Pumping Station was as usual maintained in good order. Lawns were rolled and reseeded and kept trim during the summer. All woodwork on the outside of the building was repaired and given a coat of paint, the flat roof on the Main building was given a coat of roofing cement and gravel.

The usual periodical cleaning of coagulating basins and pump well, hauling chemicals, etc., was carried on this season. A relief man was at the Station for eight weeks during the summer, while the four regular Pumping Station employees had two weeks vacation.

The material cost of \$10,563.43 is divided as follows:-

Item #1	Light and power supplied by Maritime Electric Co. 294,617 K.W.H.....	\$6,620.65	
Item #2	Transformer charges.....	151.92	
Item #3	Lime, 9543 lbs. Average price \$2.43 F.O.B. Fredericton.....	232.73	
Item #4	Alum, 67200 lbs. Average price \$1.21 F.O.B. Fredericton.....	813.12	
Item #5	Coal 276 tons (40.9 tons sold to other City Departments).....	1,297.06	
Item #6	Fuel Oil (none).....	000.00	
Item #7	Engine Oil, Renown, 32½ gals.....	23.19	
Item #8	Motor Oil (none).....	000.00	
Item #9	Gasoline, 100 gallons.....	28.00	
Item #10	Maintenance and repairs to building and machinery.....	202.09	
Item #11	New Installations.....	000.00	
Item #12	Supplies, packing rags, etc.....	31.54	
Item #13	Stationery, forms, charts, etc.....	58.07	
Item #14	Workmen's Compensation Board.....	101.15	
Item #15	Dr. Hagerman's Salary.....	855.00	
Item #16	Hoisting chemicals.....	94.00	
Item #17	Miscellaneous, telephone, etc.....	54.91	\$10,563.43

COMPARISON OF WATER PUMPED AND COSTS FOR LAST NINE YEARS

Year	I.G. Water Pumped	Yearly Gross Expenditure at Pumping Station	Pumping Station Costs per 1000 gal.	Total Yearly Water costs	Total Yearly cost per 1000 ga
		\$	¢	\$	¢
1926	206,076,526				
1927	198,168,000	18,040.65	9.10 cents	24,636.62	13.0 cents
1928	192,890,000	18,245.05	9.46 "	26,122.73	13.5 "
1929	195,590,000	17,722.44	9.00 "	32,142.34	16.4 "
1930	204,405,000	16,791.22	8.21 "	22,752.37	11.1 "
1931	187,164,000	16,425.55	8.8 "	24,359.10	13.0 "
1932	171,032,000	16,915.58	9.9 "	21,313.47	12.5 "
1933	175,050,000	16,483.67	9.5 "	20,390.82	11.6 "
1934	202,720,000	15,999.50	7.9 "	22,468.12	11.1 "

This year to deliver 1,000 Imperial Gallons of water to the City Mains took 1.45 K.W.H.

The Pumping Station cost this year to deliver 1,000 Imperial Gallons of water to the City Mains is 7.9¢.

The total cost of delivering 1,000 Imperial Gallons to the City Main and making it available to the customer is 11.1¢.

This cost includes all water costs excepting collection of water bills and other overhead charges included in City Government costs, and bond issue and sinking fund.

Results of filters and chemical treatment for year 1934.

This is well shown by the following table from Dr. Hagerman's report, under whose direct charge this work is carried on. This year as usual, very satisfactory results are shown.

# Summary of Water Reports 1934

## Fredericton Water Supply.

### Bacteria Count, Agar, 2 Days, Colonies per c.c.

Date	Raw Water	Effluent	Tap Water	Per Cent Removal
Jan. 7/34	500	1	4	99.8
" 19	1500	1	1	99.9 plus
" 23	600	1	1	99.8 "
Feb. 10	650	1		99.9 "
" 28	6000	2	1	99.8 "
Mar. 5	700	0	2	100.0
" 18	1100	1	5	99.9
" 27	500	0	2	100.0
Apr. 11	1600	1		99.9 "
" 18	5000	0		100.0
" 22	5500	4	11	99.9
May 14	1000	1	4	99.9
" 20	1100	5	3	99.5
" 31	600	1		99.8
Jun. 9	280	2	3	99.3
" 16	1150	3	10	99.7
" 23	2000	1	5	99.9
July 5	4000	1		99.9
" 19	1400	3	2	99.7
Aug. 11	4000	1		99.9
" 27	600	1	3	99.8
Sep. 11	600	0	1	100.0
" 21	2500	0	0	100.0
" 25	550	1	0	99.8
Oct. 18	6000	2	4	99.9
" 22	5500	2		99.9
" 30	4800	7	4	99.9
Nov. 10	3000	5		99.8
" 18	2200	5	5	99.7
Dec. 12	4000	0		100.0
" 23	3300	5		99.8
" 31	450	1	3	99.8
	<u>72680</u>	<u>59</u>	<u>74</u>	<u>99.8</u>
Average	<u>2271</u>	<u>1.84</u>	<u>3.3</u>	<u>99.87</u>

These results should be considered as very satisfactory and they compare very favourably with results obtained in previous years. As a matter of fact I believe they indicate a more uniform operation of the purification of the water supply than we have ever had in the past years. This may be due to the closer attention paid by the operators at the plant to the carrying on of the various duties involved. The usual seasonal variations were observed in the raw river water. The treatment of the water was similar to that practised for many years.- Alum combined with chlorine when the water is turbid or highly coloured and chlorine alone (with alum flocculation of water in each filter unit before the filter is put in operation) during parts of the months of December, January, February and March when the raw water is very clear and is not highly enough coloured to be objectionable.

Fredericton, N.B.  
January 1935.

(Sgd) H.H. Hagerman

Charts showing water pumped and material and machinery used in pumping.

Total Hours Month	Month of	Gals. Water Pumped	Coal Lbs.	K.W.H.	Hours Power Supplied by			Fuel and Lubricants			Low Lift Pump Hours Run		Service Pumps.		Re- marks.
					Mari- time	Oil Eng.	Gas	Gals. Fuel Oil	Pts. Eng. Oil	Gals Gas Used	#1 Motor	#2 Motor	#1 Motor	#2 Motor	
744	<u>1933</u> Dec.	14,495,000	51,850	22,157	744			32½	4	557		744	2'27"	2	
744	<u>1934</u> Jan.	16,870,000	59,750	24,782	744		2	33	11	604		744	12'5"		
672	Feb.	14,315,000	57,150	25,903	672			28½	4	588½	3	672	20"		
744	Mar.	19,040,000	41,500	24,536	744			34½	4	649½		742	3'05"		
720	Apr.	17,385,000	28,050	26,225	720			31	4	600½		718¾	2'15"		
744	May	19,790,000	13,550	24,175	744			33½	5	672		744	7'35"		
720	June	16,845,000	8,000	24,607	698	22 ½		31	5	585¾		688½	1'30"		
744	July	18,225,000	450	24,015	744	1		34	8	626¾	7	742½			
744	Aug.	17,980,000		25,482	744			33½	4	617		742	2'		
720	Sept.	18,170,000	600	27,004	720			28	4	618¾	11½	720			
744	Oct.	15,930,000	19,250	23,600	742	2		30	6	558-10		726¾	1'45"		
720	Nov.	13,655,000	34,400	22,131	720			33	4	505½		719	1		
8760		202,720,000	314,550	294,617	8736	24½	3½	110	63	7162.55	14½	8703½	34.47	9	

Before concluding this report I wish to insert the following table, which shows the principal purchases of material used by the departments herewithin reported on.

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

Material	Amount purchased 1934	Average price F.O.B. Fredericton	Amount in stock.
4" Soil Pipe	135 Feet	50¢	0
5" T.C. Pipe	1122½ Feet	28.8¢	43 pipe
6" T.C. Pipe	87 Feet	30.6¢	0 pipe
8" T.C. Pipe	1047½ Feet	52.2¢	29 pipe
12" T.C. Pipe	0		0
15" T.C. Pipe	0		0
20" T.C. Pipe	0		0
24" T.C. Pipe	2324½ Feet	\$2.10	137½ feet
30" Corrugated Iron Pipe	0		0
Tile	1134 Feet of 6"	9¢	0
	96 Feet of 4"	7½¢	0
Portland Cement	366 Bags	75¢ to 80¢ per bag	0
Dynamite	55 lbs.	34¢ to 40¢ per Lb.	0
Brick	15525	\$15.90 to \$19.08 per 1000	0
Stone (Field Stone)	495 cu. yds.	50¢ to 70¢ per cu.yd.	0
(Trap Rock)	532 tons	90¢ per ton	532 tons
Gravel (River)	0		0
(Pit)	345 cu. yds.	\$1.35 per yd.	8 yds.
Calcium Chloride	5-3/20 tons	\$31.20 per ton	2 bags
7" Road Machine Blades	51	\$6.05	14
Lime	9543 Lbs.	\$2.43	1000 Lbs.
Alum	67200 Lbs. = 33.6 tons	\$1.21 per 100 Lbs.	15 tons
Coal	12 cars = 565.24 tons	\$4.35 per ton	45 tons
Colas	1462 Gals.	19¢ per gallon	
	3491 Gals.	17¢ per gallon	
	4725 Gals.	14¢ per gallon	
Tubing, Copper			
5/8"	1155 Feet	\$11.75 per 100 Feet	
¾"	90 Feet	\$17.00 per 100 Feet	
8" C.I. Pipe	16265 Lbs.	\$55.00 per ton	
1" Galvanized Pipe	310'7"	\$12.74 per 100 Feet	
Lumber	17,733 sup. Feet.	\$21.00 to 26.00 per 1000	

All of which is respectfully submitted

February 15th, 1935.

City Engineer.