

# CITY ENGINEER'S REPORT.

CITY ENGINEER'S OFFICE, CITY HALL.

## CITY WORKS DEPARTMENT.

### COMMITTEE ON WORKS, 1906-1907.

R. T. MACILREITH, Mayor, *Chairman.*

ALDERMAN G. A. TAYLOR,

ALDERMAN W. H. CAWSEY.

#### OFFICERS :

F. W. W. DOANE, M. CAN. SOC. C. E., *City Engineer.*

H. W. JOHNSTON, C. E., *Assistant City Engineer.*

T. W. J. LYNCH, *Assistant.*

#### WATER WORKS.

EWEN MORRISON ..... *Foreman.*

D. P. O'NEILL ..... *Plumbing Inspector.*

JOHN E. BURNS ..... *Water and Meter Inspector.*

#### STREETS, SEWERS, &c.

JOHN McDONALD ..... *Foreman.*

JAMES DOWNIE ..... *Assistant Foreman.*

#### OFFICE.

JAMES J. HOPEWELL ..... *Clerk of Works.*

MISS MINNIE HUNTER ..... *Stenographer.*

27816987

## CITY ENGINEER'S REPORT

CITY ENGINEER'S OFFICE, CITY HALL,

HALIFAX, N. S., May 1st, 1907.

*To His Worship the Mayor:*

SIR,—I have the honor to present my sixteenth annual report covering the public works of the City under the supervision of the City Works Department during the civic year ending April 30th, 1907.

## WATER WORKS.

Amt. of funded debt on Water Account .....	\$1,056,600.00
“ transferred from revenue .....	36,000.00
“ of debt redeemed by Sinking Fund .....	8,000.00
“ “ “ revenue .....	30,000.00
“ “ “ premium on loans .....	4,073.33
	<u>\$1,134,673.33</u>
Amt. expended to April 30th, 1906....	\$1,142,025.98
“ “ May 1st, 1906, to April 30th, 1907 .....	\$15,426.64
“ repaid May 1st, 1906, to April 30th, 1907..	1,166 40
	<u>14,260.24</u>
Total cost of works to date .....	<u>\$1,156,286.22</u>
Amt. paid into Sinking Fund in excess of debt redeemed	\$17,750.00

## COST OF MAINTENANCE, 1906-1907.

Interest .....	\$47,142.00
Sinking Fund .....	2,625.00
Maintenance of System .....	28,398.87
	<u>\$78,165.87</u>

The cost of maintenance for the year is 6.77 per cent. of the total cost of the works to date, interest and Sinking Fund being 4.30 per cent.

#### NEW WORK.

There were seven petitions for the extension of main distribution pipes presented to the Council and fourteen orders passed.

Fifteen extensions were made, one of which, measuring 141 feet, was in the low service district. The high service extensions aggregated 8,060 feet, making the total length of mains laid during the year 8,201 feet. The total now in use is  $72\frac{1}{2}$  miles.

Thirteen new main stop valves and nine hydrant valves were placed in service. The total number in use is eight hundred and forty-four.

Five new hydrants were installed, making the total four hundred and thirty-three. Four old hydrants were replaced with improved City design frost jacket hydrants with steamer nozzle.

Four thousand one hundred and forty-nine feet of pipe was laid for 117 new services, and 6,475 feet of old service pipe was renewed.

The Chebucto Road and North Street mains were laid in the sewer trench. The Gottingen Street main was extended to Rockhead Prison, when cold weather stepped the work. The Coburg Road main was extended to Bircham and Bloomingdale and northwardly and southwardly along Oxford Street. This supply is from the high service system, although Coburg Road below Oxford Street should be supplied from the low service. While the fire service on Oxford Street would not be efficient if drawn from the low system there is no question that this district should receive its house supply from that service.

The 24 inch and 26 inch Venturi meters were installed, registers and chart recorders set up and the concrete foundation for the meter house constructed.

#### CLEANING MAINS.

Two three-inch mains were cleaned by hand at a cost of 30 4/5

cents and six cents per foot respectively. The high service supply main was cleaned on September 19th at a cost of  $1/18$  of a cent per foot. The new hatch box at the junction of the 20-inch and 15-inch pipe was used for the first time, and the joints were made good in one hour. The 24-inch low service main was cleaned on November 8th, the cost being about  $1/8$  of a cent per foot.

#### THAWING SERVICE PIPES

The electrical thawing apparatus was used for the first time and did good service. Thawing began on January 19th, and from that date to April 12th it was used 311 times, an average of  $4\frac{1}{3}$  for every working day. The City Electrician reported the average time per thaw 11 minutes, average cost, including labor, \$ .66. These figures tell their own story and show the saving not only in cost, which is important, but also in time which is of the greatest importance to householders. The use of the electrical outfit also saves the street surface, makes excavations unnecessary, and obviates the liability of a second freezing, which in the past was difficult to prevent where an opening was made.

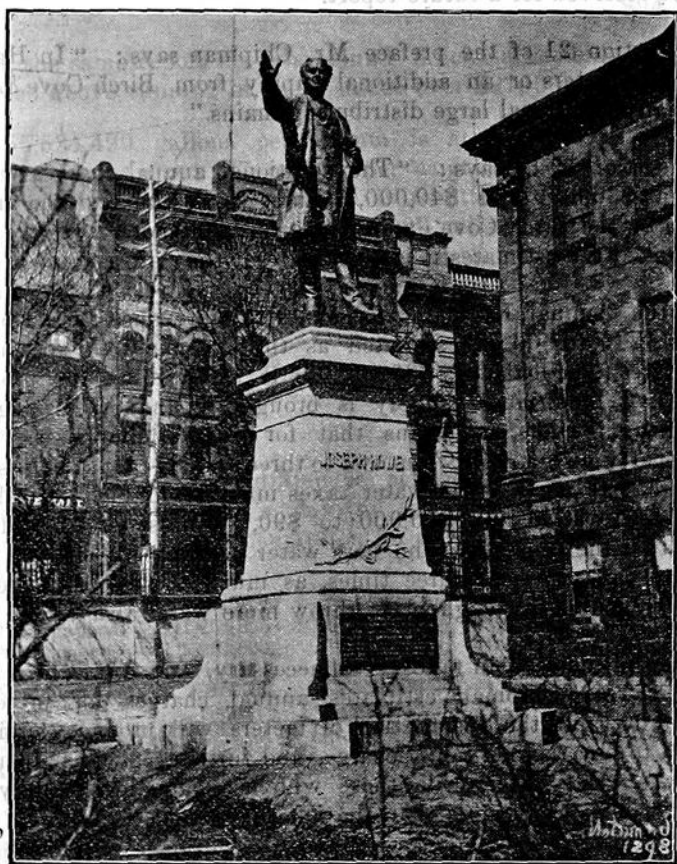
#### PRECIPITATION.

The number of days on which precipitation was recorded was 194 and the total 64.139 inches, about 115 per cent. of the mean.

Long Lake overflowed in February, March, April, May and June. The surface of the lake on October 26th was 6 feet  $3\frac{1}{2}$  inches below the waste weir. Spruce Hill Lake reached its highest level for the year, 364.00 on May 31st. On January 3rd it was 4 feet 3 inches below waste weir level.

#### EELS.

About the beginning of the year eels began to get into the service pipes, and it was at first thought that carelessness on the part of the gate-house keeper was the cause. Fortunately that official made the discovery that the eels were throwing themselves out of the water and catching the top of the screen over which they wriggled, although it was over two feet above the water. A guard board inclined over the water was placed on the top of each screen and no eels have been found in the pipes since. All the eels taken out were large, and a great many were washed out through the hydrants numbers of them being caught in the street sprinkling carts.



MONUMENT TO JOSEPH HOWE IN PROVINCE BUILDING SQUARE.

## MR. CHIPMAN'S REPORT.

Mr. Willis Chipman's report was not presented to the Council until April 4th, 1907, and as the printed copies are not completed and ready for distribution anything further than a brief comment must be reserved for a future report.

In section 21 of the preface Mr. Chipman says: "In Halifax it is either meters or an additional supply from Birch Cove Lakes, with many additional large distributing mains."

In section 19 he says: "The additional annual charges will be between \$30,000 and \$40,000," while he estimates the annual charges on the Birch Cove extension at \$22,000 more. As we have not checked the estimates it is assumed that they are correct.

In the Annual Estimates for Water Maintenance passed by the Council \$45,367.00 is estimated as the income from special and meter rates; the balance, \$30,400.00, is assessed on the property owners. If additional supply is brought in and other suggested expenditures made, it means that for every dollar assessed on the property owner now from two to three dollars must be assessed in future. It means that water taxes must be doubled or trebled; that instead of \$30,400, \$70,000 to \$90,000 must be assessed. It means that the consumer who uses water legitimately will be compelled to pay twice, or three times, as much as he does at present, simply to enable his neighbor to throw more water away.

Such an increase in taxes is unnecessary, and would be a great injustice. Mr. Chipman estimates annual charges for meters at \$16,000.00, and the installation of meters will produce sufficient revenue to pay the additional charge, and further, it will be paid by those who waste water, while those who use water legitimately will not have to pay any more than they do now.

In proof of the above take the first 100 (not including any bill over \$100.00) from the meter inspector's report appended. These bills vary from 32 cents to \$93.26. The total quantity used is 7,936,207 gallons—7,000 services at the same rate, 555,534,490 gallons.

Revenue at 15 cents per 1000 gals. (the present rate)...	\$ 83,330.17
Fire rate as at present.....	19,000.00
	-----
	\$102,330.17
Cost of maintenance last year.....	\$78,165.87
Estimated cost maintenance meters (Chipman)	16,000.00
	-----
	\$94,165.17

In the same report may be found much larger bills than those included above running in one instance over \$2700.00.

555,534,490 gallons per annum is at the rate of 1,522,012 gallons a day or about 37 gallons per capita. Is there any danger of the consumption being reduced below that quantity? Is there any probability that less than 3,000,000 gallons will be used legitimately in which case  $7\frac{1}{2}$  cents the lowest rate at present will produce ample revenue?

Under existing conditions the daily consumption varies more than 3,000,000 gallons. That means that the extra waste alone, if paid for at the present lowest meter rate, would pay the cost of maintenance.

The minimum consumption is at the rate of about eight and one-half million gallons a day in the month of October. Mr. Johnston reports the consumption for the month of January, 1907, as follows:—

	15" main.	24" main.	27" main.	Total.
Total gallons.....	71,204,000	148,800,000	149,669,000	369,673,000
Average per day..	2,297,000	4,800,000	4,828,000	11,924,613
Maximum " ..	2,445,000	5,256,000	5,070,000	12,761,000
Minimum " ..	2,192,000	4,578,000	4,498,000	11,320,000

The table appended shows the daily consumption from December to April.

In view of the above facts your Engineer is forced to the conclusion that to spend hundreds of thousands to increase the supply that the present waste may continue unchecked would be a criminal misuse of the public money.

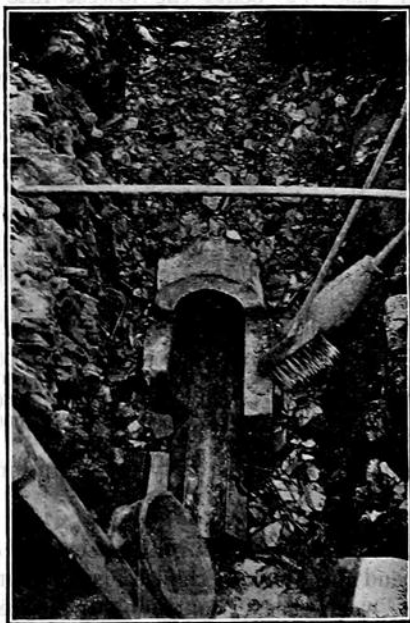
#### DOULL PROPERTY.

The late John Doull owned about sixty acres of land in the

vicinity of Chain Lakes which should belong to the City, as it is on the water shed of the low service supply, and some portions of it abutting on the lakes. The City endeavored to purchase it some years ago, but failed to agree with Mr. Doull on the price. Recently it was offered for \$650.00, and at the meeting of Council yesterday the offer was accepted.

#### SEWERS AND DRAINS.

Fourteen sewers were constructed, aggregating 8,605 feet, the average cost per lineal foot being high, as the work included the relief sewer across the Common. The total cost of the latter as shewn by the published statements is \$38,209.60, which exceeds the estimate. But it must be remembered that the estimate was made before the increase in wages, which accounts for the greater cost.



12" x 18" Sewer constructed with Concrete Blocks.

The length of sewers constructed under the Sewer Act from 1890 to 1906, inclusive, is 127,487 feet, or 24 miles.



Cost.....	\$619,051.90
Amount assessed on property.....	250,572.00
Balance paid by City.....	\$368,479.90

For the construction of the Vernon Street sewer street was deeded by F. C. Stevens, and for Dublin Street sewer deed was obtained from the Veith estate.

Thirty-four Concrete catchpits were constructed, making the total 803.

One hundred and eighty-two permits were issued for laying, cleaning or repairing drains.

The Plumbing Inspector reports a total of 329 applications for permission to do plumbing work and 309 certificates for completion recommended. He made 911 plumbing inspections.

The Board of Plumbing Examiners held only one meeting, and no journeyman received a certificate.

#### INTERNAL HEALTH.

One two-horse sprinkler was constructed in the shops and all home-made sprinklers have been replaced by the Soud-baker Sprinkler. A spare cart for removal of ashes and garbage was also constructed.

Four carts were operated by contract—Wm. Parsons, Sr, at \$3.50; G. A. Thompson, \$3.50; Claude Walsh, \$3.65; Samuel Wethers, \$3.80.

Patrolmen were employed during the autumn by the merchants and business men on some blocks of Barrington, Granville, Hillis and Sackville Streets to keep the pavement clean. This work will be taken over to-day by the City Works Department, an appropriation for this service having been included in the estimates.

#### TEAMS AND STABLES.

The returns of the Clerk of Works show that the feed for the fourteen horses cost \$3.26 per horse per week, sundry items

of maintenace \$0 58, stable foreman \$0.71. The double teams cost less than hired teams or two single teams and do more work, hauling three times the usual load of a single team. They work every day of the year except Sunday, not excepting holidays.

#### STREETS.

The \$150,000 appropriation for sidewalks was available, but in consequence of the pressure of other work and the scarcity of skilled men only  $\frac{4}{5}$  of a mile of cement concrete sidewalk was laid. A No. 6 Chicago Improved Cube Batch Concrete mixer was purchased for this work at a cost of \$673.00 and construction will be pushed rapidly during the coming season until all work ordered is completed. All work done last year was in the business district and principally where rendered necessary by the paving operations. The cost varied from \$1.27 per square yard to \$2.15.

Tenders for paving were invited at the beginning of the season. All petitions received were for Bitulithic having been circulated by an agent of the Warren Bituminous Paving Company of Ontario. The Barber Asphalt Paving Company, however, tendered for Bituminous Macadam or sheet asphalt on a five inch concrete base with ten year guarantee and twenty five cents per yard retainer at \$2.21 per square yard. The Council decided to award the contract to the Warren Company for two-inch bitulithic on a four-inch concrete base with six-inch base over new trenches and soft spots, ten year guarantee and four thousand dollars retainer for \$2.69 per square yard.

The total area of Bithulithic laid was 26,469.30 square yards the length of pavement 1.973 miles. The Tramway track allowance was paved with scoriae blocks, cement grouted, on a six-inch concrete base under a contract made by the Tramway Company with the Sicily Paving Company.

The City contract required completion by Sept. 1st, 1906, under a penalty of \$100.00 per day. The paving covered by the contract was not finished until September 26th, but the Council decided to exact a penalty of \$1500.00 only.

The work done, including the principal part of Barrington, Granville, Hollis, George, Duke, and Gottingen Streets and Spring

Garden Road, as shewn in the statements appended, with new sidewalks where needed, has made a wonderful improvement in the appearance of the business districts, and marks an epoch of progress which succeeding civic governments may fail to duplicate.

The extra work was a heavy tax on the engineering staff, and it will be some time before work in arrears can be overtaken. Fortunately the services of Professor Sexton were available for about three months of the working season.

A new grading scheme for unaccepted streets was adopted by the Council and became law. Under its provisions, on a petition from the owners of not less than two-thirds of the property fronting on any unaccepted street such street may be graded by the City at the expense of all the property owners. On completion of the grading the street may be accepted by the City.

The completion of the widening of Agricola Street was postponed until 1907-8 so that there would be ample time for subsidence.

John MacInnes & Son offered to sell for \$400.00 a piece of land on the west side of Water Street, at the north corner of Bishop Street, for the purpose of widening and straightening Water Street. Mr. A. P. Calnan and Miss Kate F. Hill offered to give the land required in front of their property, Nos. 70 and 72, if the City would move the houses back. These offers were accepted and a contract made with Daniel Murphy to move the houses back for \$750.00.

Tenders were invited for completing the grading and other work made necessary by the widening of Quinpool Road, but no tenders were received.

The contract for stone for the sheds was awarded to Samuel Walker at two cents, and for the crusher to George Harvey at three and one-half cents per bushel.

Repairs on tar concrete sidewalks cost \$1,744.72.

#### STREET RAILWAY.

Double track extensions since those last reported are: Gottingen Street between Cogswell Street and Falkland Street; Barrington

Street between Duke Street and Bell Street; Spring Garden Road between Pleasant Street and Queen Street, and from Park Street to Tower Road; Coburg Road between Oxford Street and Robie Street. A single track was laid on Oxford Street from Coburg Road to South Street. Unbroken main line cross-overs were laid on Spring Road at Tower Road and on Barrington Street at Bell Street.

#### PUBLIC BATHS.

The Beach Bath was opened July 1st and closed September 21st. The number of bathers:—

Males .....	3702
Females .....	1135
Total .....	4837

The expenditure was \$390.31. Receipts \$204.15.

The Floating Bath was opened July 7th and closed September 15th.

The attendance was:—

Males .....	2301
Females .....	280
Total .....	2581

Expenditure \$511.78. Receipts \$25.50.

At the beach the female attendance exceeded that of 1905 by 11 while the male attendance decreased 897.

The attendance at the floating bath decreases every year and it is more expensive to maintain than the beach. It should be abandoned and if a suitable site can be obtained in the north end a beach bath should be constructed. The sand beach north of the Round House and the shore south of Africville are possible locations if the distance is not too serious a disadvantage.

#### BUILDINGS.

384 permits were issued 89 being for new buildings and 295 for repairs, alterations, renewals, additions, etc.

The estimated value of new buildings for which permits were issued is \$526,015.00.

Violations of the law were reported to the City Solicitor as follows:—

Date of report.	OWNER.	LOCATION.	VIOLATION.
1906. May 23.	Alfred Gregoire....	Barrington St....	Doing more work than authorized by permit.
"	J. K. Hubley.....	Rear 206 Lockman St....	Erected a building and installed boiler without permit.
"	Mrs. Sarah Huggan.	159-61 Lockman St.....	Putting in shop front without permit.
"	J. D. Spencer.....	50 Argyle St....	Wooden structure in building district (Second report.)
June 22.	Alfred Gregoire....	Barrington St....	Doing more work than authorized by permit. (Second report.)
Oct. 19.	G. J. Hiseler.....	179-181 Gottingen St.....	Erecting new building without permit
"	H. McC. Hart.....	Lockman St.....	Erecting buildings without permit.
Oct. 26.	W. A. Adams.....	Lockman & North Sts., S. W. cor.	Alteration without permit.
"	A. J. Matthews....	Campbell Road..	Constructing an addition and operating steam engine without permit.
"	Davis & Fraser....	Lockman St.....	Operating smoke house without permit.
"	R. M. Lockhart...	Quinpool Road..	Altering stable and other alterations to a building without permit.
"	F. W. Bowes.....	Argyle St.....	Brick addition to Carleton House without permit. Work not in accordance with Building Act.
Nov. 1.	J. F. Corston.....	Henry St.....	Constructing an addition without permit.
Nov. 23.	A. McAndrews....	West Young St..	Erecting building without permit.
Dec. 12.	G. J. Hiseler.....	27 Brunswick St.	Erecting a brick wall not in accordance with Building Act.
April 30.	J. T. Brine.....	Kane St.....	Erecting a building without permit.

#### CITY PROPERTY.

The exterior of the town clock was repaired and made weather-proof and F. C. Ryan was given a contract to keep it and the City Hall clock in operation.

The western half of the north retaining wall at the Grand Parade was taken down and rebuilt and the stable under the Parade completed

except the heating. It was used to shelter the driving horses during idle time while the cold weather lasted.

Architect H. E. Gates prepared a plan for a granite cabmen's shelter at the south-west angle of the Parade, but the proposed scheme was abandoned. It was designed to harmonize with the surroundings and was to be heated and provided with sanitary fixtures and telephone.

A fountain was erected on the Parade to replace the temporary spray in use since the basin was completed.

Longard Bros. had a contract to remodel the heating system of the City Hall which has not been satisfactory since it was constructed originally. The change has made a decided improvement.

An electric motor was installed at the shops and the old gas engine which had outlived its usefulness was taken out.

A contract was made for an iron fence on concrete piers to replace the old wooden fence around the Public Gardens and the erection will be commenced in a few weeks.

A contract for the construction of a new fire station on the corner of Morris Street and Robie Street was awarded to George B. Low for \$17,616.00. The building is to be of solid concrete, reinforced where necessary, according to the design of W. B. Fidler, of the Fire Department. Construction work will begin immediately.

The Lord Bishop of Nova Scotia petitioned the Council to sell a part of the Old Exhibition Grounds as a site for a proposed Church of England Cathedral. At a meeting held June 28th, 1906, the Council decided to sell six lots at the corner of Morris Street and Tower Road for \$18,000, subject to certain restrictions. The land has not been transferred to date.

The Council decided to purchase the triangle at the intersection of Duffus Street, Longard Road and Lady Hammond Road, the Tully property south of Africville and Stayner's Wharf.

#### EXPENDITURE.

The report of the Clerk of Works shows the totals:—

Water Maintenance .....	\$ 79,754	19
Water Construction .....	22,779	29
Sewer Construction .....	77,542	41
Sewer Maintenance .....	793	86
Streets .....	29,292	16
Internal Health .....	19,763	67
Street Lighting .....	20,699	70
City Hall " .....	805	40
Teams and Stables .....	6,222	33
City Property .....	3,016	56
Fire Insurance .....	920	00
Fuel .....	1,125	00
Baths .....	878	75
Telephones .....	264	00
City Plan .....	498	35
Agricola St. Widening .....	128	69
Bedford Row Engine House .....	3,480	36
Morris St. " " .....	45	24
Parade Improvement .....	1,423	68
Public Gardens Fence .....	28	70
City Hall Heating .....	1,522	54
Paving .....	82,566	96
Sidewalks .....	8,693	00
	<hr/>	
Total .....	\$362,244	84
Total labor pay roll .....	139,281	01
Increase in expenditure above 1905 .....	75,581	60
The Tramway Company expended .....	122,000	00

which with the amount spent by the Telephone Company brought the total expenditure under the supervision of the City Engineer to over half a million dollars. The largest City pay roll was for the fortnight ending July 9th, \$8,592.71—478 men, 75 teams.

#### EMPLOYEES.

In consequence of the increased expenditure and the extra demands made upon the Foreman of Streets and Sewers, Mr. James Downie was appointed Assistant Foreman. He has been for some years our most skilful and reliable sub-foreman and has established a record

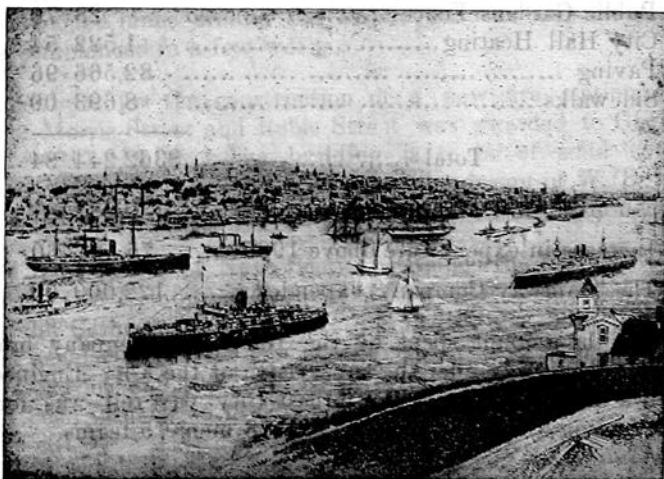
for economical construction which no other sub-foreman has equalled during my term in office. It is a pleasure to see his good work recognized by the Works Committee.

The usual reports and statements are appended.

Respectfully submitted,

F. W. W. DOANE,

*City Engineer.*



CITY AND HARBOR.

In consequence of the illness of the late Foreman and the extra work made upon the Foreman of Streets and Sewers, Mr. James Downie was appointed Assistant Foreman. He has been for some years our most skillful and reliable sub-foreman and has established a record



## REPORT FOREMAN WATER DEPARTMENT.

HALIFAX, N. S., April 30th, 1907.

F. W. W. DOANE, ESQ.,  
*City Engineer.*

SIR,—I beg to submit for your information the annual report of stock belonging to the Water Department, length of main and service pipes laid, length of pipes cleaned and location of houses supplied with water during year 1906,

Respectfully submitted,

E. MORRISON,  
*Foreman Water Department.*

*J. W. ... & Co. ...*

New Mains Laid during 1906.

STREET.			High or Low Service.	CAST IRON MAIN PIPE.				HYD'NTS.		COST PER FOOT IN CENTS.						Total Cost.					
In	From	To		4 inch Pipe—feet.	6 inch Pipe—feet.	8 inch Pipe—feet.	9 inch Pipe—feet.	Joints	Number of Valves.	Length of Pipe feet.	Size of Pipe—Inches.	Number.	Number of Valves.	Percentage of Rock.	Pipes and Specials.		Valves and Hydrants.	Labor and Cartage.	Lead, Gasket, & c.	Dynamite and Fuse.	Incidentals.
Cahot	End of pipe	18 ft. west	H	18				T. & B.					50	60.0		178.5		15.6		254.0	\$ 45 74
Chebucto Road	End pipe W. Windsor	Dublin	H	922					115	6	1	1	50	60.5	11.4	34.0	0.4	0.3		106.0	922 86
Coburg Road	W. of Walnut	835 ft. west.	H				835	Lead	1				90								
	End of 9 inch pipe.	Oxford	H		248					7	6	1	1	90	89.5	15.3	80.3	1.5	3.3	189.9	4178 75
	Oxford	Birchdale	H	1147				T. & B.	3	16	6	2	100								
Creighton	End of pipe N. North	54 ft. north	H	56									100	60.0		196.0		19.3		275.3	148 67
	Black St	213 ft. north	H	213					1				80	60.0	9.4	166.0	0.5	6.9		232.8	495 60
Gottingen	Rockhead Gate	Trachoma Hospital	H	1036									40	61.4		79.2		1.3		141.9	1470 00
Henry	Morris	211 ft. S. of Morris	H	211					1				5	60.0	9.5	36.7	1.4	0.3		107.9	227 67
Kline	Quinpool Road	677 north	H	677					1				100	61.4	3.5	247.5	0.6	18.9		331.9	1945 11
Lane to Infectious Hosp.	Gottingen	171 ft. west.	H	171					1				30	62.6	11.7	97.4	1.1	1.2		174.0	297 63
	W from end 6" pipe.	259 ft. west	H	259									50	41.0		78.4	0.8	0.7		120.9	313 11
Lawrence	End of pipe	1103 ft. west.	H	1103					1				100	60.4	1.8	8.7				71.1	784 74
Miller	Young Avenue	141 ft. west.	L	141					1				100	60.0	7.7	118.0	1.5	4.4		202.2	284 19
North	Dub in	East to end of pipe	H	280									100	64.1	14.2	19.3	0.7			87.7	228.09
Oxford	Coburg Road	466 ft. south	H	466					1	7	6	1	100	61.0	22.3	166.0	0.1	12.5		262.8	1213.63
		351 ft. north	H	357					1				100	60.0	5.7	216.2		21.1		363.5	1065.11
				250	6814	248	835		13	45			5	5							