

REPORT OF CITY ENGINEER

To the Honorable City Council of the City of Worcester:

Gentlemen:—In compliance with Chapter 7 of the City Ordinances, the report of the City Engineer for the year ending November 30, 1920, is herewith respectfully submitted.

On May 24, 1920, the City Council accepted the resignation of City Engineer Frederick A. McClure, who had served the City of Worcester in that capacity continuously since November 1, 1892, said resignation to take effect on June 30th, and on July 6th David M. Earle was elected City Engineer.

FINANCIAL STATEMENT

The total net expenses of the Engineering Department for the past fiscal year were \$13,657.44, as will be seen by the following statement of receipts and expenditures:

<i>Receipts</i>	
Balance November 30, 1919	\$3.95
Annual appropriation (budget)	12,000.00
Additional appropriation	2,000.00
Revenue from Department Service Transfers	35,459.60
Revenue from other sources	772.36
	\$50,235.91
<i>Expenditures</i>	
Salaries of City Engineer and assistants	\$47,178.12
Office equipment and supplies	265.40
Drawing equipment and supplies	121.84
Surveying equipment and supplies	59.00
Automobiles and supplies	1,904.54
Car tickets	360.50
	\$49,889.40
Balance unexpended November 30, 1920	346.51
	\$50,235.91

SEWERS

In anticipation of favorable action by the City Council upon petitions for the construction of sewers in private ways, decrees have been prepared for the taking of 1.56 miles of locations in the following named ways:

SEWER LOCATIONS TAKEN FROM DECEMBER 1, 1919, TO
NOVEMBER 30, 1920

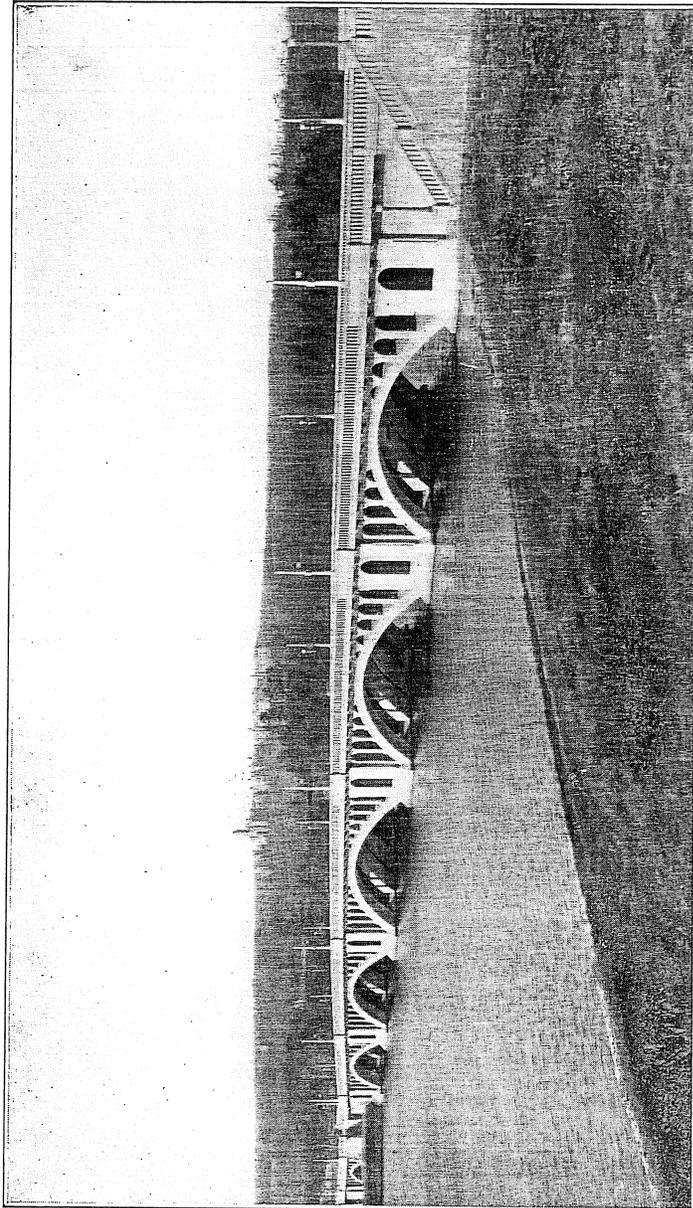
STREET	LOCATION	WIDTH FEET	LENGTH FEET	DECREE ADOPTED
Beaconsfield Road	Northerly end of Street Loc., northerly.....	50 & 25	1,530	May 10
Chesterfield Road	Pleasant St., northerly.	50 & 25	1,210	May 10
Elnwood.....	Midland St., north- easterly.....	50	500	Nov. 29
Gordon.....	Hamilton St., northerly	50	888.5	Nov. 29
Granville Ave....	Whitmarsh Ave. to Air- lie St.....	50	1,011	Nov. 29
Stratfield.....	Hamilton St., northerly	50	961.72	Nov. 29
Sewer Location..	Park Ave. to Montvale Rd. through land of Perry.....	10	310	Nov. 29
Sewer Location..	Through land of Mor- gan Const. Co., Cres- cent to Paine.....	10	442	Nov. 8
Tallawanda Drive	Brookline St., westerly.	60	322	June 21
Wyola Drive.....	Tallawanda Drive, northerly to Monti- cello Drive.....	50	1,080.8	June 21
			8,256.02	=1.56 miles

There have been constructed by the Sewer Department during the past year 2.295 miles of sewers, 1,568 miles being sanitary sewers and 0.727 miles surface-sewers, and the required lines, grades and inspections have been furnished by the Engineering Department.

In addition to the above, a new 72-inch concrete outfall sewer has been constructed for a distance of approximately 1,100 feet, extending from a point near the southerly end of Wiser Avenue southerly along the westerly side of the present precipitation tanks and sand filtration areas. This outfall sewer is to be extended for a total distance of very nearly a mile, to the site of the new sewage disposal plant, where the ground is being made ready for the construction of Imhoff tanks and sprinkler filters, plans for which are being prepared by the City Engineer acting in conjunction with the Superintendent of Sewers, in accordance with an order passed by the City Council on July 7, 1919.

Three hundred and forty-one sanitary and surface drains connecting with the public sewers throughout the city were inspected and grades given for laying the same.

For a period of five months in the early part of the year, during the building of the Norton Village, so called, sit-



NEW CONCRETE ARCH BRIDGE OVER LAKE QUINSIGAMOND
COMPLETED IN 1920

uated on the southerly side of Ararat Street and northerly of Indian Hill, the services of an inspecting engineer from this department were rendered in connection with the laying by the Fred T. Ley Co., for the Norton Co., of 9,492 lineal feet of sanitary sewers, the laying of drains connecting 92 houses with these sewers and the building of 53 manholes.

STREETS

Following the reference to the Street Committee of all petitions for the making public of streets and the construction of sidewalks, and preparatory to further action by the City Council, plans and estimated costs of the work petitioned for have been prepared, and blue prints to the number of 40 submitted to the Clerk of Committees showing the names and addresses of the owners of the several abutting estates together with the probable amounts assessable upon each.

In compliance with orders adopted by the Board of Aldermen, decrees have been prepared for the laying out, locating and making public of 2.68 miles of streets, as follows:

STREETS LAID OUT FROM DECEMBER 1, 1919, TO NOVEMBER 30, 1920

STREET	LOCATION	WIDTH FEET	LENGTH FEET	DECREE ADOPTED
Beverly Road....	Lincoln St., northerly..	50	2,608.23	May 24, 1920
Brookline.....	Tallawanda Drive— Monticello Drive....	50	1,156.45	June 7, 1920
Eureka.....	Main St., southerly....	50	762.84	Dec. 15, 1919
Fern.....	Park Ave.—Stevens Rd.	40	568.17	Dec. 15, 1919
Franklin.....	Grafton—Arctic.....	55	321.88	June 7, 1920
Halmstad.....	Greenwood—Carlstad..	40	1,161.61	Sept. 27, 1920
High.....	Austin—Chandler....	50	269.08	July 6, 1920
Ingleside Ave....	Hamilton—Village....	40	998.76	Sept. 27, 1920
Lincoln.....	Belmont St., northerly.	..	108.61	Dec. 29, 1920
Lynn.....	Salem—Orange.....	30	180.22	Feb. 16, 1920
Morningside Road	Chamberlain Parkway —Colonial Rd.....	50	872.63	Oct. 18, 1920
Murray Ave.....	Loc. 1917—Chandler...	50	433.58	July 6, 1920
Otsego Road.....	Monadnock Rd.—For- est.....	50	716.91	June 21, 1920
Pratt Court....	Park Ave.—Whitman Rd.....	35	566.67	June 21, 1920
Rhodes Road....	Loc. 1916—Morning- side Road.....	50	486.71	June 7, 1920
Sigel.....	Bigelow—Quinsiga- mond Ave.....	40	672.06	Feb. 16, 1920
Sunderland Road	Grafton—B. & A. R. R.	60	1,144.49	May 10, 1920
Trumbull.....	Trumbull Sq., northerly	..	97.20	July 6, 1920
Vale.....	Aetna—Dorchester....	40	559.60	Feb. 16, 1920
Vale.....	Dorchester—Acton....	50	490.80	Feb. 16, 1920
			14,176.5	=2.68 miles

In anticipation of favorable action by the City Council upon petitions for the construction of sidewalks, decrees have been prepared for establishing 2.82 miles of sidewalks upon the following streets:

SIDEWALKS LAID OUT FROM DECEMBER 1, 1919, TO
NOVEMBER 30, 1920

STREET	LOCATION	LENGTH FEET	DECREE ADOPTED	SIDE
Crompton.....	Southbridge—Chelsea	259.58	Nov. 8	Both
Dorchester.....	Rice Lane—Vale.....	220.00	Nov. 29	South
Granite.....	Heywood St., south- easterly.....	4,912.59	Mar. 1	Both
Harding.....	Harrison—Pond.....	774.81	Feb. 16	Both
Kenilworth Road	Pleasant St., southerly	1,943.40	Feb. 16	Both
May.....	June—Underwood....	581.50	Nov. 8	Northeasterly
Perkins.....	Lincoln—Paine.....	564.40	Feb. 16	Both
Richland.....	Ward—Millbury.....	401.16	Nov. 8	South
Rutland Terrace	Salisbury—Metcalf...	524.41	Nov. 8	Southeasterly
Shrewsbury.....	East Central—Adams	3,475.42	Sept. 27	Southeasterly
Southgate.....	Grand St., westerly...	1,215.00	Feb. 16	South
		14,872.27	=2.82	miles

Upon reference to the City Engineer of petitions for the approval of the width, location and grade of private ways, reports with recommendations for action have been made to the Board of Aldermen relative to 17 private ways.

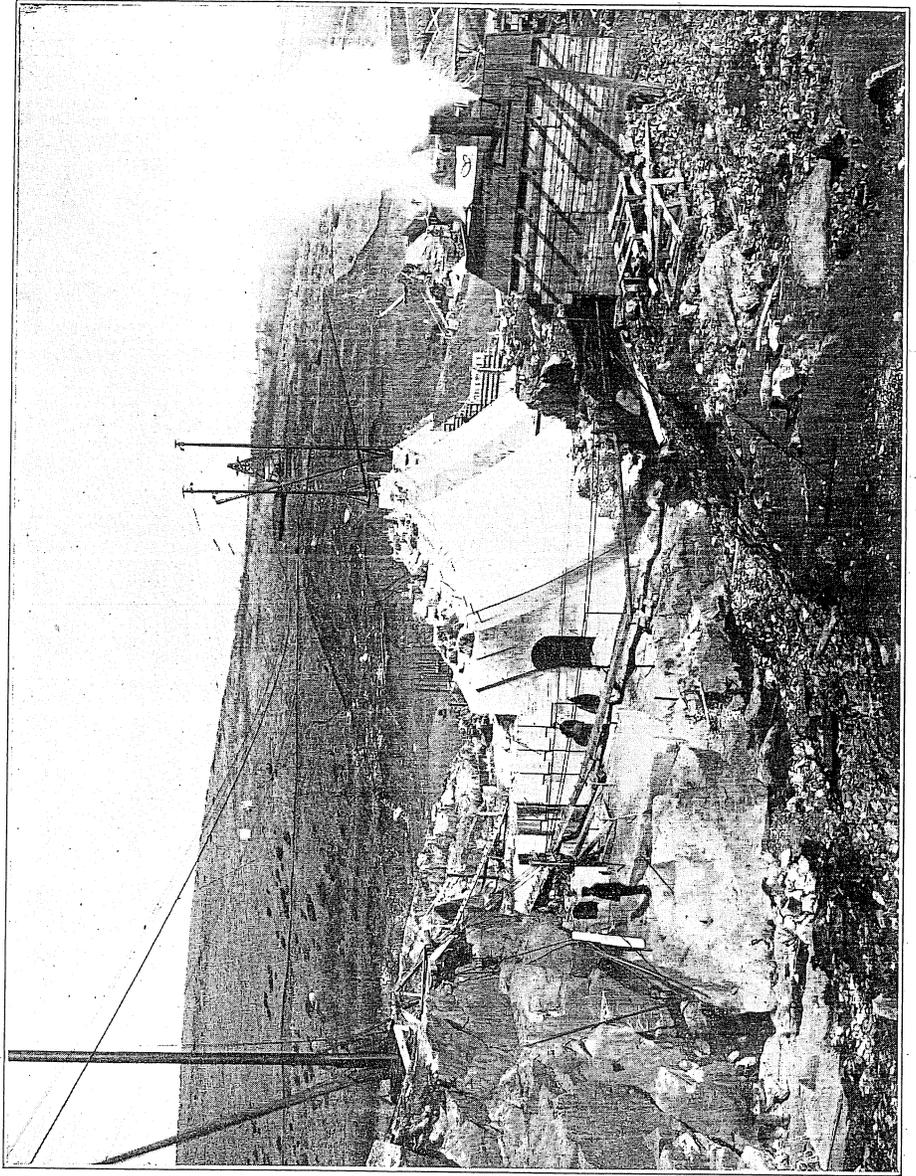
In compliance with orders of the City Council, surveys plans, estimates of cost and reports have been prepared relative to the widening of Mill Street, from Main Street to Park Avenue, the widening of Grafton Street, from Rice Square to the city line, and the lowering of the grade at the junction of Chatham and High Streets.

Lines and grades have been given for the construction of all new streets, pavements and sidewalks done by the Street Department during the year.

WATER—PINE HILL RESERVOIR

Following is a statement of the receipts and expenditures in connection with the construction of the Pine Hill Reservoir for the year ending November 30, 1920:

	<i>Receipts</i>
Balance Nov. 30, 1919.....	\$198,111.54
Loan.....	100,000.00
Revenue from Department Service Transfers.....	15.00
Revenue from other sources...	2,219.88
	\$300,346.42



PINE HILL DAM, LOOKING NORTH, AT THE COMPLETION OF THE SEASON OF 1920

Expenditures

Automobile—maintenance, hire, chauffeur, etc.....	\$1,831.13
Basin—cutting and burning brush.....	2,231.44
Buildings—construction and maintenance.....	529.77
Cement—on hand November 30, 1920.....	6,840.00
Clerical—labor, supplies and inventory.....	4,297.49
Dam:	
Diversion, pumping and care of water.....	\$6,461.43
Earth excavation and sheeting.....	13,620.87
Rock excavation.....	953.33
Concrete masonry.....	86,982.28
Earth embankment.....	4,782.65
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	112,800.56
Engineering and supplies.....	5,811.28
Fuel (on hand November 30, 1920, \$21,600.00).....	35,546.67
Incidental labor—storehouse, repairmen, watchmen, etc....	13,015.31
Incidental supplies—gasoline, grease, oil, packing, waste, etc..	2,438.89
Land—purchased and maintained.....	4,844.45
Lumber—cost and handling.....	1,436.86
Machinery and tools, general supplies.....	13,178.32
Medical and Workmen's Compensation Act.....	1,310.48
Powder—dynamite and exploders—on hand November 30, 1920	506.25
Railroad—material, maintenance and operation.....	7,193.94
Removing old dam.....	58.87
Roadways and drives.....	188.52
Telephone—rental, repairs to line (Holden).....	235.28
Transportation of workmen—car fares.....	6,281.17
Trucking—material and supplies from city.....	179.75
Vacations—qualified workmen.....	4,292.15
Water supply—piping and pumping.....	2,805.08
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Total expenditures for the year 1920.....	\$227,853.67
Balance unexpended Nov. 30, 1920.....	72,492.75
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	\$300,346.42

The cost of labor in the above items amounted to \$139,678.06.

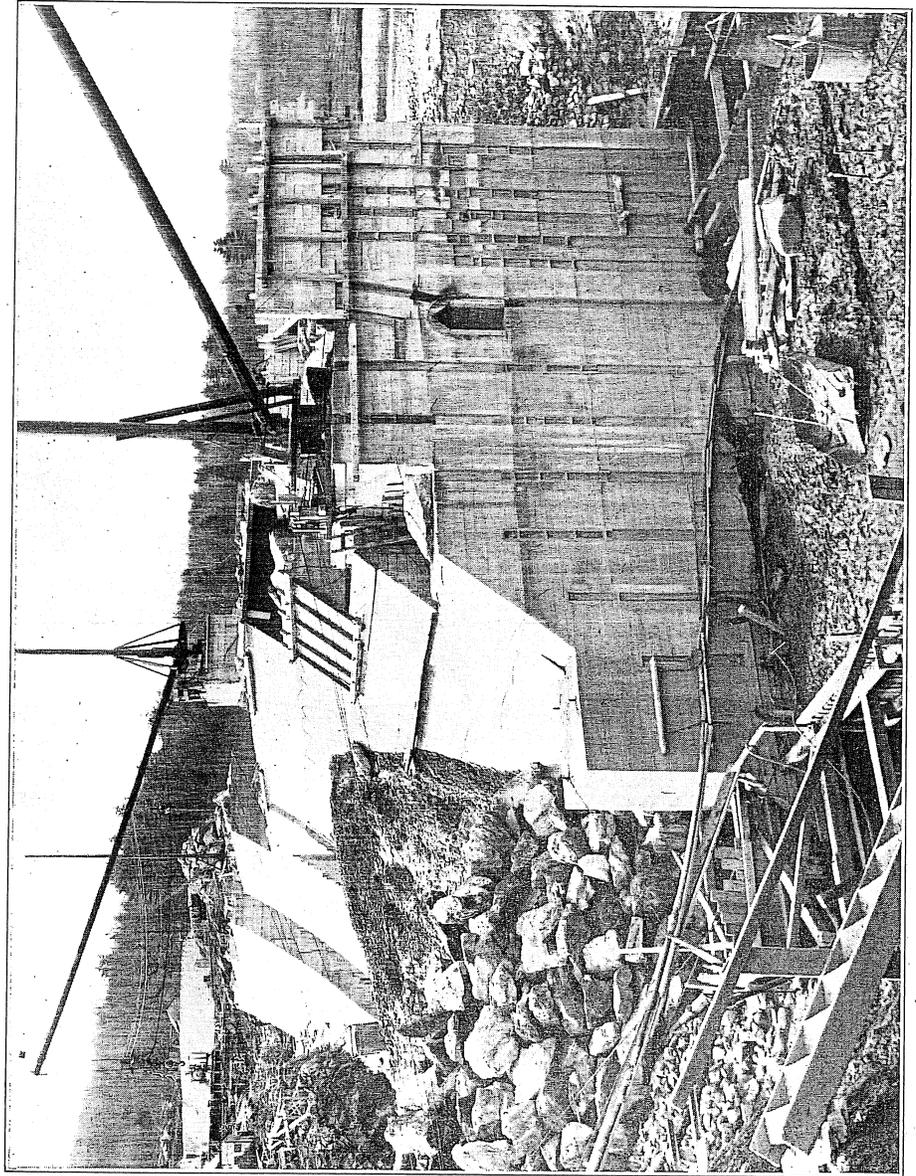
This work has proceeded during the year under the continued handicap of a force of men much smaller than desirable for obtaining the best results. For a period of six weeks during February and March, practically all work was suspended on account of the very severe and unfavorable weather conditions due to continued heavy snowstorms. Owing to the inability to obtain cement during the early part of the season, the first nine months' efforts were devoted to the quarrying of stone, making of sand and preparing for the concrete work to follow. In September, October and November, cement was received in sufficient quantities to allow the placing during those three months of approximately 4,800 cubic yards of concrete masonry, which makes a very creditable showing for the year and speaks well for the faithful and conscientious services rendered by those engaged on the work.

At the present time, owing to inactivities in other lines of industry, we are receiving many applications from men who desire employment, and it is the hope and belief that next season will witness a return to more favorable conditions, so that the construction of this dam and reservoir may be carried along with all possible dispatch, and it is of the utmost importance that this work be continued without interruption until its completion, so that the storage of this great reservoir of about 3 billion gallons capacity may be utilized, for without this storage the city would be seriously threatened should we experience a year of unusually light rainfall. It is expected that during the coming year the foundations and lower portion of the dam at its northerly end will be constructed to an elevation sufficiently high to allow the storage of a considerable amount of water during the period immediately following.

WATER—ADDITIONAL SUPPLY

In January, 1920, the Commission, created under the provisions of Chapter 176 of the Acts of the year 1918 entitled "An act relative to procuring an additional water supply for the city of Worcester," submitted its report, recommending, after the careful examination and consideration of various possible sources of supply within reasonable distance of our existing systems, that the city of Worcester be authorized to increase its water supply by obtaining water from the Quinapoxet River and its tributaries at and above Quinapoxet Pond, substantially as provided in the draft of a bill accompanying said report, entitled "An act to authorize the city of Worcester to increase its water supply." A hearing on this bill was held at the State House in Boston before the Legislative Committee on Municipal Finance, at which considerable opposition developed with the result that, after a view of the area in question had been taken, further action on the bill was deferred until next year at which time a joint report of the State Board of Health and the Metropolitan District Commission is expected to be made on the subject of water supply throughout the State, and may have an important bearing on the Worcester situation.

"To obtain water from this source, lying comparatively near existing works of the city as it does, would require the building of a conduit about three miles in length, and lifting the water about 110 feet, including frictional resistance, where it would flow by gravity through three reservoirs now owned by the city The ease with which the waters



PINE HILL DAM, LOOKING SOUTH; AT THE COMPLETION OF THE SEASON OF 1920

of this stream can be obtained, and the short time in which the diversion can be made, make this the most desirable and economical source of additional water supply for the city."

I desire to call your attention to the report of this Commission, especially with reference to the scope and details of the investigations which were made and trust that we all will ever be mindful of the great responsibility resting upon us, to see to it that the rapidly growing city of Worcester is at all times adequately supplied with plenty of good, wholesome water, which is the first essential to the welfare of any community.

MISCELLANEOUS

Plans, descriptions, photographs and whatever other information has been required from time to time for use in the settlement of legal proceedings against the city have been furnished, and constant attendance upon committees on claims, sewers, streets and water has been given, as well as at hearings before the Board of Aldermen upon petitions for the making public or relocating of streets.

Plans for filing in the Registry of Deeds relative to 10 sewer locations and 8 street locations have been made.

Thirty-three plans showing the names of the owners of the abutting estates, together with frontages and areas, have been made by the aid of which assessments for sewer, sidewalk and street betterments have been levied.

Continual assistance has been rendered the Assessors Department in the handling of the very large number of conveyances of real estate during the past year, which has necessitated an unusual amount of changes in the books of plans.

Surveys and plans in detail of 8 school house properties have been made for the Buildings Department, and also descriptions for the taking of several locations for the erection of new school buildings.

In conclusion, I desire to express my appreciation of the confidence and support of the City Council and of the loyal and hearty co-operation of the members of the Engineering Department.

Respectfully submitted,
DAVID M. EARLE,
City Engineer.