

REPORT

ON

W A T E R W O R K S

TO THE TRUSTEES.

BY

T. R. SCOWDEN,

ENGINEER.

CLEVELAND:

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1856.

CLEVELAND, January 28, 1856.

C. BRADBURN, Esq., PRES'T CITY COUNCIL,

DEAR SIR :—Herewith we hand a Report of the Engineer of Water Works, showing the amount expended in the construction of said works, and an estimate of the amount necessary to complete the same—from which it will be seen that a further issue of Bonds will be required, in order to provide means to put the works in operation.

Of the Bonds already issued, the sum of three hundred and twelve thousand five hundred dollars has been sold, at prices ranging from par to five per cent. premium. The market for such securities has been for some time past exceedingly dull. Temporary loans, to some extent, have been made to meet maturing contracts, and to pay for work that could not be suspended without loss.

We have no doubt, in a more favorable condition of the money market, par, and probably from three to five per cent. premium may be obtained for a further issue of Bonds, sufficient in amount to put the works in successful operation.

Respectfully yours,

RICH'D HILLIARD, } TRUSTEES
CHAS. L. RHODES, }

OF THE TRUSTEES OF CLEVELAND CITY WATER WORKS :

MEMORANDUM :—Permit me to lay before your Board, the Engineer's Report upon the cost of constructing Water Works, up to January 1st, 1856, with estimate of cost to finish the works and let water on the City.

LAKE WORK.

Pipe, wrought iron, riveted, 79078 lbs., at 8 $\frac{3}{4}$ cts.,	\$6,919 32
Excavating Trench in Lake to lay Inlet Pipe, 3500 yards,	
at 45 cts.,	1,575 00
Driving 300 Piles, at \$5,00 -	1,500 00
Filling between Piles, 287 yards, \$5,00, -	1,435 00
Bracing and Plank for Tower, 5184 ft., at \$200 -	103 68
Timber and cover for same and stays, 2500 lbs., at 4 cts.,	100 00
Weight fastenings, 1350 lbs., at 10 cents, -	135 00
Contractors' entry and labor, -	350 00
Expense of laying Inlet Pipe in Lake, -	450 00
Excavating and Strainer over Inlet, -	275 56
Expense of Masonry and Water Lime, -	210 00
Expense of Cofferdam and Pumping, -	550 00
Total, - - - - -	\$13,603 56

AQUEDUCT.

Brick, 600,000 delivered at \$5,25, - - -	\$3,150 00
Water Lime, 81 cts., linear foot, 2800 feet, - -	2,268 00
Timber, Plank, and Sheet-Piles, paid - - -	2,745 00
Expense of Engine, Coal, Horse-Powers, Tools, Teckle, Renting, Spikes, Scaffolding, Shanties, and all necessary implements for doing the Aqueduct work, on which was paid \$3,050 17 for 1300 feet—\$2,35 per lineal foot, 2800 feet, - - -	6,580 00
Expense of Supervision, Masonry, Carpentry, Excavation, Projections, laying Timbers and planking same, Cartage, Pumping, Bailing and Backfilling, and all to complete 1300 feet of Aqueduct, paid \$5,915 92—\$4 55 per lineal foot; then 2800 feet at \$4 55,	12,740 00
Additional cost to construction of Aqueduct—cut through Rail Road Embankment, 2200 yards excavation; protections and backfilling, at 90 cents per yard, - - - - -	1,980 00
Total, - - - - -	\$29,463 00

ENGINE HOUSE AND GROUNDS.

Real Estate, - - - - -	\$12,763 33
Stone Foundations, - - - - -	21,637 66
Water Lime for same, - - - - -	1,108 75
Cast Plates, Washers, Brackets, &c., 3500 lbs., at 3½ cts., - - - - -	122 50
For 3½ gross tons Tie-Bolts and Stay-Rods, at 10 cts. per lb., - - - - -	784 00
For 325000 Brick, delivered at \$4 50 - - - - -	1,462 50
For Stone Cornice, Coping, Caps, Sills and Steps, Parcel & Kent, Carpenters, contract price, - - -	4,687 00
Carpenter and Joiner work, interior finish not included in contract, - - - - -	1,342 73
Cast and Wrought Stays for supports and fastening to Engine timbers, - - - - -	463 00
Interior Iron Railing about Engines and Pump Wells, 230 feet, at \$2, - - - - -	460 00
Stand Pipe, 17699 lbs., at 8¾ cts., - - - - -	1,548 66¼
" " Flange fastening and patterns, per Bill,	63 80
For laying 325,000 Brick, at \$4 25, - - - - -	1,381 25
Cast Bed-Plates for supporting columns and the Entab- atures, - - - - -	1,240 60
Two Steam Furnaces, 80000 Brick ; laying the same ; Fire Brick, Tile, Fire Clay and Iron Chimney,	4,040 55
Labor by the day, pumping, handling, &c., - - -	516 29
Hoisting Timbers and for Iron and Hardware, - - -	433 57
Painting Engine House and Machinery, - - - - -	300 00
Grading and improving Engine House grounds, - - -	2,500 00
Dock on old river bed, - - - - -	1,700 00
Dredging, - - - - -	536 00
Fences for enclosing Engine House grounds, - - -	1,000 00
Total, - - - - -	\$61,947 19¼

PUMPING ENGINES.

Construction and erection of two Cornish Engines,	\$67,600 00
Not included in the contract, - - - - -	2,500 00
Transportation of same, - - - - -	9,800 00
Cast Foundation Plates and Supporting Beams, - - -	1,746 40
Wood Plunger-Checks, Tanks, Cataract floors, &c.	921 00
Cast Braces, Wrought Stays and fastenings for same,	825 40
Total, - - - - -	\$83,392 80

RESERVOIR AND GROUNDS.

Estate, - - - - -	\$22,212 34
to construct Embankment, - - - - -	2,925 00
Reservoir Embankment, haul, puddle-lined, paved, refined and completely finished, - - - - -	41,690 00
Material for Puddle, - - - - -	600 00
Weight of same, removing soil, grubbing and excavation, - - - - -	6,337 00
Reservoir Machinery, including four 20 in. Stop-Valves, - - - - -	4,890 40
Weight and improving grounds, - - - - -	550 00
Wire Fence, wood picket, painted, 990 feet lineal, cents, - - - - -	742 50
Boards double-planked Enclosing Fence at \$5 00, - - - - -	290 00
Fence on Franklin Street, iron, with stone base, 10 feet. at \$3, - - - - -	1,110 00
Expense for wetting and solidifying Res. Embankment, - - - - -	1,450 00
Transportation of Engine, - - - - -	87 50
Expenses for Stone, rough Fencing, Carpentry labor, wetting Embankment, - - - - -	1,886 12
Weight of Stone Steps to ascend Embankment, - - - - -	650 00
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Total, - - - - -	\$85,420 86

WATER PIPES AND ATTACHMENTS.

Streets in which water pipe will be laid, see Engineer's last Report, under date of April 1st, 1855.)

Extent of water pipes 70500 feet, or 13 miles

6 feet, and total weight of same as per contract,

108 gross tons, at \$62 50, - - - - - \$125,500 00

Pipe, 26026 lbs., at 8 $\frac{3}{4}$ cents, - - - - - 2,277 27 $\frac{1}{2}$

Flanges, curves, fastenings, and patterns for same, - - - - - 1023 50

Excavating Cuyahoga River to lay pipe 1200 yards, at
cents, - - - - - 600 00

Setting timber, piles, and laying pipe to place in
river, - - - - - 520 00

Excavating 1200 yards, at 20 cents. - - - - - 240 00

Weight to make and use Stop Valves for water pipes, - - - - - 1,500 00

Excavating work, Trench for pipes, make joints and backfill
1500 feet, at 30 cents, - - - - - 17,625 00

Hauling, Tool boxes, Furnaces, lead & Stop Valves, - - - - - 650 00

Expenses for static Press to prove Pipes, Street Tools, Tackle,
&c., - - - - - 1,011 00

Weight 163906 lbs., at 5 $\frac{1}{4}$ cents, transportation, &c., - - - - - 9,185 49

Weight of 2008 tons of water pipes and attachments, at
cents, - - - - - 1,305 20

Total, - - - - - \$161,437 46 $\frac{1}{2}$

*Total for Reservoir
Pipe & appurtenances
laying same
\$4,660.77 $\frac{1}{2}$*

STOP VALVES AND FIRE HYDRANTS.

Three Stop Valves, 24 inch water way, at \$500,	-	\$1,500 00
Twelve " " 20 " " " " 350,	-	4,200 00
Four " " 16 " " " " 240,	-	960 00
Ten " " 10 " " " " 75,	-	750 00
Twelve " " 8 " " " " 50,	-	600 00
For 52 " " 6 " " " " 35,	-	1,820 00
For 110 " " 4 " " " " 25,	-	2,750 00
For 40 Fire Hydrants, including street pipe attachments, at \$120,	- - - - -	4,800 00
For 203 wood Boxes and covers of iron for Stop Valves, at \$5 00,	- - - - -	1,015 00
Total,	- - - - -	\$18,395 00

INCIDENTAL EXPENSES.

For Salaries, Engineering, Draftsmen, Office expenses, Rent, Traveling expenses, and for various jobs by the day, and for which no satisfactory bids were obtained.

Engineering to construct Works,	- - - - -	\$15,912 96
Office " " " " " " " "	- - - - -	3,617 96
Work Shops " " " " " " " "	- - - - -	7,462 39
For contingencies " " " " " " " "	- - - - -	5,000 00
Total,	- - - - -	\$31,993 31
Total cost of Water Works,	-	\$485,653 18½

RECAPITULATION.

Lake Work,	- - - - -	\$13,603 56
Aqueduct,	- - - - -	29,463 00
Engine-House and Grounds,	- - - - -	61,947 19¼
Pumping, Engines,	- - - - -	83,392 80
Reservoir and Grounds,	- - - - -	85,420 86
Water Pipes and Attachments,	- - - - -	161,437 46½
Stop Valves and Fire Hydrants,	- - - - -	18,395 00
Incidental Expenses,	- - - - -	31,993 31
Total cost,	- - - - -	\$485,653 18½
Paid on Construction of Works, to January 1st, 1856,	- - - - -	\$345,644 01
To complete the Works, estimated cost,	- - - - -	\$140,009 17½

Respectfully submitted,

T. R. SCOWDEN, ENGINEER.