

# THE CITY RECORD.

## OFFICIAL JOURNAL.

VOL. XIX.

NEW YORK, WEDNESDAY, MARCH 18, 1891.

NUMBER 5,427.



### DEPARTMENT OF PUBLIC WORKS.

Report for the Quarter ending December 31, 1890.

DEPARTMENT OF PUBLIC WORKS—COMMISSIONER'S OFFICE,  
NO. 31 CHAMBERS STREET,  
NEW YORK, January 28, 1891.

Hon. HUGH J. GRANT, Mayor:

DEAR SIR—In accordance with section 49 of the New York City Consolidation Act of 1882, I have the honor to present the following report of the transactions of the Department of Public Works for the quarter ending December 31, 1890, with a brief review of the operations of the Department for the past year:

#### SUMMARY OF EXPENDITURES.

(Being amount of requisitions drawn on the Comptroller.)

On account of appropriations raised by taxation (Consolidation Act of 1882, section 189).....	\$863,649 58
On account of Local Improvement Fund for Street Improvements (Consolidation Act, sections 144 and 150).....	456,021 53
On account of Funded Debt, for improvement and extension of water supply (Consolidation Act, section 141).....	76,644 51
On account of Repavement Fund (chapter 346, Laws of 1889).....	504,713 49
On account of Criminal Court-house Fund (chapter 371, Laws of 1887, section 8)...	63,479 00
On account of Fund for One Hundred and Fifty-fifth Street Viaduct (Consolidation Act, section 144, and chapter 576, Laws of 1887).....	49,027 45
On account of Special Fund, for restoring pavements over street openings (Revised Ordinances of 1880, sections 354 to 357).....	8,050 12
On account of Revenue Bonds, for furnishing and setting water-meters (Consolidation Act, sections 161 and 352).....	5,306 21
Total.....	\$2,026,891 89

#### SUMMARY STATEMENT OF CONTRACTS.

Contracts Entered Into during the Quarter.

26 sewer contracts, estimated cost.....	\$176,185 55
19 contracts for regulating, grading, curbing and flagging streets and sidewalks, estimated cost.....	56,324 83
13 paving contracts, payable by local assessments, estimated cost.....	77,810 85
13 repaving contracts, estimated cost.....	101,584 00
1 contract for water-mains, estimated cost.....	12,283 50
2 contracts for taking up and relaying pavements, estimated cost.....	7,561 70
4 miscellaneous contracts, estimated cost.....	16,825 00
29 contracts under \$1,000 each, estimated cost.....	8,552 79
107 contracts, total estimated cost.....	\$457,128 22

Contracts Completed during the Quarter.

14 sewer contracts, cost.....	\$13,925 97
27 contracts for regulating, grading, curbing and flagging streets and sidewalks, cost.....	59,626 13
26 paving contracts, payable by local assessments, cost.....	274,484 47
19 repaving contracts, cost.....	960,030 04
5 contracts for water-mains, cost.....	32,152 50
8 miscellaneous contracts, cost.....	34,184 00
7 contracts, under \$1,000 each, cost.....	1,547 87
106 contracts, total cost.....	\$1,375,950 98

#### BUREAU OF CHIEF ENGINEER OF THE CROTON AQUEDUCT.

The following table shows the rainfall for the past quarter in the Croton water-shed, Bronx river water-shed and the Central Park Reservoir, where rain-gauges are kept by the Department:

LOCATION.	OCTOBER. INCHES.	NOVEMBER. INCHES.	DECEMBER. INCHES.	TOTAL INCHES.
Boyd's Corners Reservoir.....	7.63	1.12	3.71	12.46
South East Reservoir.....	6.49	1.09	4.41	11.99
Kensico Reservoir.....	7.63	0.69	2.32	10.64
Croton Dam.....	6.09	0.81	2.78	9.68
Central Park Reservoir.....	6.48	0.74	3.40	10.62

The storage reservoirs, lakes and ponds tributary to the city's water supply are all filled to high water-mark, and there has been no interruption in the supply furnished from the old Croton Aqueduct and the New Aqueduct since it has been brought into use, on account of any deficiency in the sources of supply.

The average daily water supply now received and distributed is 75,000,000 gallons through the old Croton Aqueduct, 60,000,000 gallons through the New Aqueduct and 10,000,000 gallons through the Bronx river conduit.

The rapid increase in buildings and population in the upper part of the city, where the water supply has to be furnished from the high-service pumping stations, has created such additional demands upon the supply that it has been necessary to increase the quantity of water pumped at the Ninety-eighth street station from the average of 8,000,000 gallons per day to 12,000,000 gallons per day. An additional pumping engine will be brought into use during the present month at the Ninety-eighth street station to meet the constantly growing demands upon that service and improve the distribution and delivery of the water supply.

In extending and improving the water supply throughout the city 3,400 lineal feet of 36-inch water-mains, 3,150 lineal feet of 20-inch mains, 209 lineal feet of 12-inch mains, and 2,883 lineal feet of 6-inch mains have been laid during the quarter.

In addition to the ordinary work of repairs to water-mains, stop-cocks and fire-hydrants, a gang of mechanics and laborers has been continuously employed in the replacing of water-mains and fixtures in the streets contiguous to the water-front in the lower part of the city, where the old mains and fixtures have become corroded by contact with salt water, and in relaying water-mains in the Twenty-third and Twenty-fourth Wards to correspond to changes of grades of the streets in that section of the city. A large portion of this work has also been done by contract.

During the quarter 482 additional water-meters have been placed, making a total of 22,072 meters now in use.

#### BUREAU OF WATER PURVEYOR.

An unusually large amount of work has been done during the last quarter in laying new pavements on up-town streets, where the cost is assessed on the property fronting on the streets, and in laying new pavements in place of old and worn out pavements under the annual appropriation for repavements made under the provisions of the Consolidation Act, and under the one million dollar appropriation provided by chapter 346, Laws of 1889:

The following is a summary statement of the area of new pavements completed during the quarter:

Pavements payable by assessments—	
Granite blocks.....	42,769.3 square yards.
Asphalt.....	44,376.1 "
Pavements within limits of water grants, and payable by assessments—	
Granite blocks.....	14,791.5 "
Repavements under annual appropriation—	
Granite blocks.....	43,068.2 "
Asphalt.....	29,693.6 "
Repavements under chapter 346, Laws of 1889—	
Granite blocks.....	78,524.6 "
Asphalt.....	208,148.8 "
Total area of new pavements completed.....	461,372.1 square yards.
Total new granite pavement.....	179,163.6 square yards.
Total new asphalt pavement.....	282,218.5 "

On the repairs of pavements an average force of 221 pavers and rammers, 283 laborers, 75 carts and 5 teams was employed during the quarter, and the work was continued until the latter part of December, when a severe frost put a stop to all pavement work except local repairs of dangerous places in the pavements, which require instant attention, and for which a small repair force is retained during the winter season. The repair force took up and relaid 118,289 square yards of pavement, in addition to which 11,652 square yards of pavement was taken up and relaid under contract, making a total of 129,941 yards of pavement relaid during the quarter.

In the repairs and maintenance of the water-mains, stop-cocks and fire-hydrants which constitute the system for distributing the city's water supply, an average force of 32 mechanics, 96 laborers and 15 carts has been employed, and, in addition to the ordinary repairs, the force has placed 130 new fire-hydrants in the place of old ones and has also placed 2 additional fire-hydrants.

Four new drinking hydrants of improved pattern were placed instead of the old style hydrants.

#### OFFICE OF ENGINEER IN CHARGE OF SEWERS.

During the past quarter 30 contracts for building sewers and receiving-basins have been completed, and 6,927 lineal feet of sewers and 7 receiving-basins have been built.

Work is now in progress under 37 contracts for the construction of new sewers and repairs to old sewers.

The principle items of work done in repairing and cleaning sewers during the quarter are:

- 1,322 receiving-basins and culverts cleaned.
- 11,935 lineal feet of sewers cleaned.
- 162,619 lineal feet of sewers examined.
- 97 lineal feet of brick sewer rebuilt.
- 18 lineal feet of new pipe sewer built.
- 21 lineal feet of new culvert built.
- 33 lineal feet of spur-pipe laid.
- 441 manhole heads reset.
- 19 basin heads reset.
- 1 new manhole built.
- 2 manholes repaired.
- 14 receiving-basins repaired.
- 48 new manhole heads placed.
- 79 new manhole covers placed.
- 3 granite basin-heads placed.
- 15 new basin-covers placed.
- 37,951 cubic yards of earth excavated and refilled.
- 3,675 cart-loads of sewer deposit removed.

#### BUREAU OF STREET IMPROVEMENTS.

During the quarter work was in progress on 24 contracts for regulating and grading streets, setting and resetting curb-stones and flagging and reflagging sidewalks, and the following quantities of work were done under the several contracts:

- 7,013 cubic yards of earth excavated.
- 24,512 cubic yards of rock excavated.
- 69,339 cubic yards of filling placed in embankments.
- 27,126 lineal feet of curb-stones set.
- 14,120 lineal feet of curb-stones reset.



174,732 square feet of flagging laid.  
37,551 square feet of flagging relaid.  
3,638 lineal feet of picket fence built.  
220 cubic yards rubble range masonry built.  
180 lineal feet drain-pipe laid.

## BUREAU OF STREETS AND ROADS.

The work of this Bureau consists of the care and maintenance of the macadam roadways and of country roads and unpaved streets in the upper part of the city. During the quarter 3,827 square yards of macadam roadways were resurfaced and repaired; 1,788 square feet of flagging relaid, and 360 square feet of bridge-stones reset. In this work 709 cubic yards of broken trap-stone, 331 cubic yards of trap-rock screenings, 30 cubic yards of Telford stone, 25 cubic yards of gravel and 70 cubic yards of sand were used. In the cleaning of the roadways, 1,000 truck-loads of surplus material was removed.

On the country roads and unpaved streets an area of 1,000 square yards was surfaced with broken stone and earth, and 1,000 yards of Telford foundation for pavement was laid; six miles of roadways were re-regulated and graded and the gutters opened, 446 truck-loads of earth, 741 truck-loads of stone, 501 truck-loads of broken stone, and 35 truck-loads of screenings were used, and 521 truck-loads of surplus material were removed.

## BUREAU OF LAMPS AND GAS.

During the quarter 90 new gas-lamps were lighted, 98 old gas-lamps were relighted, 55 gas-lamps were discontinued, and at the close of the quarter there were 27,114 gas-lamps, 881 electric lights and 138 naphtha lamps in use on the streets, roads, parks, docks and bridges of the city.

## BUREAU OF REPAIRS AND SUPPLIES.

The following are the principal items of work done under the direction of this Bureau in the repairs of the public buildings under the charge of the Department:

A contract has been made for four new steam boilers, including setting, fittings and appliances to make them complete in every respect for the new County Court-house in place of the old boilers which have become worn out by long service.

The renovation of the north front of the City Hall by cleaning and painting it in white color has been completed, except that some defects in the painting will have to be made good as soon as the weather and the condition of the work will permit. Fifty electric lights of 16-candle power each have been placed around the gallery in the dome of the City Hall building. A contract has been made for repairing, repainting and redecorating the Mayor's office and private room, and this work will be completed as rapidly as possible.

In the Brown-stone Court-house a new Worthington pumping engine for running the passenger elevator has been placed, and the Grand Jury rooms have been painted and calcimined.

In the Hall of Records the gutters and cornice have been repaired; the exterior of the building has been thoroughly repaired and painted of a tint to imitate stone work, and thirteen new book racks have been put up in the interior of the building. The accommodations of the office have been increased by making the top story, or garret, suitable for the transaction of its clerical business.

In Washington Market building extensive repairs have been made on the floor and on the roof.

In the West Washington Market buildings the work of repairing the damages caused by fire last August, was nearly completed. Another fire occurred in one of the Washington Market buildings on the last day of the year, and the needed repairs will be made as soon as the work can be put under contract.

In Fulton Market building a fire also occurred on September 8, and the damage done by it has been satisfactorily repaired. Other repairs on this building have been made on the roof and flooring.

The exterior of Tompkins Market building has been thoroughly cleaned, the iron work repaired, and the entire frontage painted with three coats of paint.

In the Seventh Regiment Armory the walls and ceilings of the halls and corridors have been cleaned, repaired and painted.

On the roof of the Twelfth Regiment Armory an iron railing has been put up to keep off persons from the adjoining premises.

In the Sixty-ninth Regiment Armory the walls, ceilings and woodwork in the officers' Board Room have been repaired and painted.

In the Seventh District Court-house a large amount of painting has been done on the front of the building, the vestibule and hall, and several of the rooms.

A new tin roof has been placed on the County Jail, and the exterior, ironwork, window frames, doors, railings, etc., have been cleaned and painted.

The details of numerous other and minor repairs will be found in the report of the Superintendent of Repairs and Supplies, hereto annexed.

## BUREAU OF INCUMBRANCES.

The following is a summary of the operations of this Bureau for the quarter:

930 complaints of obstructions received and attended to.  
513 seizures and removals of obstructions made.  
1,783 building permits issued.  
203 miscellaneous permits issued.  
4 permits issued to cut down shade-trees.  
196 notices issued to repair defective sidewalks.  
9 notices issued to repair defective vault covers.  
129 cart-loads of refuse material removed from streets.  
68 dead and dangerous shade-trees, stumps and posts removed.  
168 telegraph poles removed.  
470 miles of electric wires removed.

## BUREAU OF WATER REGISTER.

The following is the amount of revenue from the water service collected and paid into the City Treasury during the quarter:

For water rents .....	\$373,666 88
For penalties on water rents .....	6,002 65
For permits to tap water-meters .....	3,346 00
Total .....	\$383,015 53

## MISCELLANEOUS REVENUE.

The Department has also collected and paid into the City Treasury during the quarter the following amounts from various sources:

For sewer permits .....	\$6,251 78
For vault permits .....	34,805 15
For redemption of street obstructions .....	287 75
From miscellaneous sources .....	17,294 79
For restoration of pavements over street openings .....	8,344 50
For furnishing and setting water-meters .....	2,886 40
Total .....	\$69,870 37

## REVIEW OF THE OPERATIONS OF THE DÉPARTEMENT FOR THE YEAR 1890.

## SUMMARY OF EXPENDITURES.

Requisitions on appropriations for 1890, exclusive of repavements, under chapter 346, Laws of 1889 .....	\$2,346,689 77
Liabilities on above appropriations, estimated .....	803,074 00
Requisitions on Appropriations for Repavements under Chapter 346, Laws of 1889, for the year 1890 .....	462,008 13
Liabilities on above appropriation, estimated .....	535,492 00
Requisitions on Fund for Local Improvements .....	1,355,147 88
Requisitions on Croton Water Fund .....	227,282 86
Requisitions on Fund for New Criminal Court-house .....	157,805 50
Requisitions on Fund for One Hundred and Fifty-fifth Street Viaduct .....	64,252 70
Requisitions on Special Fund for Restoring Pavements over Street Openings .....	34,829 24
Requisitions on Revenue Bonds for Furnishing and Setting Water-meters .....	17,607 50
Total .....	\$6,004,189 58

## SUMMARY STATEMENT OF CONTRACTS FOR THE YEAR 1890.

## Contracts entered into.

68 sewer contracts, estimated cost .....	\$491,721 85
91 contracts for regulating, grading, curbing and flagging streets and sidewalks, estimated cost .....	224,300 64
87 paving contracts, payable by local assessments, estimated cost .....	699,981 04
41 repaving contracts, payable from appropriations, estimated cost .....	1,392,009 30
2 contracts for relaying pavements, estimated cost .....	7,561 70
5 contracts for water-mains, estimated cost .....	160,415 75
1 contract for high-service pumping engine, estimated cost .....	52,000 00
2 contracts for improvement of Central Park Reservoir, estimated cost .....	148,500 00
1 contract for One Hundred and Fifty-fifth Street Viaduct, estimated cost .....	514,423 00
38 miscellaneous contracts, estimated cost .....	138,512 58
101 contracts under \$1,000 each, estimated cost .....	25,589 47
437 contracts, total estimated cost .....	\$3,855,415 33

## Contracts Completed.

51 sewer contracts, cost .....	\$247,378 57
92 contracts for regulating, grading, curbing and flagging streets and sidewalks, cost .....	265,481 77
73 paving contracts, payable by local assessments, cost .....	816,407 76
40 repaving contracts, payable from appropriations, cost .....	1,379,328 18
6 contracts for relaying payments, cost .....	28,006 79
12 contracts for water-mains, cost .....	188,239 53
27 miscellaneous contracts, cost .....	186,675 17
66 contracts under \$1,000 each, cost .....	19,250 45
367 contracts, total cost .....	\$3,130,768 22

## WATER SUPPLY.

The acquisition of an additional water supply through the New Aqueduct is now an accomplished fact to the extent that an average daily supply of 60,000,000 gallons is now received through that structure, though the supply has been interrupted since its introduction on July 15 last, for periods extending from August 7 to 25; October 1 to 20; November 25 to 27; December 2 to 3, and on December 9, in consequence of the necessity of making repairs. Prior to the receipt of this additional supply, the Old Croton Aqueduct had to be kept under the extreme and hazardous pressure of delivering a daily supply of 98,000,000 gallons or over, and the Bronx river water-shed and storage reservoirs had to be drained to their utmost capacity to deliver an average daily supply of 18,000,000 gallons, which is considerably above the normal supply which can be relied on from that source. The extreme pressure upon the Old Aqueduct has now been reduced, so that it is now required to deliver the reduced supply of 75,000,000 gallons per day, and the supply received through the Bronx river conduit is reduced to 10,000,000 gallons per day, making a total supply of 145,000,000 gallons per day now received and distributed in this city. The great strain on the supply from the Bronx river water-shed during the past year, and prior to the introduction of the supply from the New Aqueduct, is evidenced by the fact that over 5,000,000 gallons of water per day had to be drawn from the two storage reservoirs at the Kensico and Rye Ponds to supplement the natural flow of the river.

The duties of this Department in connection with the construction of the New Aqueduct and its appurtenances have consisted in the making of surveys for the same and the preparation of plans, contracts and specifications for the work, and there has been no delay in the performance of this duty. The work done under the direction of the Aqueduct Commission in the construction of storage reservoirs to assure a steady supply through the New Aqueduct has been further supplemented by this Department by proceeding with the construction of Reservoir A in the Croton water-shed.

The Chief Engineer of the Croton Aqueduct, in his report hereto annexed, states that the pressures in the delivery of water from the mains connected directly with the City reservoirs has been increased so as to deliver the water at an elevation of from 20 to 25 feet higher than heretofore, and that while the repair gangs have been called upon to attend to many small leaks, there have been no serious breaks in the distributing system. In consideration of the difficulty of making needed repairs to water mains and fixtures, which would require the tearing up of pavements during the winter season, he deems it proper to withhold, to a limited extent, until next spring the additional pressure of water which can be obtained with the present facilities, and which will be sufficient to deliver water from the mains at an elevation of from five to ten feet higher than at present.

The necessity of supplementing the distribution of water in the city by the service of pumping engines arises from the fact that some of the higher elevations in the city's territory could not be supplied by natural pressure from the water-mains, even with the most abundant supply. The increased demands upon the high-service water supply are caused by the immense increase in buildings and population in the high-service district. As already stated, the accumulating demands have been partially met by increasing the quantity of water pumped at the Ninety-eighth Street station from 8,000,000 gallons to 12,000,000 gallons per day, and an additional pumping engine will be brought into use at that station during the present month to further improve the water supply in the high-service district. The irregularities in the topography of those portions of the city which are beyond the reach of supply of water by natural pressure from the general distributing system, and can only be supplied by the artificial means of pumping water to higher elevation, will always make it a difficult problem to supply the residents with water in such a manner as to avoid complaints, and the demands upon the high service are so rapidly increasing that the Chief Engineer of the Croton Aqueduct recommends legislation authorizing the City to expend \$500,000 for necessary additional pumping machinery, structures, appurtenances, distributing mains, etc., which would be sufficient to double the present pumping capacity of the high-service works.

The Chief Engineer of the Croton Aqueduct, in his report, expresses the opinion that there need be no stoppage of the supply now received through the New Aqueduct during the winter season, and that by early spring all the weak and defective places in the structure, especially where it is under pressure, should develop themselves, so that all needed repairs may be made during the month of April, 1891. When these repairs are made, and the stability of the structure is assured, the question will arise whether the control of the New Aqueduct and its appurtenances, including storage reservoirs, dams, etc., should continue in the Aqueduct Commission, or should devolve upon the Department of Public Works, where it will finally rest.



## ONE HUNDRED AND FIFTY-FIFTH STREET VIADUCT.

For a considerable number of years past the city authorities have endeavored to solve the difficult problem of establishing adequate means of communication, on easy and practicable grades, between the high grounds known as Washington Heights at its declivity, which is very abrupt, and the low lying land east of it at and about One Hundred and Fifty-fifth street and Eighth avenue and the approach to McComb's Dam Bridge. Various schemes were presented from time to time, such as a zig-zag or winding roadway descending the declivity, the terracing of the steep descent or the construction of a viaduct; but about the year 1886 the conclusion was reached that a viaduct would be most convenient and practicable as a means of communication. Upon this conclusion the Legislature of 1887, by chapter 576 of the Laws of 1887, authorized the Commissioner of Public Works to erect and construct an elevated iron roadway, viaduct or bridge, from the easterly line of St. Nicholas place to McComb's Dam Bridge, upon plans and specifications to be approved by the Board of Estimate and Apportionment. The plans and estimate for the work were not completed until May 6, 1890, when I presented them to the Board of Estimate and Apportionment for approval, and they were approved by that Board on the same day. The estimate of cost was \$594,557, including engineering, supervision and contingent expenses. Under the act referred to, and the action of the Board of Estimate and Apportionment, one-half of this cost will be assessed on property benefited by the improvement, and the other half will be borne by the city at large. Immediately after the approval of the plans, the engineers of the Department proceeded to prepare the necessary contract and specifications, and when the forms of contract and specifications were completed, the work was advertised for public letting and was publicly let to the lowest bidder, July 14, 1890, Mr. Herbert Steward, at the sum of \$514,423. The contract provides that the work be completed in five hundred working days. The contractor immediately proceeded with the preparations for the work and carried it on vigorously until it had to be suspended on the advent of severe winter weather. On a work of this magnitude the preparatory and preliminary parts, though they may not make much show to the eye, require an immense amount of labor. The progress so far made is quite satisfactory, giving promise that the work may be completed at or near the limit of time set by the contract. There can be no question of the great benefit and advantage this improvement will be to the surrounding property, extending over a very large area, especially the section known as Washington Heights, and the structure, when completed, will be creditable to the city as a judicious undertaking and a fine piece of engineering work.

## STREET PAVEMENTS.

For many years the inferior condition and quality of our pavements have been a standing reproach to the city, the subject of bitter criticism and ridicule through our own daily and periodical journals, and the occasion of astonished comment on the part of visitors from abroad. It was difficult to understand why the great and prosperous metropolis of the Western Continent, the centre of the wealth and commerce of a great nation and of a country overflowing in natural resources of every character, should tolerate such a condition of its thoroughfares, when European cities like London, Paris, Berlin, Liverpool, Manchester and others had made within the present generation, and still continue to make, vast and expensive improvements in their street pavements. This was done with a just regard for the incontestable fact that good pavements are an essential element to the welfare and prosperity of every large city; that there is always room for improvements in the quality of pavements as new ideas and knowledge of the subject are developed by experience, study and invention; and that liberal expenditures for the improvement of the pavements, when judiciously applied, are the most profitable of investments for a great municipality.

Most of our European visitors in forming their judgments on this subject, have probably given no thought to the differences between our municipal organization and that of most or all of the large European cities. With the latter the municipal government is either entirely autonomous with abundant power and resources for the development and advancement of city improvements and adornments; and where exclusive autonomy is not vested in the municipal government, it is supplemented by a paternal care on the part of the National government, which is exercised for the advancement and not for the restriction of improvements, and is often manifested in the granting of large subsidies from the National Treasury.

With the City of New York the conditions of government are different. The municipal government and population are far from having autonomy. The parental authority exercised over the city by the State Legislature is absolute; no improvement of any magnitude can be had without legislative permission, and the parental authority is unfortunately too often exercised to put a veto on improvements which have the unanimous sanction and demand of the people of the city and its legislative representatives, and too seldom for the real advancement of the city's best and most important interests in that respect. That this should be so, and that our people should be denied the right to make improvements which they demand, and the cost of which they alone must bear and are willing to bear, seems an anomaly, but it is a deplorable fact in too many instances.

However, the city has good reason to congratulate itself on the fact that in the matter of its needs in the improvement of the pavements a majority of the Legislature of 1889 rose to a just appreciation of the situation by passing the act, chapter 346, Laws of 1889, authorizing the expenditure of \$1,000,000 each year for three successive years for the replacement of old and defective pavements by new ones of far superior quality, and far better adapted to the needs of the people in respect to proper facilities for wagon traffic, sanitary requirements, and personal comfort. The fruits of this just liberality of legislative action are already manifest in various sections of the city to the most casual observer in the many miles of new, substantial and comfortable pavements which have replaced old and defective ones within the past eighteen months, though only about one-half the work is completed which will be accomplished by the time the \$3,000,000 appropriation is exhausted.

The greatest obstacle to the construction and maintenance of first-class pavements in our most important and frequented thoroughfares consists in the existence of privileges granted to private corporations by legislative franchises to cover the pavements with railroads, and undermine them with such a variety and multitude of underground conduits and structures, steam pipes, gas pipes, electric conduits or subways, etc., that in miles of streets the foundation of the pavement consists of a network of conduits occupying nearly all the space from curb to curb, and from a depth of two or three feet to the depth of twelve to fifteen feet below the pavement, with only a minimum of space for natural soil foundation between, over and under the network. At the same time the best portion of the surface of the pavement is monopolized by railroads with their tracks and car traffic, to the comparative exclusion and obstruction of wagon traffic. For the laying, repairing and maintenance of these networks of conduits, and their innumerable lateral house connections, and the laying and maintenance of railroads, the pavements and the soil under them are torn up and replaced again and again with such frequency and persistency that they may be said to be in a constant state of disruption. It is a fact well known to practical engineers, architects, builders, contractors and people of similar occupations and experience, that when natural soil is torn up time after time, and is traversed by a multitude of structures in close proximity to each other, it cannot, even with the greatest care, skill and expenditure of labor, be put back to its natural compactness and even strength of resistance to pressure. The inevitable consequence is unequal settlement of the soil and corresponding unequal settlement of the pavement, which soon transforms the even surface of the pavement into a series of hills and hollows, ruts and ridges.

The natural disposition of corporations organized for speculation and profit is to realize the greatest income on the smallest expenditure of capital, and to that end self-interest is placed above all other considerations. This leads to the practice of economizing on the work of replacing the excavated soil and the pavements to the proper stability and uniformity, by doing the work with the least possible expenditure of labor and money, regardless of the acknowledged fact that without good workmanship and unstinted use of labor and material the soil and pavements cannot be properly restored.

The Department has spared no effort and neglected no opportunity to use the authority vested in it, and the means placed at its disposal, to the fullest extent to compel the corporations by a rigid system of inspection and supervision to carry on their works with the least possible injury to pave-

ments and public structures, and to replace disrupted soil and pavements in the most substantial manner. The Department has also made every effort to restrict the operations of corporations engaged in tearing up the streets, in respect to time, extent and location, for the protection of the pavements and the abatement of the many evils which arise therefrom. But the latitude of privilege and freedom from restraint by municipal authority which has been given to most of these corporations by legislative franchises place so many barriers in the way of these efforts that the results desired cannot be adequately realized. In respect to the extent to which some or most of the corporations may occupy the public streets with their structures, and tear up the streets for their purposes, the several franchises practically place no limit. Where there was formerly only one gas company having mains in any street, each company being limited to a certain section or district, there are now many miles of streets where three or four companies have each one or two lines of gas-mains, and the majority of houses along such streets now have two or more lateral connections with gas-mains where formerly there was only one. This may have been to some extent beneficial in reducing the price of gas by competition, but it has certainly also acted, and will continue to act, to the injury of the public by multiplying the occasions for tearing up and obstructing the streets and damaging or practically destroying the pavements. The same may be said in respect to the numerous electric light companies which have sprung into existence in the past few years.

In Philadelphia and other cities, where the municipal authorities control the manufacture and distribution of gas and electric light, these difficulties are obviated without making the business a monopoly in the hands of a private corporation.

The New York Steam Company claims the whole territory of the city for its field of operations, and the right to enter upon any street at its pleasure.

I know of no city where the franchises given to private corporations for occupation of the public streets are so devoid of conditions showing due regard for the necessity of municipal supervision and restraint of the operations of the corporations.

New schemes, involving further occupation and obstruction of the streets and disruption of the pavements come to the surface from time to time, and the promoters of each wish to be regarded in the light of public benefactors, whose principal desire is to supply a pressing public need or demand. The facility with which franchises in such cases have heretofore been obtained, without much or any regard for public needs or demands, makes it necessary to view such schemes with extreme caution, and must soon force upon the public mind the necessity of weighing critically the amount of benefit the public may derive, and the amount of injury to the common public interests which may be inflicted by the granting of further privileges of this character.

It may be said that the action of the Legislature of 1889, in appropriating, or giving power to appropriate and expend, \$3,000,000, in three successive years, for the improvement of the city's pavements, and the progress so far made and about to be made in carrying out the improvements, mark a period in the history of New York's pavements, and that a retrospect of the subject at this time appears to be opportune. For the data given in this retrospect I am indebted to the report of Mr. Stevenson Towle, the Consulting Engineer on Pavements, which is hereto annexed, and which contains much other valuable information on the subject of pavements, and to information furnished by Mr. Charles H. Bull, Assistant Engineer on Pavements, who has rendered valuable and faithful service in the matter of our street pavements.

Prior to 1860 nearly all the streets of the city were paved with cheap cobble-stone, which fairly met the needs of the light street traffic prevailing prior to that period, but the cobble pavement had already been much injured and partially destroyed by the tearing up of the streets to lay water-mains and connections upon the introduction of Croton water in 1842 and subsequently, and in the extension and improvement of the sewerage, which assumed definite shape and unusual dimensions about the same period. With the increase in population, commerce and business generally the street traffic also became heavier in weight of loads carried and in number of vehicles, which added to the destruction of the cobble pavement, so that the city soon became noted for its bad pavements. The introduction of a more substantial and smoother pavement soon became urgent and one of the new pavements adopted was the "Russ" pavement, laid in 1849 in Broadway from Fourteenth street south. In respect to durability this pavement could not be excelled, but the large square trap-blocks soon wore so smooth that the pavement became extremely slippery. The first "Belgian" pavement of small square trap-blocks was laid on the Bowery in 1852, and met with such popular favor that it rapidly replaced the cobble, but before long it was much damaged by the introduction of street railroads on a large scale. With succeeding years wagon traffic increased so much in weight and volume, that a stronger and more substantial pavement became necessary. The result of experiments made in London led to the adoption of granite or trap blocks three inches wide, ten to twelve inches and seven to ten inches deep, laid on hydraulic concrete, as the best pavement for business streets, and, excepting slight variations as to size, this style of pavement was adopted by other cities. At a later period, in 1869, it was introduced in this city by laying it on Broadway, from Fourteenth street south, in place of the "Russ" pavement. There could be no better demonstration of its durability and other good qualities than the fact that it has withstood the Broadway traffic all these years, and would to-day be in fair condition if it had not been torn up time and again, first for the pneumatic conduit of the Western Union Telegraph Company and later for additional gas-mains, for steam-pipes and last for the surface railroad. It furnishes a most conspicuous example of the injury and destruction which can be wrought by such tearing up, and the presence of a surface railroad, on the most substantial pavements, capable of withstanding the heaviest of wagon traffic without much deterioration for more than twenty years.

The same style of pavement was laid on South Fifth avenue in 1872-3, and it would probably have been extensively applied on other thoroughfares except for its costliness and the claim of a patent right, which excluded competition. The cost was subsequently reduced, as the quarrymen became more skilled and experienced in cutting the stone blocks to the required dimensions and shape. In the meantime the small square block pavements, trap and granite, steadily and rapidly deteriorated under the constantly increasing weight and volume of wagon traffic, the multiplication of occasions for tearing up the streets for the benefit and needs of private corporations, and the extension of rail-tracks and street-car traffic. The City Charter of 1873 took away the authority theretofore possessed by the Common Council to direct by ordinance that any street be repaved, and an assessment levied for the repavement, unless it should be petitioned for by the owners of a majority of the property in frontage to be assessed, and this put a complete stop to all repavements until the passage of the Act of 1875, which authorized an annual expenditure not exceeding \$500,000 for repavements. The first appropriation under this act was made in 1877—\$200,000; for succeeding years there was appropriated: 1878-80, inclusive, \$300,000 each year; 1881-85, inclusive, \$350,000 each year; 1886, \$200,000; 1887, \$336,000; 1888, \$434,500; 1889, \$413,000; 1890, \$400,000; 1891, \$350,000.

The repavements which could be and were made under these annual appropriations were utterly inadequate to check or counterbalance the rapid deterioration in the old square block pavements, and were, in fact, applied and needed almost exclusively to remove and replace the remainder of the old cobble pavement. The City authorities finally recognized the absolute necessity of larger means and measures to stop the retrogression in the general condition of the streets, and to inaugurate improvements instead. The Legislature of 1889 came to their aid by the passage of the act already mentioned.

The large addition made by the act to the means for improving the pavements brought upon the authorities intrusted with its execution—the Board of Estimate and Apportionment and the Commissioner of Public Works—great responsibility, both in the selection of the streets to be first repaved, and the character and quality of pavements to be chosen. The selection of the streets was rendered the more difficult from the fact that the number and area of streets which were in actual need of repavement, and the demands for repavements from all sections of the city, were many times greater than the capacity of even an appropriation of \$1,000,000 for one year.

The small square block pavement, granite and trap, had for years been the universal pavement for all sections and streets of the city, the exclusively commercial and business sections; the mixed business and residential sections; the exclusively residential streets, and even the suburban sections, with the exception of the macadam roadways built some years ago for the main purpose of suburban



drives. It became at once apparent that these different sections required different treatment in the selection of the character of the pavements to be adopted, and it became also apparent that in the selection of the streets to be repaved there were other elements of public interest to be considered besides the main element of the actual condition of the existing pavement. Among these are volume and character of street traffic, the condition of contiguous and connecting streets, and the special needs in the districts and directions of the heavy commercial traffic, of proceeding on a fixed system which would gradually develop an intercommunicating network of well-paved streets. Appreciating the responsibility resting upon me, not only in the execution of the work to be done, but also in the matter of the selection of the streets and the character of the pavements, which in its initiatory steps had been intrusted to me by the Board of Estimate and Apportionment, I called to my aid the services and advice of an eminent engineer, who, by many years of experience and special study, possesses exceptional qualifications as an authority on street pavements, by the appointment of Mr. Stevenson Towle, as Consulting Engineer, with the approval of the Board of Estimate and Apportionment, and Mr. Charles H. Bull as Assistant Engineer by the same authority.

After duly considering the questions of the character and volume of street traffic; conditions of climate and soil; durability of material; cost and experience in this and other large cities, it was soon determined that for the highways of business traffic the granite blocks, similar in shape and dimensions to the Broadway pavement above mentioned, would furnish the most suitable and durable pavement at comparatively moderate cost, and that in streets of very heavy traffic, and those built on loose soil contiguous to the water front, the pavement should be laid on concrete foundation to give it the required solidity and stability, while on ordinary business streets with lighter traffic the cheaper sand and gravel foundation would probably answer all purposes.

In the residential portions of the city, and in the vicinity of schools, hospitals and similar public institutions, as well as in streets where buildings are exclusively occupied for office purposes, the jarring noise of wagon traffic over stone-block pavements is very objectionable, and the need of a smooth, clean, noiseless, and at the same time durable pavement had long been felt. The field from which to choose such a pavement was practically confined to the asphalt, the wood and the macadam. The experiments with wood pavements in this city had been very unfortunate, and it seemed to be the general opinion that they are not suitable to our conditions of street traffic and climate. The macadam roadways, built about twenty years ago in the upper part of the city, in then suburban surroundings, furnished palpable evidence that with the transformation of surroundings from the suburban to the urban, and the consequent change in the character and volume of wagon traffic, macadam pavement becomes unsuitable and objectionable in many ways. There had also been in preceding years considerable hesitation about adopting asphalt pavements to any considerable extent, the principal objections being slipperiness, want of durability and expensiveness. In recent years, however, asphalt pavements had been more extensively used in the large European cities, and some of the cities in this country, notably the national capital and the city of Buffalo, in this State, and the tests of time and wear which they had undergone gave a substantial basis for judgment as to their qualities. The judgment arrived at was, that with proper composition of materials and proper methods and workmanship in laying them, they combine the qualities of smoothness, cleanliness and noiselessness, with a fair degree of firmness and durability under ordinary traffic in city streets, and that in respect to slipperiness they compare not unfavorably with other kinds of pavements, and present safe foothold for horses.

The best and most favorably known asphalt pavements were therefore adjudged to meet the requirements of residential streets in this city, to a greater degree than any other known and tried pavement.

The soundness of this judgment has so far been demonstrated by eighteen months' experience with the asphalt pavements laid in our streets in the summer of 1889, and by the fact that they are constantly growing in popular favor. The demand from property owners and residents to have the old stone blocks in their streets replaced with asphalt far exceeds the means available under the present appropriation, and a proportionate demand is made for them on new uptown streets, which are to have their first pavement, by the property owners who are or will be assessed for them, and who may therefore be expected to act with due caution and deliberation in expressing their preferences for the pavement for which they have to pay. In response to these demands of property owners, ordinances have been passed and contracts have been made in 1889 and 1890, for asphalt pavements, payable by assessments, on twenty-one uptown streets, with an aggregate area of 60,760 square yards.

To allay any doubts or apprehensions as to the durability and cost of maintenance of the asphalt pavements laid on our streets since the summer of 1889, and as a measure of precaution, covering that point, every contract for asphalt repavement requires the contractor to give a guarantee, with amply adequate bonds, that he will maintain the pavement in good condition, equal to its condition when newly laid, for the period of fifteen years, and a similar guarantee for the period of five years is required in all contracts for asphalt pavements payable by assessment. The contractors for asphalt repavements are further bound to their obligations in respect to the quality and durability of the pavement, and the maintenance of the same at their expense, by the retention from them of thirty per cent. of the moneys earned, and the money so retained is paid to them at stated periods as follows, provided the pavement up to such period has been maintained in its original condition: Three per cent. at the expiration of six years after the completion of the work, and three per cent. each year thereafter until the expiration of the fifteen years, when the final and full payment is made. The shorter period of five years' guarantee is used on assessment work in order that the first cost and the assessment shall not be increased by the longer period of guarantee.

The city is thus assured that the pavements shall be maintained in their original condition for such periods, and is also relieved of the expense of maintenance for that time.

The selection of the kind and description of pavements to be used in the repavement work having been made, the next step was to select the streets to be first repaved.

The conditions and views to be considered, and which were duly considered in this matter, have been outlined above. The destroying effects of railroads on street pavements, especially the objectionable centre bearing or T rails, projecting so much above the street surface, determined me to leave out of the list of streets recommended for repavement in 1889 all those traversed by rail-tracks, and to follow up this action by exercising all my authority to induce or compel the railroad companies to remove the centre bearing rails, and replace them by a rail as nearly as possible flush with the pavement, and presenting no projection which forces vehicles to travel in certain grooves, wearing ruts into the pavements and destroying them. A grooved rail, the groove admitting the flange of the car-wheel to keep it in place, and the wheel resting on the flat surface of the rail, flush with the pavement, was considered to be, and certainly is, the best style of rail that can be used without excessive injury to the pavements, for the reason that vehicles can pass over, across and along such rail in every direction without obstruction, danger or inconvenience. When the Twenty-eighth and Twenty-ninth Street Railroad Company applied for the permit to lay the rail-tracks on its route, it was made a condition that the grooved rail be used, and it has consequently been adopted and laid by that company. All my efforts to induce or compel the railroad companies already in operation to adopt this style of rail have so far only succeeded to the extent that on the Fourth and Madison Avenue Road the T rail has been replaced by the less objectionable "step" rail, and that the Broadway Railroad Company and the Third Avenue Railroad Company have agreed to use that style of rail in rebuilding their roads for cable traction. The manner in which the subject of street railroads is dealt with in some of the European cities, to overcome the difficulties above mentioned by giving the municipal authorities more extensive control, is shown by the example of the city of Manchester, England, which, when entering upon a thorough reconstruction of its pavements, purchased some fifty miles of street car tracks, reconstructed them in the most substantial manner, and then rented them to the original car companies at six per cent. per annum on the cost of construction.

Another precaution taken in the selection of the streets to be repaved in 1889 was to avoid streets which were then, or were about to be, torn up by corporations for placing underground conduits and structures, and when the selection had been made, all corporations and parties having occasion to open street pavements in the pursuit of their business were notified to proceed with such

work at once, in advance of the laying of the new pavements, and that no disruption of the newly laid pavements would be allowed. Ample notice is given, and time and opportunity allowed to all, to make their constructions and repairs in advance of the laying of new pavements and no permits to open new pavements are granted for any purpose, except in cases of emergency, involving danger to life or property. Those who do not avail themselves of the opportunity can only blame themselves, and have no cause to find fault when they are refused permission to open new pavements for their purposes.

When the time arrived to make up the list of streets to be repaved in 1890, the same views and methods were followed as in 1889, as far as practicable, except that a larger portion of the repavement work was apportioned to residential and other streets in the central part of the city, whereas the bulk of the repavement work for 1889 had been devoted to the improvement of the commercial thoroughfares in the lower part of the city.

The latter work has been greatly aided and supplemented by another act of the Legislature of 1889, chapter 449. This act relates to streets within the limits of grants of land under water. Under these grants the grantees and their successors, the present owners of the land, are required to pave and maintain the streets within the limits of the grants at their own cost, but they rarely complied with this requirement beyond laying the first pavement years ago, when these streets were first built up, and when the cheap cobble pavement was in common use in this city. Of late years many unsuccessful efforts were made by this Department to compel the owners of such lands to repave their streets in a suitable manner, according to the plans and specifications for repavements made at the expense of the city at large. The Act of 1889 provides that the Common Council may by ordinance direct this Department to repave such streets, the cost to be assessed on the abutting property, and that on payment of one assessment for such repaving the owners of the property shall be forever released from all obligations contained in the grant in relation to paving and repaving such streets and keeping them in repair. These streets are all contiguous to the water-front, in the business portions of the city, and include some of the most important thoroughfares, such as West street, South street, Washington street, and intersecting streets. The owners of the land having disregarded their obligations to repave them, when it became necessary, or even to keep the old pavements in repair, and the city having no authority to make the repavement, or even repairs, at their expense until the passage of the Act of 1889, the pavements degenerated to a deplorable condition, and to a large extent neutralized the beneficial effects of new pavements on other streets in their vicinity. With the authority now vested in the city the repavement of streets within land grants is made to work as far as practical in harmony with, and supplementary to, the repavements made from the Department appropriations.

#### *Pavement Work Accomplished in 1889 and 1890.*

##### NEW PAVEMENTS LAID IN 1889.

##### *On Uptown Streets, Cost Assessed on Abutting Property.*

Granite-block.....	110,223 square yards.
Trap-block.....	5,178 "
Asphalt.....	14,938 "
Total.....	130,339 square yards.

##### *Repavements under Annual Appropriation—Consolidation Act.*

Granite-block.....	55,761 square yards.
Trap-block.....	10,667 "
Total.....	66,428 square yards.

##### *Repavements under Chapter 346, Laws of 1889.*

Granite-block.....	4,927 square yards.
Asphalt.....	10,647 "
Total.....	13,574 square yards.

Grand total area of pavements laid in 1889..... 212,341 square yards.

##### NEW PAVEMENTS LAID IN 1890.

##### *On Uptown Streets, Cost Assessed on Abutting Property.*

Granite-block.....	153,328 square yards.
Trap-block.....	4,190 "
Asphalt.....	45,611 "
Total.....	203,129 square yards.

##### *Repavements under Chapter 449, Laws of 1889, Assessed on Abutting Property.*

Granite-block.....	32,681 square yards.
--------------------	----------------------

##### *Repavements under Annual Appropriation—Consolidation Act.*

Granite-block.....	94,422 square yards.
Trap-block.....	889 "
Asphalt.....	30,153 "
Total.....	125,464 square yards.

##### *Repavements under Chapter 346, Laws of 1889.*

Granite-block.....	138,119 square yards.
Asphalt.....	244,241 "
Total.....	382,360 square yards.

##### *Summary.*

	1889. SQUARE YARDS.	1890. SQUARE YARDS.
Granite-block pavement laid.....	170,911	418,550
Trap-block pavement laid.....	15,845	5,779
Asphalt pavement laid.....	25,585	320,005
Total area of pavements laid.....	212,341	743,634



*Present Length of Paved Streets.*

Stone-block, granite and trap.....	321.27 miles.
Cobble.....	3.32 "
Asphalt.....	16.35 "
Macadam.....	24.24 "
Wood.....	0.03 "
Total.....	365.21 miles.

New York City now has a larger area and mileage of asphalt pavement than either London or Paris.

*Length of New Pavements Laid in the Past Seven Years.*

In 1884.....	11.11 miles.
" 1885.....	9.61 "
" 1886.....	8.53 "
" 1887.....	19.10 "
" 1888.....	16.54 "
" 1889.....	10.87 "
" 1890.....	34.21 "

*Repairs of Pavements.*

The pavement repairs may be divided into two classes: Where pavements are taken up and relaid from curb to curb for distances of not less than one-half block to several blocks in the same street; and the repairs of depressions and defects which in the separate instances are confined to smaller limits. The latter class of repairs must, from their nature and distribution over more than 320 miles of stone pavements, and the necessity of immediate attention, be done by day's work, while a large portion of the relaying from curb to curb is done by contract.

The average force employed by the day on pavement repairs during the paving season was 54 single gangs of 8 to 10 men each, and the area of pavements repaired and relaid by this force is 341,123 square yards.

The area of pavements taken up and relaid by contract is 62,500 square yards.

In the report of the Water Purveyor, hereto annexed, 95 separate streets are enumerated in which the pavement was relaid from curb to curb for distances of not less than one-half block.

*Excavations in Street Pavements.*

The extent to which the City's pavements are torn up for the business of private corporations and individuals is shown by the following:

*Summary of Work Done during the Past Year.*

27,088 separate excavations made to repair underground structures, and to make and repair their lateral house connections.

53.72 miles of gas-mains laid.

48.97 miles of trench opened for electric subways.

1,263 lineal feet of steam-pipes laid.

2,723 lineal feet of salt-water mains laid.

630 lineal feet of pneumatic tubes laid.

1,396 lineal feet of refrigerating pipes laid.

250 lineal feet of single car tracks laid.

16,743 lineal feet of double car tracks laid.

2,117 house connections with water-mains laid and repaired.

1,553 house connections with sewers laid and repaired.

The building of the cable railway on Broadway has been so much delayed, principally on account of the difficulty of re-arranging gas-mains, steam-pipes, water-mains, electric subways, etc., to make room for the cable conduit, that practically nothing is yet accomplished except the shifting of the gas-mains on Broadway below Fulton street. I believe that all arrangements and preparations have been made for the commencement of this work in the spring, and its vigorous and rapid prosecution to early completion. The repaving of Broadway will follow the cable construction as rapidly as the latter progresses.

The construction of the cable railway on the route of the Third Avenue Railway Company, through Third avenue, the Bowery and Park Row, will be proceeded with in the early spring, and will be followed as rapidly as the construction of the cable railway progresses, by the repavement of Park Row, from Frankfort street to and including Chatham Square, the contract for which has already been made. It is also the intention of the Department to repave the Bowery and Third avenue with new and substantial pavement simultaneous with the building of the cable railway, as far northward as practicable.

## SEWERAGE AND DRAINAGE.

No subject is of greater importance to a large and densely populated city, with extensive manufactures and commerce, than that of sewerage and drainage. This Department has charge of the subject so far as it relates to the part of the city south of the Harlem river. North of the Harlem river the sewerage and drainage have heretofore been under the charge of the Department of Public Parks, but with the beginning of this year, 1891, they came under the care and management of the Commissioner of Street Improvements elected at the last election under an act passed by the last Legislature, which created that office. So far as the work south of the Harlem river and under the charge of this Department is concerned, it may be divided into three parts—(1) the extension of sewerage and drainage into new streets and districts; (2) the improvement and reconstruction of sewers and their appurtenances in the older part of the city to meet the increased demands upon the sewerage system caused by the changes in buildings and growth of population, manufactures and commerce, and to overcome defects in the old sewers which were built prior to the establishment of a comprehensive sewerage system; (3) the ordinary repairs and cleaning of sewers, culverts and receiving-basins.

In the extension of sewerage and drainage into new streets and districts, the first work is the making of topographical surveys to determine the grades and dimensions of sewers required, and to divide the territory into sewerage districts, each of which may be drained by a common outlet, and this work is kept well in advance of the actual need of constructing sewers. After that the detailed plans and the contracts and specifications for new sewers and appurtenances are prepared, and the construction work is proceeded with as the demands for it arise. The demands for additional sewers may arise from the progress of improvements on private property which requires drainage, and in such cases the Department usually awaits the manifestation of such demands by written applications of property owners, or the demands may arise from sanitary conditions, or the necessity of providing outlets for sewers already built, and in these cases the Department acts upon its own knowledge of the circumstances, or upon requests and reports made by the Health Department.

For the past year this work has been principally confined to the section of the city west of Eighth avenue and north of Fifty-ninth street, where exceptionally rapid progress has been made within the past few years in building operations, principally in the construction of residential buildings. The most important of the sewers completed during the past year in this section are—in Eleventh avenue, between One Hundred and Sixty-first and One Hundred and Sixty-fifth streets, with extensions in One Hundred and Sixty-fifth street and Kingsbridge road; in Tenth avenue, between One Hundred and Seventy-eighth and One Hundred and Ninetieth streets; in One Hundred and Forty-second street, between Eighth and Edgecombe avenues.

In the easterly part of the city sewers have been built in Seventy-third street, between Avenue A and the East river; in Sixty-fifth street, between Avenue A and First avenue; in Madison avenue, between One Hundred and Fifth and One Hundred and Ninth streets; between One Hundred and Sixteenth and One Hundred and Seventeenth streets; between One Hundred and Twenty-fifth and One Hundred and Twenty-seventh streets; between One Hundred and Twenty-

eighth and One Hundred and Thirtieth streets, and between One Hundred and Thirty-first and One Hundred and Thirty-second streets.

In the aggregate 13,920 lineal feet of new brick sewer, 8,050 lineal feet of new pipe sewer, and 39 receiving-basins have been built in the extension of the sewerage system during the year, and the sewerage system on Manhattan Island now includes 437.89 miles of sewers with 3,248 receiving-basins.

One sewerage district, covering a large area north of One Hundred and Fifty-fifth street, still awaits the construction of a common outlet through One Hundred and Sixty-seventh street, and through a strip of private land to the Harlem river, for the reason that the proceedings for acquiring such strip of land for sewerage purposes have not yet been completed, though they have been pending for several years. This has caused delay in proceeding with the construction of the minor sewers which will drain into this outlet, and which are urgently needed for the drainage of buildings and streets in that district, but all necessary preparations have been made to proceed with this work as soon as the land is acquired and the outlet built.

The work of altering, improving, reconstructing and extending old sewers is partly paid for from the annual appropriation for repairing and cleaning sewers, and partly by local assessments on property benefited and drained into the sewers. Under the annual appropriation 2,301 lineal feet of sewers have been repaired with tiled bottoms, and 2,608 lineal feet of sewers have been rebuilt, and a very large amount of work of this character was in progress at the close of the year.

The most important of the reconstruction and improvement work on the old sewerage system is along and contiguous to the water-front, and includes a comprehensive plan of marginal sewers along the North and East rivers, with as few outlets as the existing grades will admit of, the outlets being extended under the piers into the tidal currents, doing away with the numerous small outlets which have heretofore been or are now discharging into still water at the bulkheads, causing deposits of sewerage matter near the outlets, which pollute the water and are detrimental to health. This work can only advance as the improvements under the Department of Docks in the construction of bulkheads, piers, etc., progress.

On West street the marginal and outlet sewers have been completed as follows:

From Battery place to Rector street, with outlet through Pier 4 at Morris street, cutting off the two old outlets at Battery place and Morris street respectively, and draining an area of about 15 acres; between Rector and Carlisle streets, with outlet through Pier 8 on Rector street, and draining an area of about 20 acres.

Between Murray and Jay streets, through Pier 21 at Duane street, cutting off 5 old outlets which formerly emptied at the bulkhead, and draining an area of about 75 acres.

Between Canal and West Eleventh streets, with outlet through Pier 40 at Clarkson street, cutting off 13 old outlets which emptied at the bulkhead, and draining an area of about 450 acres. This section was completed several years ago.

Three sections on West street remain uncompleted, viz.:

Between Carlisle and Dey streets, with proposed outlet through Pier 13, on which the work has so far progressed that it is expected to be completed next spring. This will cut off 4 old outlets, and drain an area of about 26 acres.

Between Dey and Murray streets, with outlet to connect with a sewer to be built by the Department of Docks under Pier 14, near Vesey street, and to drain an area of about 54 acres. This work may also be completed next season.

Between Jay and Desbrosses streets, and between Canal and Desbrosses streets, with outlet through Pier 39 at Vestry street, cutting off 8 old outlets, and draining about 45 acres. This section is all completed except the construction of about 200 feet of the outlet sewer.

On South street the marginal sewer has been completed between Roosevelt and Fulton streets, with outlet through Pier 29 at Roosevelt street, cutting off 3 old outlets, and draining an area of about 148 acres. Work is in progress on the marginal sewer between Roosevelt street and Pike Slip, with outlet through new Pier 29 at Market Slip, which is to cut off 5 old outlets and will drain about 56 acres.

Between Broadway and Whitehall streets, connecting for the present with the Broad street sewer, and doing away with the old outlet under the South Ferry. This section will drain about 19 acres.

Surveys and plans are now being made for the construction of the remainder of the marginal sewers and outlets on South street, between Whitehall and Montgomery streets.

The area drained by 1 sewerage district, with 1 common outlet, according to the plans adopted and pursued in the reconstruction and improvement of the sewerage system in the older part of the city and in the laying out of new districts and the construction of new sewers in the upper part of the city, is controlled by the topography of the ground and the grade of the streets to be drained. These variations of topography and grades account for the large differences in the areas drained by separate districts and outlets.

The sewage of the city is now discharged through 93 outlets into the East river and 68 outlets into the North river. The 61 old outlets formerly discharging along the water-front south of Fourteenth street, where complaints of defilement of the water have been greatest, will be reduced to 23 on completion of the works above mentioned, all of which will discharge into the deep water of the tidal currents.

I invite your special attention to the report of the Engineer in Charge of Sewers, hereto annexed, which treats at considerable length, of the subject of marginal sewers and outlets along the water-front, and the improvement already made, now in progress and in contemplation.

In the ordinary repairs and cleaning of sewers, a system of examination has been established, covering the sewerage throughout Manhattan Island, beginning at the sewer outlets, and proceeding thence through all the branch sewers so as to trace and locate any possible defect. The effect of this system of examination has been that many repairs have been made in advance of any manifestation of defects of the sewers by stoppage, and through complaints from house owners, which heretofore were seldom made before the defects were so manifested. The Engineer in Charge of Sewers states in his report that the sewerage system is now clean and has operated with marked success during the entire year.

The brick sewers are cleaned by contract, and during the past year the contractors cleaned 240,850 lineal feet of brick sewers at a cost of \$36,729.62. The pipe sewers, which are all of smaller dimensions, are cleaned by the regular force employed by the Department in cleaning and repairing sewers, and the total length of pipe sewers cleaned during the year is 64,652 lineal feet, at an average cost of five cents per foot. The average cost of cleaning all sewers, brick and pipe, is 13 cents per lineal foot.

Two mason gangs have been constantly employed during the year in resetting to the proper grades the manholes in the streets where pavements have been actually laid or relaid, so that there should be no inequalities as between the pavements and the manhole heads.

The average force employed on ordinary and minor repairs consisted of 71 mechanics and laborers, 24 horses and carts, and five inspectors. The following are the principal items of work done by this force:

- 5,168 receiving-basins cleaned.
- 64,652 lineal feet pipe sewers cleaned.
- 333 lineal feet brick sewer rebuilt.
- 250 lineal feet brick sewer repaired.
- 80 lineal feet box sewer repaired.
- 207 lineal feet new pipe sewer laid.
- 159 lineal feet spur pipe laid.
- 1,368 manhole heads reset.
- 22 new basin heads set.
- 4 new manholes built.
- 4 new receiving-basins built.
- 62 receiving-basins and 6 manholes repaired.
- 96,179 cubic yards earth excavated and refilled.
- 13,426 cart loads sewer deposits removed.



The greatest obstacle to the rapid and economical cleaning of sewers consists in the habit of careless people to discharge solid substances into the sewers which the current of sewage is not sufficiently strong to remove, and which become obstructions to the flow, and cause constant accumulation of deposits until the obstruction is removed by cleaning.

Another evil practice in regard to the use of the public sewers consists in the discharge of steam and hot water from buildings. The fact that such practice is very deleterious to the sewers and to the public health by generating noxious and dangerous gases has long ago been recognized by the enactment of a city ordinance which prescribes a heavy penalty for every offense committed in discharging steam into sewers, and the Department uses all the means at its command to stop this evil practice by following up every case which is discovered to the enforcement of the penalty if necessary.

During the past year it has been demonstrated that pipes for conveying steam from central stations through the public streets at considerable distances, and under very high pressure, cannot be laid within ten feet of any sewer without conveying heat to the interior of the sewer, which, in a measure, creates the same deleterious conditions which the direct discharge of steam into the sewers creates. In acting upon future applications for laying additional steam mains, this point will be kept in view, though it may be difficult to find streets where the numerous underground structures already existing will leave sufficient space to place steam mains at a distance of ten or more feet from the public sewers, and at equal or greater distance from the water-mains, so that the water in the mains shall not be affected by the heat and steam from the steam mains.

#### REGULATING AND GRADING STREETS.

The Bureau of Street Improvements has charge of regulating and grading streets, setting and resetting curb-stones, flagging and reflagging sidewalks, building fences in front of vacant lots when directed by ordinance of the Common Council, and keeping in proper order the fences and sidewalks in front of city property.

At the beginning of the year work was in progress on 29 contracts for such works; 137 new contracts were entered into during the year and 126 contracts were completed. The aggregate cost of the works completed, and for which assessment lists have been transmitted to the Board of Assessors, is \$309,502.21.

Of the principal regulating and grading works still under way, I will mention:

Kingsbridge road, from One Hundred and Ninetieth street to the Harlem river, which is intersected by the United States Ship Canal, now building between the Harlem and Hudson rivers.

The construction of this canal will require the building of a bridge across it, which, according to the report and estimate of the Chief Engineer of the Croton Aqueduct, should be 50 feet wide, with a draw 300 feet long and approaches 458½ feet long on the south side and 430 feet long on the north side, and with a clear space of 28 feet between the draw-bridge and mean high water in the canal, the cost of the entire work being estimated at \$350,000 to \$375,000. Under the advice of the Counsel to the Corporation the City will have to bear the expense of building this bridge under a special appropriation to be made for the purpose. The regulating and grading work, irrespective of the bridge and the work connected therewith, may be completed in about six months.

Edgcombe avenue, from One Hundred and Forty-fifth street to St. Nicholas place—This avenue, as its name indicates, is on the edge of a bluff, and its construction required an immense amount of filling, sustained on the easterly side by a retaining-wall. The work is very nearly completed.

Claremont avenue, from One Hundred and Twenty-second to One Hundred and Twenty-seventh street—The work on this avenue consists of heavy rock excavation and will be completed in about six months.

Details in respect to other regulating and grading works now in progress will be found in the report of the Superintendent of Street Improvements hereto annexed.

The aggregate quantities of work done under all the contracts under the direction of the Bureau of Street Improvements during the year are as follows:

- 35,018 cubic yards earth excavated.
- 66,383 cubic yards rock excavated.
- 278,195 cubic yards filling placed in embankments.
- 66,772 lineal feet curb-stones set.
- 35,951 lineal feet curb-stones reset.
- 546,799 square feet flagging laid.
- 153,309 square feet flagging relaid.
- 501 cubic yards retaining-walls built.
- 7,479 lineal feet picket fence built.

#### MACADAM ROADWAYS AND UNPAVED STREETS.

The work done on the macadam roadways during the year is summarized as follows:

- 90,006 square yards of roadways resurfaced and repaired.
- 1,275 square yards of gutters repaved.
- 458 square yards gravel roadway resurfaced.
- 3,982 square feet flagging relaid.
- 600 square feet bridge stone relaid.
- 707 lineal feet curb-stones reset.

The following materials were used:

- 4,211 truck-loads of broken trap-stone.
- 1,705 truck-loads of trap-rock screenings.
- 1,872 truck-loads of gravel.
- 880 truck-loads of gravel screenings.
- 445 truck-loads of sand.
- 309 truck-loads of earth.
- 10 truck-loads of paving-stones.
- 6 truck-loads of Telford foundation stone.

In the cleaning of the roadways 10,661 truck-loads of surplus material were removed.

The sprinkling of the roadways during dry weather has received all the attention which the means and force at the command of the Department would admit.

In the care and repair of country roads and unpaved streets, 36 miles of roadways were re-regulated and graded, 8,016 square yards of roadway were surfaced with broken stone, rubble and clay, 1,000 square yards of Telford foundation were laid, 175 lineal feet of stone drains were built and 1,380 lineal feet of fence built.

The following materials were used on the unpaved streets and roads:

- 3,299 truck-loads of earth.
- 4,202 truck-loads of broken stone.
- 35 truck-loads of stone screenings.
- 52 truck-loads of gravel.
- 25 truck-loads of building stone.

Of the broken stone used, 375 cubic yards were broken by the repair gangs.

With the very rapid increase in buildings and population in the districts through which the macadam roadways pass, and the immense increase in wagon traffic over these roadways which were designed only for light suburban travel, the difficulty and expense of keeping them in repair are continually increasing; and both as a question of economy and convenience for public travel, and the comfort of the residents in the vicinity, these roadways should be gradually replaced by more substantial pavements—stone block pavements on the highways of business traffic and asphalt pavements on purely residential streets.

#### LIGHTING THE CITY.

During the year street light was extended to over seven miles of new streets, and at the close of the year 509.9 miles of streets, ¾ miles of piers, 2½ miles of bridges, 66 acres of public parks,

and 3¼ acres of public market (Gansevoort Market Square) were lighted by public lamps, as follows:

#### Gas Lamps.

By the Consolidated Gas Co., Branch 1	3,387
By the Consolidated Gas Co., Branch 2	1,695
By the Consolidated Gas Co., Branch 3	2,054
By the Consolidated Gas Co., Branch 4	3,449
By the Consolidated Gas Co., Branch 6	4,881
By the New York Mutual Gas-light Co.	264
By the Equitable Gas-light Co.	3,717
By the Standard Gas-light Co.	1,412
By the Central Gas-light Co.	2,694
By the Northern Gas-light Co.	2,227
By the Yonkers Gas-light Co.	567

Total gas-lamps lighted December 31..... 27,114

#### Electric Lights.

By the United States Illuminating Co.	236
By the Brush Electric Illuminating Co.	223
By the East River Electric-light Co.	189
By the Mount Morris Electric-light Co.	109
By the Harlem Lighting Co.	124

Total electric lights, December 31, 1890..... 881

#### Naphtha Lamps.

By the New York and New Jersey Globe Gas-light Co.	138
--	-----

Making the grand total of all kinds of public lamps in use at the close of the year..... 28,133

The Equitable Gas-light Company and the Standard Gas-light Company are required by their franchises to light the public gas-lamps in the streets where they have gas-mains at a price not exceeding \$12 and \$12.50 per annum respectively, but in respect to the other gas companies there is no restriction on the price of lighting public lamps, except that made by competition between the companies at the public lettings for the contracts for lighting the streets.

The several gas companies laid during the year 59½ miles of additional gas-mains, making a total of 1,274 miles of gas-mains now under the streets of the city, of which 108½ miles are north of the Harlem river.

The number and prices of electric lights furnished during the year 1890 by the different electric-light companies are as follows:

The Brush Electric Illuminating Co., 7 lamps, at 25 cents each per night; 15 lamps, at 29 cents each per night; 133 lamps, at 35 cents each per night, and 69 lamps, at 45 cents each for each night the lamps are lighted.

The United States Illuminating Co., 58 lamps, at 25 cents each per night; 18 lamps at 29 cents each per night; 160 lamps, at 35 cents each per night.

The East River Electric Light Co., 33 lamps at 25 cents each per night; 21 lamps at 29 cents each per night, and 135 lamps at 35 cents each per night.

The Mount Morris Electric Light Co.,—28 lamps at 23 cents each per night; 18 lamps at 24 cents each per night; 11 lamps at 25 cents each per night; 52 lamps at 35 cents each per night.

The Harlem Lighting Co., 104 lamps at 35 cents each per night, and 19 lamps at 50 cents each per night.

The different prices paid for all the electric lights are classified as follows:

- 28 lamps, at \$83.95 per year each.
- 18 lamps, at \$87.60 per year each.
- 109 lamps, at \$91.25 each per year.
- 54 lamps, at \$105.85 per year each.
- 584 lamps, at \$127.75 each per year.
- 69 lamps, at \$164.25 each per year.
- 19 lamps, at \$182.50 per year.

This Department also makes the contract for supplying gas for public buildings, offices, markets, and armories, the cost of which for the year was \$42,490.21.

#### PUBLIC BUILDINGS.

The report of the Superintendent of Repairs and Supplies, hereto annexed, contains a statement of the public buildings under the charge of this Department and their condition as indicated by repairs or improvements which he recommends should be made in them, which I briefly recite as follows:

#### City Hall.

With the recent improvements made in this building, some minor repairs only appear to be needed in the interior of the building.

#### New Court-house.

This building is in excellent condition, except as to the necessity of some repairs and overhauling required in some portions of the interior and the plumbing arrangements, exclusive of the four new steam boilers about to be placed as stated in the preceding part of this report.

#### The Brown Stone Court-house.

Except some minor repairs, the fitting up of the large room in the westerly side of the basement of the building, which has remained vacant since the offices of the Receiver of Taxes were removed to the Stewart building, is the principal improvement now required, so that the room may be made available for some branch of the city administration.

#### The Hall of Records.

As already stated in this report, the exterior of the building has been thoroughly repaired and painted. The interior needs repainting and the roof is in poor condition and constantly in need of repairs. These repairs will have to be made so long as the building is used as the receptacle of real estate records which are of immeasurable value, and the destruction of which would cause incalculable loss and complications; but no amount of repairs can make it fit for such a purpose, and provision should be made as early as possible for a depository of records which will not only assure their safety, but also afford better facilities for the transaction of the business connected with the records.

#### Civil and Police Courts.

Of the buildings occupied by District Civil Courts and by Police Courts, the following are owned by the City:

The building in which the First District Civil Court is located on the northeast corner of the City Hall Park, which is in fair condition.

The Centre Market building, in which the Second District Civil Court is located—in good condition.

The Jefferson Market Court-house, in which the Third District Civil Court and the Second District Police Court are located—in good condition.

The Tombs Building, in which the First District Police Court and the Court of Special Sessions are located. Some repairs to the steps and flagging leading to the Court-rooms are needed, but accommodation for these Courts will be provided for in the new Criminal Court Building when completed.



The Fifty-seventh Street Court-house, which is exclusively used for the Seventh District Civil Court and the Fourth District Police Court, is in good condition.

The Fifth District Court Building is in good condition.

The County Jail Building, on Ludlow street, is in fair condition.

Nos. 49 Beekman street and 5 Duane street, the former occupied by the offices of the Corporation Attorney and the Public Administrator, and the latter as storage by the Public Administrator and the Fire Department. These two buildings are in fair condition, but are old.

#### Armory Buildings.

The armory buildings owned by the City are the Seventh Regiment Armory, Eighth Regiment Armory, Twelfth Regiment Armory, Twenty-second Regiment Armory, Sixty-ninth Regiment Armory and Tompkins Market; they are all in good condition, and the Eighth and Twenty-second Regiment Armory buildings are quite new, the latter not yet having been turned over to the care of this Department, although occupied by the regiment for several months past. Considerable alterations and improvements are yet required on the Eighth Regiment Armory building to meet the requirements of the regiment.

#### The Public Markets.

The Washington, Fulton, Jefferson, Catharine, Tompkins, Essex and Union Market buildings are in good condition. The buildings in New West Washington Market are comparatively new and in good condition, except the damage done by the fire on the last day of the year, which will be repaired as speedily as possible. In the Centre Market building only the first floor is occupied for market purposes, the upper floor being partly occupied by the Second District Civil Court and partly rented for business purposes and partly vacant. Considerable repairs are necessary in the vacant portion of the building. Clinton Market building is very old and dilapidated and in need of constant repairs. The ground it occupies is bounded by Canal, Spring, Washington and West streets, and is much too valuable to be covered by so dilapidated an old building, which does not even answer the ordinary requirements of a public market, notwithstanding the continued expense for repairs.

This completes the list of buildings owned by the City and under the charge of this Department, excepting some small buildings in the three corporation yards.

The City leases buildings or offices for the Fourth, Sixth, Eighth, Ninth, Tenth and Eleventh District Civil Courts, the Fifth and Sixth District Police Courts, the offices of the Finance Department, Commissioner of Jurors, Commissioners of Accounts and Tax Receiver in the Stewart Building, the offices of this Department, No. 31 Chambers street, the offices of the Board of Assessors and Surveyor's Office, No. 27 Chambers street, and the offices of the Department of Taxes and Assessments, the Law Department, etc., in the Staats Zeitung Building, all of which are under the charge of this Department in respect to certain interior repairs or required furnishing, fittings, etc. The annual expense imposed on the City for the rental and care of these scattered public offices, and the great inconvenience in the transaction of public business to the people at large, as well as to the public officials, caused by these offices being so scattered, furnish the best possible argument for the necessity of constructing a municipal building in which all such offices could be concentrated, with suitable space and arrangements for the proper transaction of business.

#### New Criminal Court Building.

The contractors for the mason work of this building were ordered to begin work on or before March 20, 1890, since which time the work has been prosecuted with suitable vigor, when not suspended on account of stress of weather. The number of days on which the work has been prosecuted during the past year is 192 $\frac{1}{4}$ , and the number of Sundays and legal holidays and days when the weather was unfit for work is 94 $\frac{3}{4}$ . In the prosecution of the work 4,442 piles were driven for foundation, 1,217 cubic yards of concrete laid, 16,100 feet of granite base course laid, 3,290,000 bricks laid, 2,000 feet of cut granite placed, 28,719 cubic yards of soil excavated and removed. The entire foundation walls are now above the street level, and several parts of the superstructure are up to the level of the first or main court floor. The contractor for the carpenter and joiner work was notified on June 21 to begin several parts of the work under his contract, consisting of long pipes for electric-mains, and making centres for the mason work, which has been duly performed. The contractor for the plumbing work has also put in the sewer connections in compliance with notice. The contractors for the iron work have put in place portions of the first and second tiers and beams and the columns and girders around the elevators on the Franklin and White street sides. The amounts so far paid on account of this building, exclusive of twenty-five per cent. retained as security for the faithful performance of the contracts, are:

On account of mason-work.....	\$130,500 00
On account of iron-work.....	8,475 00
Total .....	\$138,975 00

The architects in charge of the work express the opinion that, judging from the progress so far made, the building will be completed at or near the time specified in the contracts.

#### New Court Building in the Twelfth Ward.

By chapter 487 of the Laws of 1890, the Commissioner of Public Works, by and with the approval of the Board of Estimate and Apportionment, is authorized to erect and construct a public building in the Twelfth Ward for the accommodation of the Fifth District Police Court and Prison, the Court for the Ninth Judicial District, and for offices and other accommodations required in that part of the city for carrying on the business of any of the city departments, the building to be erected on the property owned by the City at One Hundred and Twenty-first street and Sylvan place. Plans have been prepared under the direction of this Department, and have been approved by the Board of Estimate and Apportionment, for a three-story building, with cellar, which will occupy the whole space designated, 100 feet by 100 feet 11 inches. The cellar is to be used for heating apparatus and for the storage of coal, and ample accommodation for laundry, kitchen, etc., for the prison. The first or main ground floor is designed to give ample space for store, shops, etc., for the Department of Public Works and the Street Cleaning Department; a large space into which the prison van can be driven, and guard-room, waiting-room and other offices to be used by the Department of Charities and Correction. The second floor is designed to give ample accommodations for the Fifth District Police Court and accessory offices and rooms. The third floor is intended for the Ninth Judicial District Court, and will have large, well-lighted and ventilated Court rooms, private examination room and the requisite offices. There will be a passenger elevator running from the first to the third floor. The prison will be arranged for ten-day prisoners on the first floor, and will contain forty-six cells, divided into tiers. The building will be heated with steam, and will have an approved system of ventilation. The preparations are nearly completed to advertise the work for public letting, and it will be put under contract at an early day, and the time for its completion is estimated at sixteen months.

#### FREE FLOATING BATHS.

The bathing season of 1890 at the public baths began June 1 and ended September 30, and all the 15 free floating baths now owned by the City were in use during the season. The large attendance at the baths for the season, which included 2,344,609 males and 1,069,005 females, again attests the great popularity and usefulness of these institutions. The baths are now in their winter quarters, and will be thoroughly repaired and refitted for the next bathing season.

#### STREET OBSTRUCTIONS.

The means and force at the command of the Department to effect the removal of illegal obstructions from streets and sidewalks have been used with the utmost vigor and vigilance, and

the action of the Bureau of Incumbrances for the past year deserves commendation, showing a marked improvement in many locations in the city where illegal obstructions had for years been abundant. One of the most difficult classes of obstructions to deal with is the temporary placing of building material on streets and sidewalks in front of buildings in course of erection or undergoing alterations or repairs, and it seems physically impossible, with the powers now vested in the Department, to compel builders to confine the obstructions so caused to the limits prescribed by the permits, which would leave convenient passageway for public travel, or to compel the prompt removal of obstructions on the completion of the building operations. In very many cases the builders leave a pile of abandoned and worthless material and rubbish to be removed at the expense of the City through the Bureau of Incumbrances. When it is considered that during the past year 8,203 permits were issued to temporarily place building material on streets, it will be readily seen that the Department, with a force of only five or six inspectors available to cover the entire area of the city, finds it impossible to exercise such supervision as to prevent violations of the permits, either in spreading the material over too large a space, and encroaching too much upon the carriageways of the streets, as well as upon the sidewalks, or in failing to promptly remove the material, clean away all rubbish and leave the surface of the street in as good condition as it was found when the material was first placed.

Another class of obstructions which it is difficult to suppress or prevent consists of the many vehicles and other easily movable articles placed on the streets and some on the sidewalks, and which the owners may remove upon receiving notice to that effect, and may immediately thereafter replace and keep there for a considerable time before the fact of such replacement is brought to the notice of the Bureau of Incumbrances through reports of inspectors, or through complaints from citizens.

These two classes of obstructions can only be effectively dealt with by the vigilant and active co-operation of the police force, whose aid has been repeatedly invoked. The enactment of an ordinance providing for an adequate penalty and prompt enforcement of the same for such violations in respect to illegal obstructions would probably also prove an efficient aid in the matter.

The following is a summary of the work done by the Bureau of Incumbrances during the year:

4,685 complaints of obstructions received and attended to.
3,735 seizures and removals of obstructions made.
1,104 cart-loads of dirt and refuse material removed from streets.
312 dead and dangerous shade-trees removed.
1,505 telegraph and electric-light poles removed.
3,660 (about) miles of electric wires removed.
8,203 permits issued to place building materials on streets.
19 permits issued to cut down shade trees.
1,196 miscellaneous permits issued.
955 notices issued to repair defective sidewalks.
43 notices issued to repair defective vault covers.

#### SURVEYS FOR LAYING OUT AND OPENING NEW STREETS.

This Department is by law required to furnish all surveys, maps, and technical descriptions of land to the Board of Street Opening and Improvement, the Law Department, and the Commissioners of Estimate and Assessment, in the various proceedings for establishing new streets and public places on Manhattan Island, closing old streets, widening, extending or altering existing streets, and acquiring title for the City to lands included in streets, parks and places which have been placed on the city map, and acquiring land for purposes of sewerage and drainage.

In proceedings to acquire land for public streets and purposes in the usual way, through the Commissioners of Estimate and Assessment, appointed by the Supreme Court, four separate sets of maps have to be furnished: (1) a rule map and description of the land which the City has to acquire, and upon which the Counsel to the Corporation initiates the legal proceedings; (2) a damage map upon which the Commissioners of Estimate and Assessment begin their proceedings; (3) an estimate copy of damage and benefit maps, showing each separate parcel of land included within the area of benefit, or assumed benefit; (4) a final copy of damage and benefit map and abstract, with the exact limits of benefit determined upon by the Commissioners of Estimate and Assessment, and showing the exact limits of each separate parcel of land included in such area. The preparation of these maps requires a great deal of labor, close attention and scrupulous accuracy. It is not an unfrequent occurrence that Commissioners of Estimate and Assessment change their views as to the limits of benefit and assessment in the course of their proceedings, and in such cases new or amended maps have to be furnished and additional surveys made. Among the principal proceedings which have engaged the attention of the Department and the labor of the Assistant Engineer and draughtsmen assigned to this work, are:

The establishment and opening of the exterior street along the East river, from Sixty-fourth street to Eighty-first street, and the alteration of the grades of abutting and contiguous streets and avenues to correspond with the grade of the exterior street.

The widening and extension of College place and Greenwich street, from Chambers street to Dey street.

The extension of Bethune street, on which the benefit area includes about 1,500 city lots.

The laying out and extension of One Hundred and Twenty-fifth street, from the Boulevard to Riverside Drive.

The acquisition of land for a sewer outlet through private land from the easterly terminus of One Hundred and Sixty-fifth street at Edgecombe avenue to the Harlem river.

Considerable labor on surveys and maps is also required to determine the limits of grants of land under water which can be assessed for repavements under the provisions of chapter 449, Laws of 1889.

#### City Revenue.

The total revenue from the water service collected and paid into the City Treasury during the year is as follows:

For regular water-rents and penalties.....	\$1,746,815 41
For water supplied through meters.....	917,287 95
For penalties on water-rents.....	11,932 50
For permits to tap water-mains.....	13,774 50
Total cash revenue .....	\$2,688,910 36
To this must be added the unpaid water-rents returned in arrears which are liens on the respective property, and are, therefore, a part of the assured revenue of the City, amounting to.....	237,401 27
Total .....	\$2,926,311 63

Under the provisions of chapter 696, Laws of 1887, as amended by chapter 492, Laws of 1890, sixty-five institutions or societies, organized for charitable purposes, have claimed and obtained exemption from charges for water supply on the premises owned and occupied by them, each of such claims having been submitted to the Counsel to the Corporation for examination before taking action thereon. The report of the Water Register, hereto annexed, contains a list of the institutions and premises and the average amounts annually paid for water rent prior to the date of exemption, aggregating \$26,322.80, showing the amount to which the revenue from the water service has been diminished under the operation of the laws referred to. The Water Register's report also contains a statement of the revenue derived by the City from the water service since its introduction, including amounts returned in arrears which, as already stated, are liens on the respective property, and, therefore, a part of the assured revenue of the City. The total revenue from the introduction of



Croton water in 1842 to January 1, 1879, was \$33,458,403.39; the revenue for the year 1879 was \$1,694,765.59; the gradual increase in the succeeding years is shown in the tabular statement referred to, reaching for the year 1890, including amounts returned in arrears, the figure of \$2,926,311.63, as above stated.

The increase in the amount collected and paid into the City Treasury in 1890 over the amount collected in 1889 is \$131,872.29.

#### Miscellaneous Revenue.

The Department has also collected from various sources and paid into the City Treasury during the year the following amounts:

For sewer permits.....	\$28,852 88
For vault permits.....	138,793 68
For redemption of street obstructions.....	3,547 70
For restoration of pavements over street openings.....	30,389 00
For furnishing and placing water-meters.....	9,835 41
From miscellaneous sources.....	36,772 58
Total.....	\$248,191 25

The following documents, appended to this report, contain further detailed information of the transactions of the Department:

- Document A—Statement of appropriations and expenditures.
- Document B—Detailed statement of expenditures.
- Document C—Detailed statement of contracts.
- Document D—Report of Chief Engineer of the Croton Aqueduct.
- Document E—Report of the Water Purveyor.
- Document F—Report of the Consulting Engineer on Pavements.
- Document G—Report of the Engineer in Charge of Sewers.
- Document H—Report of the Superintendent of Street Improvements.
- Document I—Report of the Superintendent of Streets.
- Document K—Report of the Superintendent of Lamps and Gas.
- Document L—Report of the Superintendent of Repairs and Supplies, with Architect's Reports.
- Document M—Report of the Superintendent of Incumbrances.
- Document N—Report of the Water Register.
- Document O—Report of Assistant Engineer in Charge of Surveys and Maps for Street Openings.

Very respectfully,

THOS. F. GILROY, Commissioner of Public Works.

#### Document "A."

Showing Titles of Appropriations; Balances of 1889 on October 1, 1890; Requisitions on 1889 in Fourth Quarter of 1890; Together with Transfers; Balances of 1889 on December 31, 1890; Appropriations, Including Transfers of 1890; Requisitions First Nine Months of 1890; Requisitions, Fourth Quarter of 1890; Balances on December 31, 1890, and the Titles and Conditions of the Trust and Special Accounts.

TITLES OF APPROPRIATIONS.	BALANCES OF 1889, ON OCTOBER 1, 1890.	REQUISITIONS AND TRANSFERS OF 1889, IN FOURTH QUARTER, 1890.	BALANCES OF 1889, ON DECEMBER 31, 1890.	APPROPRIATIONS INCLUDING TRANSFERS OF 1890.	REQUISITIONS, FIRST NINE MONTHS, 1890.	REQUISITIONS, FOURTH QUARTER, 1890.	TOTAL REQUISITIONS, 1890.	BALANCES ON DECEMBER 31, 1890.
Aqueduct—Repairs, Maintenance and Strengthening.....	\$6,955 79	\$5,406 52	\$1,549 27	.....	\$95,984 46	.....	.....	.....
Care, Maintenance and Repairs.....	.....	.....	.....	\$180,000 00	7,002 00	\$50,694 09	\$147,678 55	\$32,321 45
Completing the Excavation in the Old Central Park Reservoir.....	.....	.....	.....	139,000 00	.....	12,456 00	19,456 00	119,544 00
Building New Gate-house and Removing the Old Gate-house.....	.....	.....	.....	21,000 00	.....	.....	.....	21,000 00
Aqueduct—Repairs, Maintenance and Strengthening—Salaries.....	834 60	834 60	.....	27,000 00	19,048 55	6,632 84	25,681 39	1,318 61
Boring Examinations for Grading and Sewer Contracts.....	50	50	.....	3,600 00	3,200 03	396 00	3,596 03	3 95
Boulevards, Roads and Avenues, Maintenance of.....	108 04	108 04	.....	105,000 00	91,756 36	11,953 28	103,709 64	1,290 36
Boulevards, Roads and Avenues, Maintenance of—Salaries.....	04	04	.....	2,500 00	1,874 97	624 92	2,499 89	04
Bronx River Works—Maintenance and Repairs.....	2,190 18	2,190 18	.....	25,000 00	19,946 55	4,402 92	24,349 47	650 53
Bronx River Works—Maintenance and Repairs—Salaries.....	233 33	233 33	.....	2,400 00	1,800 00	600 00	2,400 00	.....
Construction of two New Baths at Market and Fifty-ninth sts., East river.....	10 00	10 00	.....	.....	.....	.....	.....	.....
Contingencies—Department of Public Works.....	68 74	68 74	.....	4,000 00	2,731 97	1,600 05	4,331 02	737 98
Flagging Sidewalks and Fencing Vacant Lots in Front of, etc.....	3,553 77	553 77	3,000 00	3,000 00	247 83	1,306 01	1,553 84	1,446 16
Free Floating Baths—Care and Maintenance.....	321 49	321 49	.....	20,000 00	10,059 43	4,523 29	14,582 72	5,417 28
Free Floating Baths—Care and Maintenance—Salaries.....	3,644 50	3,644 50	.....	32,000 00	25,712 50	4,316 00	30,028 50	1,941 50
Lamps and Gas and Electric Lighting.....	3,736 54	3,736 54	.....	700,000 00	468,817 14	173,877 70	642,694 84	57,305 16
Lamps and Gas and Electric Lighting—Salaries.....	536 84	536 84	.....	6,500 00	4,831 84	1,573 88	6,405 72	94 28
Laying Croton Pipes.....	9,544 50	1,981 61	7,562 89	232,000 00	64,611 51	75,187 01	139,828 52	92,171 48
Laying Croton Pipes—Salaries.....	1,737 04	1,737 04	.....	18,000 00	12,810 50	4,211 03	17,021 53	948 50
Public Buildings—Construction and Repairs.....	1,098 35	1,098 35	.....	94,345 00	34,567 03	29,614 06	64,172 01	30,172 99
Public Drinking-hydrants.....	1,156 52	1,156 52	.....	3,000 00	1,033 55	664 87	1,698 42	1,301 58
Public Drinking-hydrants—Salaries.....	.....	.....	.....	1,200 00	900 00	300 00	1,200 00	.....
Removing Obstructions in Streets and Avenues.....	1,087 94	1,087 94	.....	40,000 00	29,600 83	9,172 12	38,772 95	1,227 05
Removing Obstructions in Streets and Avenues—Salaries.....	1,386 59	1,386 59	.....	7,800 00	5,360 65	2,600 00	7,960 65	239 35
Repairing and Renewal of Pipes, Stop-cocks, etc.....	388 20	388 20	.....	253,000 00	158,197 78	50,050 35	217,248 13	5,751 87
Repairs and Renewal of Pavements and Regrading.....	5,020 96	4,409 37	611 59	350,000 00	288,292 45	29,252 99	287,545 44	62,481 56
Repairs and Renewal of Pavements and Regrading—Salaries.....	86 62	86 62	.....	17,000 00	11,094 88	3,689 39	15,684 26	1,315 80
Repaving Streets and Avenues.....	88,749 89	34,982 55	53,767 34	400,000 00	45,105 26	13,518 00	177,623 26	222,376 74
Repaving Streets and Avenues—Salaries.....	7,595 72	7,595 72	.....	13,000 00	6,440 50	4,316 25	10,756 75	4,207 25
Retaining-walls in East Fifty-first street and East Forty-second street.....	.....	.....	.....	10,000 00	2,201 50	873 60	3,075 10	6,924 90
Roads, Streets and Avenues Unpaved—Maintenance and Sprinkling.....	178 08	179 08	.....	25,000 00	18,156 97	5,914 59	24,071 56	928 44
Salaries—Department of Public Works.....	10,905 47	10,905 47	.....	92,000 00	68,836 34	23,062 23	91,898 57	51 43
Salaries—Engineer, Clerks, etc.—Bureau of Water Register, etc.....	7,136 98	7,136 98	.....	52,000 00	36,408 48	12,625 85	49,034 33	2,005 67
Sewers—Repairing and Cleaning.....	3,014 70	2,616 70	397 91	160,000 00	97,962 63	38,581 38	136,544 01	23,455 99
Sewers—Repairing and Cleaning—Salaries.....	60 08	60 08	.....	10,000 00	7,449 94	2,469 98	9,919 92	80 08
Sewerage System—Salaries.....	4,109 05	4,109 05	.....	8,600 00	5,932 85	2,137 50	8,070 35	529 65
Street Improvements—For Surveying, Monumenting, etc.....	206 05	206 05	.....	3,000 00	1,789 03	638 60	2,427 63	573 00
Supplies for and Cleaning Public Offices.....	139 50	139 50	.....	135,000 00	73,452 24	37,452 24	106,206 84	28,793 16
Supplies for and Cleaning Public Offices—Salaries.....	726 28	726 28	.....	18,000 00	14,152 01	4,727 19	18,879 20	40 80
Surveys, Maps, etc., for Street Openings, etc.—Salaries.....	1,408 51	1,408 51	.....	7,100 00	5,324 94	1,774 98	7,099 92	08
Supplying Water to Shipping and for Building Purposes—Salaries.....	65	65	.....	10,000 00	7,523 00	2,307 00	9,830 00	70 00
Water Supply for the Twenty-fourth Ward.....	1,628 31	1,628 31	.....	7,800 00	2,825 22	1,004 89	3,830 11	3,959 89
Water Supply for the Twenty-fourth Ward—Salaries.....	.....	.....	.....	1,200 00	800 00	300 00	1,100 00	100 00
Wells and Pumps—Repairing and Cleaning.....	59 84	59 84	.....	250 00	.....	.....	.....	250 00
Totals.....	\$170,580 19	\$103,691 19	\$66,889 00	\$3,211,215 00	\$1,655,932 09	\$821,286 35	\$2,477,218 44	\$733,096 56
NOTE.—Requisition drawn, Fourth Quarter, 1890, on Liabilities of 1888, Laying Croton-pipes.....	.....	.....	.....	.....	.....	\$876 74	.....	.....
NOTE.—Requisition drawn, Fourth Quarter, 1890, on Liabilities of 1887, Repairs and Renewals of Pavements, etc.....	.....	.....	.....	.....	.....	333 63	.....	.....
Repaving, chapter 346, Laws 1889.....	\$376,203 51	\$173,441 65	\$202,761 86	\$1,000,000 00	\$130,736 29	331,271 84	\$162,008 13	\$537,991 87

TITLES OF TRUST ACCOUNTS.	BALANCES FROM 1889, RETURNS TO ARREARS AND RECEIPTS OF FIRST NINE MONTHS, 1890.	RECEIPTS, FOURTH QUARTER, 1890.	TOTAL BALANCES OF 1889, AND RECEIPTS FOR 1890.	REQUISITIONS, FIRST NINE MONTHS, 1890.	REQUISITIONS, FOURTH QUARTER, 1890.	TOTAL REQUISITIONS, FOR 1890.	BALANCES, DECEMBER 1, 1890.
Croton Water Fund.....	.....	.....	.....	\$150,638 35	\$76,644 51	\$127,282 86	.....
Fund for Local Improvements.....	.....	.....	.....	899,126 35	456,021 53	1,355,147 88	.....
Restoring and Repaving—Special Fund—Department of Public Works.....	\$35,344 60	\$8,344 50	\$43,709 10	29,779 12	8,050 12	34,829 24	\$8,879 86
Water-meter Fund, No. 2.....	31,123 08	2,896 40	34,008 48	12,391 29	5,300 21	17,691 50	16,460 98
Criminal Court-house Fund.....	.....	.....	.....	94,326 50	63,479 00	*157,805 50	.....
Fund for Viaduct, from St. Nicholas place to McComb's Dam Bridge.....	.....	.....	.....	15,225 25	49,027 45	64,252 70	.....

\* Includes expenditures of 1889, \$525.

Statement of General Bookkeeper, Department of Public Works, Showing all Revenues of the City Received through the Department of Public Works during the First Nine Months of 1890, during the Fourth Quarter of 1890, and the Total for the Year.

SOURCE OF REVENUE.	FIRST NINE MONTHS, 1890.	FOURTH QUARTER.	TOTAL.	SOURCE OF REVENUE.	FIRST NINE MONTHS, 1890.	FOURTH QUARTER.	TOTAL.
Water rents.....	\$2,290,436 48	\$373,666 88	\$2,664,103 36	Return of Water-rents, etc., in Arrears—	.....	.....	.....
Water penalties.....	5,029 85	6,002 65	11,032 50	Regular Croton-water rents.....	.....	123,016 91	.....
Pipe tapping.....	10,428 50	3,346 00	13,774 50	Water by meter measurement.....	.....	114,384 36	.....
Sewer permits.....	22,601 10	6,251 78	28,852 88	Meters and meter setting.....	.....	.....	\$237,401 27
Vault permits.....	103,988 83	34,805 15	138,793 98	.....	.....	.....	5,997 57
Redemption of street obstructions.....	3,259 95	287 75	3,547 70	.....	.....	.....	\$243,398 84
Use of road roller, pipe storage, etc.....	72 75	16 00	88 75	.....	.....	.....	.....
Sales at auction, and work done and material furnished citizens.....	19,496 04	17,278 79	36,774 83	.....	.....	.....	.....
Rent of farm at Lake Gilead.....	9 00	.....	9 00	.....	.....	.....	.....
Totals.....	\$2,455,322 50	\$441,655 00	\$2,896,977 50	.....	.....	.....	.....

C. T. McCLENACHAN, General Bookkeeper, D. P. W.



## Document "B."

A Detailed Statement of Expenditures for which Requisitions were drawn on the Comptroller by the Commissioner of Public Works during the Quarter ending December 31, 1890.

## APPROPRIATIONS.

## Aqueduct—Repairs, Maintenance and Strengthening—

Blacksmithing	\$127 29
Coal	6,763 67
Flagging	249 05
Horse-hire	262 50
Improvements to Old Reservoir	18,900 00
Improvements to Aqueduct property	2,865 00
Lumber	561 04
Pay-rolls	26,500 98
Repairing engines, etc.	1,370 42
Repairing roof, etc.	441 00
Repairing stop-cocks	191 77
Sundry supplies, tools, etc.	2,563 87
Taxes	491 42
Telephone wire, etc.	799 12
Traveling expenses	1,053 96

Total ..... \$63,150 09

## Aqueduct—Repairs, Maintenance and Strengthening, 1889—

Building Keepers' House	\$3,850 00
Telephone supplies, etc.	344 85

Total ..... \$4,194 85

## Boring Examinations for Grading and Sewer Contracts—

Pay-rolls	\$396 00
-----------	----------

## Boulevards, Roads and Avenues, Maintenance of—

Horse hire	\$90 00
Pay-rolls	10,929 53
Rent of Yard	900 00
Telephone service	33 75

Total ..... \$11,953 28

## Bronx River Works—Maintenance and Repairs—

Blacksmithing	\$52 65
Coal	55 00
Pay-rolls	4,218 00
Resetting range	9 90
Taxes	67 37

Total ..... \$4,402 92

## Contingencies—Department of Public Works—

Atlas of Metropolitan District	\$20 00
Drawings	20 00
Horse-hire	360 00
Miscellaneous incidental expenses	300 00
Postage	265 75
Senate and Assembly Documents	50 00
Traveling expenses	14 30

Total ..... \$1,030 05

## Flagging Sidewalks and Fencing Vacant Lots, etc.—

Fencing	\$77 00
Pay-rolls	28 00
Repairing sidewalks	1,201 01

Total ..... \$1,306 01

## Free Floating Baths—Care and Maintenance—

Gas-fitting	\$353 87
Lumber	409 56
Pay-rolls	285 25
Repairing stoves	30 00
Rope	649 44
Sundry supplies, tools, etc.	474 12
Towing baths and buoying anchors	865 00
Traveling expenses	50 07
Wharfage	1,405 98

Total ..... \$4,523 29

## Lamps and Gas and Electric Lighting—

Gas examinations	\$389 00
Glass	62 50
Horse-hire	250 00
Lamps	4,155 00
Lamp brackets	12 50
Lamp-posts	1,195 75
Lighting public offices	10,610 07
" streets	155,645 68
Pay-rolls	784 50
Rent of Photometrical Rooms	240 00
Repairing lamps	340 50
Street signs	131 25
Supplies	54 35

Total ..... \$173,877 70

## Laying Croton Pipes—

Cast-iron pipe	\$11,508 95
Horse-hire	540 00
Laying water-mains	48,073 24
Protecting gas-mains	128 46
Pumping engine, etc.	14,560 00
Traveling expenses	376 36

Total ..... \$75,187 01

## Laying Croton Pipes, 1889—

Laying water-mains	\$596 15
--------------------	----------

## Laying Croton Pipes, 1888—

Laying water-mains	\$896 74
--------------------	----------

## Public Buildings—Construction and Repairs—

Armory, Brigade Headquarters	\$324 50
" Troop "A"	257 96
" Second Battery	163 41
" Seventh Regiment	20 00
" Eighth "	130 00
" Ninth "	7 25
" Twelfth "	2,124 70
" Sixty-ninth "	62 19
" Seventy-first "	79 37
Brown-stone Building	841 87
Bureau of Repairs and Supplies	6,177 98
City Hall	1,386 14

## Public Buildings—Construction and Repairs—

City Prison	\$73 04
County Jail	86 25
Court, First District Civil	232 67
" Second "	17 00
" Fourth "	78 90
" Fifth "	161 23
" Tenth "	45 54
" Third " Police	202 47
" Fourth "	62 78
" Fifth "	94 97
" Sixth "	9 00
Court-house, County	3,510 97
" Third District	45 00
" Seventh "	213 00
Dog Pound	90 00
Hall of Records	285 16
Calvary and Greenwood Cemeteries	385 00
Market, Centre	341 55
" Clinton	158 00
" Essex	31 00
" Fulton	5,701 47
" Jefferson	191 00
" Tompkins	533 16
" Union	10 30
" Washington	224 67
" West Washington	516 00
Pay-rolls	3,797 50
Repair Shop, Eighty-seventh street	95 00
Staats Zeitung Building	37 25
Stewart Building	15 00
No. 12 Chambers street	12 00
" 27 "	80 00
" 31 "	349 45
No. 49 Peckman street	27 11
Sixteenth Street Yard	219 81
Traveling expenses	36 34

Total ..... \$29,604 96

## Public Drinking-hydrants—

Repairing hydrants	\$664 87
--------------------	----------

## Removing Obstructions in Streets and Avenues—

Pay-rolls	\$1,041 12
Removing obstructions	7,598 90
" trees	336 00
Traveling expenses	196 10

Total ..... \$9,172 12

## Repairing and Renewal of Pipes, Stop-cocks, etc.—

Carpenter work	\$59 01
Changing taps	181 62
Hydrants, stop-cocks, etc.	7,170 59
Lead, lead-pipe, etc.	1,668 46
Pay-rolls	46,263 76
Protecting gas-mains	31 78
Relaying water-mains	2,292 54
Repairing gauges	36 00
" hydrants	626 20
" tapping machine	133 29
Setting meters	515 88
Sundry supplies, tools, etc.	501 17
Telephone service	169 15

Total ..... \$59,050 35

## Repairs and Renewal of Pavements and Regrading—

Cement	\$505 76
Cutting paving stones	600 00
Horse-hire	432 00
Pay-rolls	84,865 87
Relaying pavement	1,487 10
Rent of yard	125 00
Repairing tools, etc.	689 35
Sand and gravel	7,135 57
Stone	2,055 16
Sundry supplies, tools, etc.	622 03
Traveling expenses	107 25

Total ..... \$99,225 99

## Repairs and Renewal of Pavements and Regrading, 1889—

Relaying pavement	\$1,074 47
-------------------	------------

## Repairs and Renewal of Pavements and Regrading, 1886—

Relaying pavement	\$333 63
-------------------	----------

## Repaving (Chapter 346, Laws of 1889)—

Canal street, between Hudson street and the Bowery	\$28,630 00
Duane street, between Washington and Centre streets	34,561 52
Greenwich street, between Chambers and Canal streets	30,921 67
Madison avenue, between Fifty-eighth and Sixtieth streets, etc.	8,229 11
Eighth avenue, between Thirteenth and Thirty-fourth streets	42,197 40
Eighth avenue, between Thirty-fourth and Fifty-ninth streets	76,396 60
Fifteenth street, between Fifth and Sixth avenues, etc.	23,367 96
Thirty-seventh street, between Fourth and Sixth avenues, etc.	533 67
Forty-ninth street, between Madison and Sixth avenues, etc.	30,513 00
Forty-ninth street, between Fifth and Sixth avenues, etc.	501 55
Fifty-third street, between Madison and Sixth avenues, etc.	20,512 15
Fifty-fourth street, between Madison and Sixth avenues, etc.	24,093 98
Horse-hire	234 00
Pay-rolls	10,290 43
Surveyor's instruments	247 75
Traveling expenses	41 05

Total ..... \$331,271 84

## Repaving (Chapter 346, Laws of 1889), 1889—

Boulevard, between Fifty-ninth and Seventy-ninth streets	\$23,388 74
Cedar street, between Broadway and Greenwich streets	393 92
Laight street, between Canal and Greenwich streets	445 71
Leonard street, between Broadway and Hudson streets	354 30
Lexington avenue, between Twenty-first and Thirty-second streets, etc.	8,715 00
Lexington avenue, between Thirty-fourth and Thirty-fifth streets, etc.	92,856 32
Varick street, between Franklin and Canal streets	5,764 28
Thirteenth street, between Avenue B and Fifth avenue	30,914 23
Forty-third street, between Madison and Fifth avenues	4,609 13

Total ..... \$173,441 65

## Repaving Streets and Avenues—

East Broadway, between Chatham Square and Grand street	\$70,516 01
Elizabeth street, between Bleeker and Bayard streets	40,668 89
Leroy street, between Washington and West streets	1,717 70
Little West Twelfth street, between Washington street and Tenth avenue	2,677 40
Pearl street, between Fulton and Oak streets	16,758 00
Horse-hire	180 00

Total ..... \$132,518 00



Repaving Streets and Avenues, 1889—	
Madison avenue, between Thirty-second and Thirty-third streets, etc.	\$26,955 39
Wall street, between Nassau and Hanover streets.	8,027 16
Total	\$34,982 55
Retaining-walls in East Fifty-first street and East Forty-second street—	
Painting fence	\$569 60
Pay-rolls	304 00
Total	\$873 60
Roads, Streets and Avenues, Unpaved, Maintenance of, etc.—	
Building steps	\$50 00
Horse-hire	90 00
Paints	41 03
Pay-rolls	5,733 54
Total	\$5,914 59
Sewers, Repairing and Cleaning—	
Brick, cement, etc.	\$507 89
Building manhole	459 00
Cleaning sewers	5,835 27
Correcting maps	120 00
Horse-hire	480 00
Insurance maps	52 00
Manhole heads and covers	538 94
Pay-rolls	20,630 12
Protecting gas-mains	178 44
Removing basin-heads	15 00
Repairing sewers	8,415 76
Repairing tools	13 65
Sundry supplies, tools, etc.	943 66
Traveling expenses	391 65
Total	\$38,581 38
Sewers—Repairing and Cleaning, 1889—	
Protecting gas-mains	\$81 75
Repairing sewers	203 09
Total	\$284 84
Street Improvements for Surveying, Monumenting, etc.—	
Insurance map	\$52 00
Pay-rolls	566 00
Resetting monument	20 00
Total	\$638 00
Supplies for and Cleaning Public Offices—	
Brigade Headquarters	\$116 34
Bureau of Repairs and Supplies	2,841 48
City Hall	99 29
Court, Civil, Second District	15 00
“ “ Fourth “	23 50
“ “ Sixth “	17 50
“ “ Seventh “	4 00
“ “ Eighth “	35 00
“ “ Ninth “	133 00
“ Police, Third “	169 15
“ “ Fifth “	18 00
“ City	68 00
“ Common Pleas	88 00
“ General Sessions	207 75
“ Superior	351 72
“ Supreme	801 65
Court-house, County	165 10
Office, Board of Police Justices	33 25
“ County Clerk	93 50
“ Counsel to the Corporation	121 05
“ Comptroller	288 50
“ Department Public Works	331 18
“ Department Taxes and Assessments	34 15
“ Recorder	67 60
“ Register	35 00
Repair shops	111 42
Coal	4,266 63
Ice	1,322 05
Pay-rolls	20,593 43
Total	\$32,452 24
Water Supply for the Twenty-fourth Ward—	
Supply of Water	\$1,004 89

## RECAPITULATION OF APPROPRIATIONS.

Aqueduct Repairs, Maintenance and Strengthening	\$63,150 09
Aqueduct Repairs, Maintenance and Strengthening, 1889	4,194 85
Aqueduct Repairs, Maintenance and Strengthening—Salaries	6,632 84
Boring Examinations for Grading and Sewer Contracts	396 00
Boulevards, Roads and Avenues, Maintenance of	11,953 28
Boulevards, Roads and Avenues, Maintenance of—Salaries	624 99
Bronx River Works, Maintenance and Repairs	4,402 92
Bronx River Works, Maintenance and Repairs—Salaries	600 00
Contingencies—Department of Public Works	1,030 05
Flagging Sidewalks and Fencing Vacant Lots, etc.	1,306 01
Free Floating Baths—Care and Maintenance	4,523 29
Free Floating Baths—Salaries	4,346 00
Lamps and Gas and Electric Lighting	173,877 70
Lamps and Gas and Electric Lighting—Salaries	1,573 88
Laying Croton-pipes	75,187 01
Laying Croton-pipes, 1889	596 15
Laying Croton-pipes, 1888	896 74
Laying Croton-pipes—Salaries	4,241 00
Public Buildings, Construction and Repairs	29,604 96
Public Drinking-hydrants	664 87
Public Drinking-hydrants—Salaries	300 00
Removing Obstructions in Streets and Avenues	9,172 12
Removing Obstructions in Streets and Avenues—Salaries	2,000 00
Repairing and Renewal of Pipes, Stop-cocks, etc.	59,050 35
Repairs and Renewal of Pavements and Regrading	99,225 99
Repairs and Renewal of Pavements and Regrading, 1889	1,074 47
Repairs and Renewal of Pavements and Regrading, 1886	333 63
Repairs and Renewal of Pavements and Regrading—Salaries	3,689 32
Repaving—Chapter 346, Laws of 1889	331,271 84
Repaving—Chapter 346, Laws of 1889—1889	173,441 65
Repaving Streets and Avenues	132,518 00
Repaving Streets and Avenues, 1889	34,982 55
Repaving Streets and Avenues—Salaries	2,346 25
Retaining-walls in East Fifty-first Street and East Forty-second Street	873 60
Roads, Streets and Avenues Unpaved, Maintenance of, etc.	5,914 59
Salaries—Department of Public Works	23,062 23
Salaries of Engineer, Clerks, Inspectors and Measurers, etc.	12,625 85
Sewers—Repairing and Cleaning	38,581 38
Sewers—Repairing and Cleaning, 1889	284 84
Sewers—Repairing and Cleaning—Salaries	2,469 98
Sewerage System—Salaries	2,137 50
Street Improvements for Surveying, Monumenting, etc.	638 00

Supplies for and Cleaning Public Offices	\$32,452 24
Supplies for and Cleaning Public Offices—Salaries	4,727 19
Supplying Water to Shipping and for Building Purposes—Salaries	2,307 00
Surveys, Maps, etc., for Street Openings, etc.—Salaries	1,774 98
Water Supply for the Twenty-fourth Ward	1,004 89
Water Supply for the Twenty-fourth Ward—Salaries	300 00
Total	\$1,368,363 07

## TRUST ACCOUNTS.

Croton Water Fund—	
Clerical services	\$900 00
Flagging, etc.	138 22
Horse-hire	510 00
Iron railing	280 00
Legal services, etc.	1,133 96
Pay-rolls	14,285 14
Repairing instruments	22 50
Reservoir at Williamsbridge	26,191 97
Reservoir near Amawalk	32,240 25
Sundry supplies, etc.	338 50
Traveling expenses	603 97
Total	\$76,644 51
Fund for Viaduct from St. Nicholas place to McComb's Dam Bridge—	
Pay-rolls	\$2,241 50
Engineer's services	2,171 17
Traveling expenses	114 73
Work on contract	44,500 05
Total	\$49,027 45
Restoring and Repaving Special Fund—	
Pay-rolls	\$2,416 62
Restoring pavements	5,633 50
Total	\$8,050 12
Criminal Court-house Fund—	
Iron work	\$8,475 00
Masonry	53,250 00
Pay-rolls	1,404 00
Surveying	350 00
Total	\$63,479 00
Street Improvement Fund—	
Curbing and flagging	\$32,312 65
Fencing	1,119 13
Paving	233,956 89
Regulating, grading, etc.	52,089 33
Sewers and basins	96,915 95
Pay-rolls	28,878 04
Protecting gas-mains	997 80
Surveying	9,751 74
Total	\$456,021 53
Water-meter Fund, No. 2—	
Setting meters	\$3,416 00
Water-meters	1,890 21
Total	\$5,306 21
Recapitulation of Funds—	
Criminal Court-house Fund	\$63,479 00
Croton Water Fund	76,644 51
Fund for Viaduct, from St. Nicholas place, etc.	49,027 45
Restoring and Repaving—Special Fund	8,050 12
Street Improvement Fund	456,021 53
Water-meter Fund, No. 2	5,306 21
Total	\$658,528 82

## Document "C."

## STATEMENT OF CONTRACTS.

Contracts Entered into During the Three Months ending December 31, 1890.

NATURE AND LOCATION OF WORK.	CONTRACTOR.	ESTIMATED COST.
<i>Sewer Contracts.</i>		
Repairs to sewer in Twenty-seventh street, between Seventh and Eighth avenues	John Kenny	\$2,556 00
Repairs to sewer in Thirty-first street, between Sixth and Eighth avenues	"	5,160 90
Alteration and improvement to sewer in Fifty-fifth street, between Eighth and Ninth avenues	John J. Donovan	5,970 00
Sewer in Seventy-seventh street, between Boulevard and Amsterdam avenue	John Slattery	3,002 00
Sewer in Eighty-second street, between Boulevard and Amsterdam avenue	"	3,736 50
Sewer in Ninety-ninth street, between Madison and Fifth avenues	W. J. Murray	1,447 00
Sewer in Ninety-ninth street, between Boulevard and West End avenue	"	1,305 00
Sewer in One Hundred and Second street, between Boulevard and West End avenues	J. P. & J. H. Kerrigan	3,554 75
Sewer in One Hundred and Fourth street, between Harlem river and First avenue	Kane & Murphy	6,903 00
Sewer in Amsterdam avenue, east side, between One Hundred and Thirty-first and One Hundred and Thirty-third streets	Thomas F. Murray	10,250 00
Sewer in Amsterdam avenue, west side, between One Hundred and Thirty-third and One Hundred and Thirty-sixth streets	"	14,534 65
Sewer in One Hundred and Fifty-third street, between Eighth and Bradhurst avenues, etc.	John J. Donovan	2,262 00
Sewer in Twelfth avenue, between Thirty-fifth and Thirty-seventh streets, etc.	Patrick Casey	18,539 00
Sewer in Park avenue, between Ninety-second and Ninety-third streets, etc.	John R. Anderson	3,751 25
Sewer in Ninety-fifth street, between Harlem river and First avenue	Lawrence Martin	9,434 75
Sewer in Boulevard and West End avenue, between One Hundred and Fifth and One Hundred and Eighth streets	Charles H. Power	16,087 00
Sewer in Convent avenue, at One Hundred and Thirty-fifth street, etc.	O'Leary, Reilly & McCarthy	16,335 00
Sewer in Amsterdam avenue, between One Hundred and Thirty-eighth and One Hundred and Forty-first streets	"	9,368 00
Sewer in One Hundred and Fortieth street, between Hamilton place and Tenth avenue	Henry B. Towle	11,170 00
Sewer in Fifth avenue, between One Hundred and Thirty-sixth and One Hundred and Thirty-seventh streets, etc.	Thomas Smith	8,778 75
Sewer in Bridge street, between Broad and Whitehall streets	Wm. F. Cunningham	2,602 50
Extension of sewer outlet, Rivington street, East river	Patrick Casey	8,049 00
Alteration and improvement to sewer in Ludlow street, between Delancey and Broome streets	Patrick Larney	3,106 00
Extension of sewer in Twenty-eighth street, between First avenue and East river, etc.	Terence A. Smith	2,152 50
Sewer in Seventy-ninth street, between Boulevard and Amsterdam avenue	William F. Cunningham	2,859 00
Sewer in First avenue, between Forty-fourth and Forty-fifth streets	"	3,271 00
Total		\$176,185 55







## NATURE AND LOCATION OF WORK.

## AMOUNT.

Paving Fifty-fourth street, from Madison to Sixth avenue, and Sixty-ninth street, from Lexington to Fifth avenue.....	\$34,419 97
Paving Fifty-third street from Madison to Sixth avenue, and Sixty-eighth street, from Third to Fourth avenue.....	29,301 99
Paving Forty-ninth street, from Madison to Sixth avenue; Fifty-fifth street from Fourth to Fifth avenue, and Fifty-sixth street, from Madison to Sixth avenue.....	44,306 49
Paving Leroy street, from Washington to West street.....	1,876 72
Paving Thirtieth street, from Avenue B to Fifth avenue.....	61,715 51
Paving Wall street, from Nassau to Hanover street.....	11,467 37
Paving Forty-third street, from Madison to Fifth avenue; Sixty-fifth street, from Fourth to Fifth avenue; Sixty-seventh street, from Fourth to Fifth avenue, and Sixty-eighth street, between Park and Fifth avenues.....	37,335 42
Paving Elizabeth street, from Bleeker to Bayard street.....	43,541 69
Paving East Broadway, from Chatham Square to Grand street.....	74,701 51
Paving Madison avenue, from Thirty-second to Thirty-third street, Thirty-sixth to Forty-first street, Forty-second to Fifty-eighth street, and Fifty-eighth street, from Madison to Fifth avenue.....	121,057 69
Paving Broadway, or Boulevard, from Fifty-ninth to Seventy-ninth street.....	188,644 80
Paving Little West Twelfth street, from Washington street, etc.....	1,911 00

## Laying Croton Pipes, etc., Contracts.

Laying water-mains in Ninth, Morningside, Bainbridge, Pelham and Railroad avenues, Ninety-first, One Hundred and Twenty-eighth, One Hundred and Thirty-fifth, One Hundred and Thirty-eighth, One Hundred and Fortieth, One Hundred and Forty-fifth, One Hundred and Sixty-fifth, One Hundred and Sixty-sixth, One Hundred and Sixty-seventh, One Hundred and Sixty-ninth, One Hundred and Seventieth, One Hundred and Seventy-fifth, One Hundred and Seventy-sixth, One Hundred and Seventy-seventh, One Hundred and Eighty-eighth, Sherwood, New and Talmadge streets.....	\$9,475 95
Laying water-mains in Tenth, Honeywell, Daily and First avenues, Eighty-ninth, Ninety-sixth, One Hundred and Third, One Hundred and Ninth, One Hundred and Twelfth, One Hundred and Twenty-sixth, One Hundred and Thirty-sixth, One Hundred and Thirty-seventh, One Hundred and Fortieth, One Hundred and Forty-ninth, One Hundred and Seventy-sixth, High Bridge and Samuel streets.....	4,395 25
Furnishing dock hydrants, hydrant nozzles, caps and chains, drills, plugs and stop-cock box covers.....	2,418 60
Furnishing stop-cocks, hydrants, wooden hydrant boxes and cast-iron stop-cock boxes.....	13,419 50
Relaying water-mains in Gerard avenue, One Hundred and Sixty-first, One Hundred and Fifty-sixth, One Hundred and Fifty-fifth and One Hundred and Thirtieth streets and in Boulevard.....	2,413 20

## Miscellaneous Contracts.

Improvement of Aqueduct property, between Ninetieth and Ninety-first streets, 100 feet west of Ninth avenue.....	\$2,861 00
Repairing and painting roofs of Twelfth Regiment Armory.....	1,685 00
Furnishing 3,000 street-lamps.....	690 00
Painting and calicining the rooms and halls of Seventh Regiment Armory, Seventh District Court-house, etc.....	2,678 00
Painting, repairing and putting new tin roofs on Seventh District Court-house and Office of Corporation Yard, foot of East Sixteenth street.....	1,176 00
Repairing roofs over gangways facing Beekman and Front streets, Fulton Market.....	5,250 00
Building a house at High Bridge.....	13,000 00
Furnishing 800 Boulevard lamps and 1,600 additional globes.....	6,840 00

## Special Contracts.

Fencing vacant lots southwest corner Central Park and One Hundred and First street.....	\$94 04
Fencing vacant lots south side Ninety-fifth street, west of Columbus avenue.....	35 25
Fencing vacant lots Ninety-fifth and Ninety-sixth streets, from Madison to Fifth avenue, etc.....	716 85
Fencing vacant lots north side One Hundred and Tenth street, from Fifth to Lenox avenue.....	289 59
Crosswalk across One Hundred and Twenty-fourth street, east and west sides Lenox avenue.....	124 23
Crosswalk across Kingsbridge road, west side Tenth avenue.....	221 16
Crosswalk across One Hundred and Twenty-fourth street, west side Park avenue.....	65 83

## RECAPITULATION.

14 Sewer Contracts.....	\$13,925 97
27 Regulating and Grading, Curbing and Flagging Contracts.....	59,626 13
26 Paving Contracts (Assessment Work).....	274,484 47
19 Repaving Contracts.....	960,030 04
5 Laying Water-pipe, etc., Contracts.....	32,152 50
8 Miscellaneous Contracts.....	34,184 00
7 Special Contracts.....	1,547 87
106 Contracts.....	\$1,375,950 98

## Document "D."

## REPORT OF CHIEF ENGINEER OF THE CROTON AQUEDUCT.

DEPARTMENT OF PUBLIC WORKS,  
OFFICE OF CHIEF ENGINEER, No. 31 CHAMBERS STREET, ROOM 10,  
NEW YORK, January 6, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

DEAR SIR—In compliance with your letter dated December 10, 1890, I herewith submit the report for the quarter ending December 31, 1890, and a summary for the year 1890.

## EXPENDITURES FOR THE QUARTER ENDING DECEMBER 31, 1890.

Aqueduct—Repairs, Maintenance and Strengthening—Care, Maintenance and Repairs.....	\$56,719 25
Aqueduct—Repairs, Maintenance and Strengthening—Salaries.....	6,632 84
Aqueduct—Repairs, Maintenance and Strengthening—Excavation.....	12,456 00
Bronx River Works—Maintenance and Repairs.....	4,412 62
Bronx River Works—Maintenance and Repairs—Salaries.....	600 00
Croton Water Fund.....	77,008 06
Fund for Viaduct, from St. Nicholas Place to McComb's Dam Bridge.....	49,027 45
Laying Croton Pipes.....	70,679 90
Laying Croton Pipes—Salaries.....	4,241 00
Repairing and Renewal of Pipes, Stop-cocks, etc.....	25,267 54
Salaries of Engineer, Clerk, etc.....	3,293 98
Water Meter Fund, No. 2.....	5,156 68
Water Supply, Twenty-fourth Ward.....	1,004 89

Total..... \$322,500 21

## SUMMARY OF EXPENDITURES FOR THE YEAR 1890.

Aqueduct—Repairs, Maintenance and Strengthening—Care, Maintenance and Repairs.....	\$191,191 56
Aqueduct—Repairs, Maintenance and Strengthening—Salaries.....	25,681 39
Aqueduct—Repairs, Maintenance and Strengthening—Excavation.....	19,458 00
Bronx River Works—Maintenance and Repairs.....	25,900 64
Bronx River Works—Maintenance and Repairs—Salaries.....	2,400 00
Croton Water Fund.....	227,496 32
Fund for Viaduct, from St. Nicholas Place to McComb's Dam Bridge.....	63,272 70
Laying Croton Pipes.....	206,828 22
Laying Croton Pipes—Salaries.....	15,870 50
Repairing and Renewal of Pipes, Stop-cocks, etc.....	115,696 05
Retaining-wall, East Forty-second and Fifty-first streets.....	600 00
Salaries of Engineer, Clerk, etc.....	12,709 92
Water Meter Fund No. 2.....	17,354 09
Water Supply, Twenty-fourth Ward.....	4,210 91

Total..... \$928,670 30

## Contracts Made, Completed and Unfinished in 1890.

WORK.	CONTRACTOR.	DATE OF CONTRACT.	ESTIMATED COST.	DATE OF FINAL ESTIMATE.	AMOUNT OF FINAL ESTIMATE.	AMOUNT PAID IN 1890.
Building reservoir, etc., on Byram river.....	John McQuade.....	1889. Jan. 7	\$209,155 00	1890. ....	.....	\$1,645 42
Furnishing coal at High Bridge and Ninety-eighth street.....	William D. Bruns, Jr., G. C. Hotchkiss, Field & Co.....	Feb. 28	21,290 00	Apr. 10	\$20,755 90	5,913 63
Furnishing hydrants, stop-cocks, etc.....	"	" 27	12,937 50	Feb. 10	12,997 50	2,522 61
Laying Croton-pipes in Ninetieth street, etc.....	F. Thilemann, Jr.....	Mar. 14	66,271 00	Sept. 24	66,590 60	28,339 37
Building house at Williamsbridge Loading and hauling away material, Old Reservoir, Central Park.....	Terence A. Smith....	" 29	8,749 00	June 20	8,749 00	6,049 00
Laying pipe in One Hundred and Twenty-fifth street.....	"	Apr. 10	18,000 00	May 2	17,999 00	6,497 10
Laying pipe in West Vanderbilt avenue, etc.....	John Cornwell, Jr.....	" 22	52,473 00	Feb. 7	51,897 53	18,338 84
Building house at High Bridge Building storage reservoir, Muscoot river.....	Terence A. Smith....	" 31	13,000 00	Nov. 22	13,000 00	11,500 00
Laying pipes in St. Ann's avenue, etc.....	John McQuade.....	July 25	540,610 00	.....	.....	82,582 20
Laying pipes in Eighty-seventh street, etc.....	F. Thilemann, Jr.....	Aug. 21	20,780 00	Mar. 28	9,493 80	4,719 11
Furnishing cast-iron pipes.....	John Cornwell, Jr.....	Oct. 16	7,421 00	Feb. 14	7,784 56	2,598 33
Furnishing stop-cocks, etc.....	Warren, Foundry and Machine Co.....	Nov. 27	23,777 00	July 18	28,907 07	28,907 07
"	John Fox.....	1890. Feb. 3	6,225 00	June 25	6,225 00	6,225 00
"	M. J. Drummond.....	" 4	13,419 50	Nov. 6	13,419 50	13,419 50
Furnishing tapping cocks, etc.....	"	" 4	2,032 00	June 10	2,032 00	2,032 00
Laying mains in Eighth avenue, etc.....	Bernard Mahon.....	" 5	23,777 20	.....	.....	16,190 30
Laying mains in Moshulu Parkway, etc.....	William E. Dean.....	" 17	110,326 00	.....	.....	67,244 85
Laying mains in Ninth avenue, etc.....	John Cornwell, Jr.....	" 25	9,272 05	Oct. 6	9,475 95	9,002 15
Furnishing coal at High Bridge and Ninety-eighth street.....	William D. Bruns, Jr.....	" 27	15,760 00	.....	.....	10,076 86
Furnishing chestnut poles and posts.....	James V. Lawrence ..	" 27	4,475 00	.....	.....	.....
Furnishing lead and lead pipes.....	Rowland A. Robbins.....	" 28	4,644 00	.....	.....	2,421 49
Furnishing bolts, etc.....	Ogden & Wallace ..	Mar. 1	648 00	Apr. 22	672 08	672 08
Furnishing engine, etc., at Ninety-eighth street.....	Henry R. Worthington	" 1	52,030 00	.....	.....	14,563 00
Improvement of Old Reservoir, Central Park.....	Bernard Mahon.....	Feb. 27	24,500 00	.....	.....	13,356 00
Improvement of Old Reservoir, Central Park excavation.....	"	" 27	124,030 00	.....	.....	19,458 00
Furnishing dock hydrants, etc.....	M. J. Drummond.....	Mar. 5	2,518 00	Oct. 22	2,418 60	2,448 60
Laying water-mains in Madison avenue, etc.....	John Cornwell, Jr.....	May 5	4,757 00	July 10	4,830 03	4,598 53
Improvement of Aqueduct, between Ninetieth and Ninety-first streets.....	F. Thilemann, Jr.....	July 7	3,000 00	Oct. 16	2,865 00	2,865 00
Improvement of One Hundred and Fifty-fifth street.....	H. Steward.....	" 14	514,423 00	.....	.....	54,299 39
Furnishing cast-iron water-pipes Laying mains in Tenth avenue, etc.....	M. J. Drummond.....	Aug. 2	13,630 00	.....	.....	11,508 95
Relaying mains in Gerard avenue, etc.....	John Cornwell, Jr.....	" 4	4,551 00	Oct. 6	4,395 25	4,175 49
Removal of gate-houses on Tenth avenue and One Hundred and Thirty-fourth street.....	F. Thilemann, Jr.....	" 4	2,952 00	Dec. 9	2,413 20	2,292 54
	William Mansfield ..	Nov. 10	12,283 50	.....	.....	.....

## STORAGE RESERVOIRS.

The Croton river has furnished a full supply to the Aqueduct during the quarter. There was no water running over the Croton Dam for 67 days during the year 1890.

## Storage Drawn During the Year.

	Gallons.
Boyd's Corners Reservoir.....	780,000,000
South East Reservoir.....	550,000,000
Kirk Lake.....	500,000,000
Barrett Pond.....	90,000,000
Total.....	1,920,000,000

A commission will be appointed in January to appraise the balance of the lands required for Reservoir "A."

## Rain-fall—Inches.

	OCTOBER.	NOVEMBER.	DECEMBER.	TOTAL FOR QUARTER.	TOTAL FOR YEAR.
Boyd's Corners Reservoir.....	7.63	1.12	3.71	12.46	54.44
South East Reservoir.....	6.49	1.09	4.41	11.99	55.85
Kensico Reservoir.....	7.63	0.69	2.32	10.64	49.70
Croton Dam.....	6.09	0.81	2.78	9.68	48.71
Central Park Reservoirs.....	6.48	0.74	3.40	10.62	46.61

## Rain-fall at Storage Reservoir, Boyd's Corners, Putnam County, N. Y., including Melted Snow.

MONTH.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.
January.....	3.33	2.11	2.90	3.79	4.51	3.80	1.44	5.66	6.96	2.74	1.42	2.68	4.49
February.....	3.60	3.00	1.38	3.64	6.40	3.81	1.22	3.09	2.78	3.47	4.91	0.80	3.65
March.....	3.33	1.49	2.55	5.48	3.80	4.27	2.59	3.08	1.57	4.99	6.33	7.66	3.10
April.....	3.79	3.74	3.87	2.11	5.45	3.01	3.04	3.77	6.31	3.04	4.43	2.35	2.85
May.....	5.62	6.85	8.79	4.52	2.30	3.45	3.69	2.91	1.99	1.08	3.99	0.85	4.97
June.....	4.45	5.28	4.53	3.59	2.06	5.73	4.00	0.71	3.57	3.02	2.52	4.95	4.65
July.....	4.01	5.25	2.13	2.26	3.43	5.07	4.34	2.21	5.98	3.10	3.42	4.65	4.28
August.....	6.56	10.04	6.98	1.92	5.10	5.24	5.99	5.73	2.75	10.33	1.20	2.54	2.66
September.....	4.92	3.62	9.33	3.20	2.85	1.44	3.69	3.73	3.56	2.11	5.21	1.49	6.61
October.....	5.09	3.66	0.87	9.46	4.73	6.18	2.15	5.13	2.40	3.61	1.50	8.38	3.78
November.....	3.80	3.10	4.65	2.43	2.51	4.35	4.91	3.72	2.72	4.61	3.40	8.16	4.36
December.....	3.27	2.62	2.35	5.96	1.49	2.59	3.68	4.13	1.78	1.56	2.35	1.52	8.74
Total.....	51.77	50.77	50.33	48.36	44.63	48.94	40.74	43.87	42.37	43.66	40.68	46.03	54.14



MONTH.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
January .....	2.52	4.00	4.19	4.41	2.80	5.07	5.59	5.24	5.68	5.56	5.14	2.03
February .....	2.85	2.92	5.28	5.96	5.21	6.31	4.66	5.20	6.01	5.07	2.33	4.94
March .....	4.96	4.51	6.14	4.58	1.67	4.82	1.29	3.86	3.60	6.44	1.86	5.66
April .....	5.10	3.99	1.67	1.36	3.94	2.95	2.09	3.61	3.47	2.68	4.43	3.03
May.....	2.45	1.17	3.74	6.30	2.85	4.33	2.44	4.54	0.32	6.27	3.22	5.74
June.....	5.29	1.28	5.72	3.04	5.64	2.04	1.19	3.09	7.70	2.00	4.51	3.56
July.....	5.95	5.65	2.45	3.63	4.26	6.54	5.27	4.40	13.32	2.43	7.74	5.46
August .....	5.83	3.60	1.71	3.92	2.09	4.50	7.35	3.21	7.06	6.87	2.90	4.70
September.....	3.43	2.69	0.75	14.33	2.45	1.69	1.09	2.30	2.00	10.77	6.13	6.86
October.....	0.95	3.25	3.65	3.33	6.99	3.74	5.19	2.28	3.12	4.80	4.85	7.63
November.....	2.49	2.97	4.50	1.66	1.79	4.37	5.99	5.57	2.69	4.49	8.45	1.12
December .....	4.26	2.49	6.53	2.68	3.45	7.34	3.84	4.29	6.71	6.13	2.94	3.71
Total .....	46.08	38.52	46.33	55.22	43.15	53.71	45.99	47.59	61.68	63.51	54.50	54.44

The storage reservoirs and lakes in the Croton water-shed, under the control of this Department, are in good condition and are all full of water.

Work on the New Reservoir "A" on the Muscoot river has been carried on effectively during this year, but the cold weather has stopped the laying of masonry during the winter. The contractor is building roads, quarrying and cutting stone, blasting rock and building fence walls as the weather will permit and should be completed in 1893.

The Aqueduct Commissioners have continued their work on the Reservoir "I" on the East Branch, during the year, and have it so far completed that 2,000,000,000 gallons of water can be stored in same, if required; this reservoir will be completed next year. They have also continued work on Bog Pond Reservoir, an adjunct of Reservoir "I;" this reservoir should be completed in 1892. They have also commenced work on Reservoir "M" on Titicus river, all of which is preparatory to work on the dam proper; this work will be completed in 1894, and on Reservoir "D" on the West Branch of the Croton river, work was commenced late this year; this reservoir should be completed in 1895. These several storage reservoirs will, when completed, increase the storage 30,000,000,000 gallons, being a full provision for the wants of the city for the next twenty years and during any severe drought.

BRONX AND BYRAM RIVER SUPPLY.

The commissioners appointed to appraise damages on the Bronx river, between Woodlawn and Williamsbridge, have made their report.

Another commission is necessary to appraise the damages for the diversion of the water at Kensico Dam for that portion of the river between Williamsbridge and tide-water at West Farms.

On account of the death of one of the commissioners appointed to appraise the value of lands necessary for the connection of the Byram and Bronx rivers nothing has been done for some time. A new commission has been appointed, and in a few months they will be able to make their report.

Maps, plans, etc., have been made for the lands and right of way necessary on the Byram river and Byram Pond for the completion of this work, and a commission will be necessary to appraise the value of those not already acquired by the City.

On account of not being able to acquire the lands on Bear Gutter Creek now before the commission for appraisal, work was stopped on the contract for connecting the two rivers.

The regular force has been employed in repairing roads, excavating at Rye Ponds, building drains around the Williamsbridge Reservoir necessary to provide for the change of drainage, putting in order the grounds around the new Keeper's house at Williamsbridge, and watching and attending to the reservoirs. The supply of water has been uninterrupted during the year.

1,280,000,000 gallons of water were supplied during the quarter.

5,920,000,000 gallons of water were supplied during the year, an average of 16,200 million gallons per day.

There has been drawn from storage during the quarter from Kensico Reservoir 300,000,000 gallons.

Storage Drawn during the Year.

	Gallons.
Kensico Reservoir.....	1,230,000,000
Rye Ponds Reservoir.....	720,000,000

Total ..... 1,950,000,000

Kensico Reservoir is one-third full and Rye Ponds Reservoir is one-half full.

Lands Acquired and Damages Paid in 1890.

Voucher No.	Parcel No.	NAME OF OWNER.	FOR WHAT PAID.	AMOUNT PAID.	REMARKS.
21	121	De Witt, Lockman & De Witt and others.....	Damages .....	\$1,130 00	Bronx river.
22	122	" .....	" .....	1,694 00	"
23	124	" .....	" .....	535 00	"
24	128	" .....	" .....	200 00	"
25	129	" .....	" .....	1,000 00	"
26	159	George H. Behrman .....	" .....	25 00	"
27	197	John W. H. Parodi.....	" .....	25 00	"
28	207	Mary F. Tryon.....	" .....	60 00	"
147	1	Christian Cook.....	Land .....	438 90	Reservoir "A."
148	2	George H. Anderson.....	" .....	1,542 42	"
149	2	Hazen Bennett.....	Damages .....	30 00	"
150	3	Louisa A. Hynard .....	Land .....	5,785 75	"
151	4	George B. Travis .....	" .....	1,614 00	"
152	5	Edmund J. Travis .....	" .....	5,015 45	"
153	6	Sarah Ann Smith.....	" .....	1,602 50	"
154	7	William Carpenter.....	" .....	225 00	"
155	8	William B. Sniffin.....	" .....	1,100 00	"
156	9	Edmund J. Travis.....	" .....	589 50	"
157	10	John Cogen .....	" .....	675 00	"
158	11	Arthur Worden.....	" .....	1,778 90	"
159	12	William Carpenter .....	" .....	9,475 00	"
160	13	Grace Fountain.....	" .....	18 75	"
161	13	Mary Fountain.....	" .....	18 75	"
162	13	Mary E. Tomkins.....	" .....	18 75	"
163	13	Charlotte Westervelt.....	" .....	18 75	"
204	183	James H. Westcott and others.....	Damages .....	100 00	Bronx river.
486	62	George P. Sheldon.....	" .....	420 00	"

Amount Expended to December 31, 1890.

	To DECEMBER 31, 1889.	IN 1890.	TOTAL.
Labor and materials.....	\$2,660,858 85	\$35,336 10	\$2,696,194 95
Land, damages and expenses.....	1,131,469 08	8,985 19	1,140,454 27
Engineering and inspection.....	321,475 15	13,600 00	335,075 15
Totals.....	\$4,113,803 08	\$57,921 29	\$4,171,724 35

NEW AQUEDUCT.

During the year surveys for land required by the Aqueduct Commissioners for Reservoirs "M" and "D" have been carried on; plans, specifications, etc., for Reservoir "D" and houses over shafts have been examined and transmitted.

The quantity of water flowing through the New Aqueduct has been:

	Gallons.
In July .....	995,000,000
In August .....	485,000,000
In September.....	1,260,000,000
In October .....	1,340,000,000
In November .....	1,500,000,000
In December.....	1,830,000,000

The supply through same to the city has been interrupted for repairs, etc., from August 7 to August 25, October 1 to October 20, November 25 to November 27, December 2 to December 3 and on December 9.

I am informed that all large repairs have been made, but as leaks may occur which the Engineers of the Aqueduct Commission may try to stop, it is impossible to fully state what the interruption to the supply will be.

From the best of my knowledge there need be no stoppage to same this winter, and by spring all of the bad places and leakages, especially where the Aqueduct is under pressure, should show themselves on the surface, and the repairs made if necessary during the month of April, 1891.

Under section 316 of the New York City Consolidation Act of 1882, "The Department of Public Works shall have cognizance and control of all structures and property connected with the supply and distribution of Croton water."

Under section 357 of same act, "Said Department shall be responsible for the supply of water and the good order and the security of all the works from the Croton Lake to the city."

Under chapter 490, Laws of 1883, section 2, the Aqueduct Commissioners are empowered to construct "a new aqueduct or conduit for water from some point on the Croton river or Croton lake to some point in the City of New York; to construct 1 or more dams and reservoirs to retain such water and to construct the necessary appurtenances."

As soon as the aqueduct or reservoirs are completed and accepted, that is, provided for the purpose of increasing the supply of water, they should be turned over to the Department of Public Works, who under the law have cognizance and control of the supply and distribution of Croton water and is responsible for the same.

The Aqueduct Commissioners have not as yet accepted Sections "B" and No. 16 of the New Aqueduct and that portion of the same south of the Yonkers line that is under pressure should have two or three months more of a test to assure its durability.

From my knowledge of what has been done I should say that all examinations, tests and repairs can be completed by May 1, 1891.

AQUEDUCT—REPAIRS, MAINTENANCE AND STRENGTHENING.

Work Done during the Quarter ending December 31, 1890.

DIVISIONS.	Earth Excavation, Cubic Yards.	Stone Quarried, Cubic Yards.	Dry Masonry, Cubic Yards.	Stone Masonry, Cubic Yards.	Brick Masonry, Cubic Feet.	Fence Built, Lineal Feet.	Fence Repaired, Lineal Feet.	Filling and Grading, Cubic Yards.	Sodding, Square Feet.	Flagging, Square Feet.	Subway Laid, Lineal Feet.	Fence Gates Built.	Curbing Set, Lineal Feet.	Concrete Masonry, Cubic Yards.
First.....	.....	.....	.....	.....	460	.....	.....	.....	.....	.....	.....	.....	.....	.....
Second.....	.....	.....	.....	.....	2,235	.....	.....	.....	.....	.....	.....	.....	.....	.....
Third.....	61	.....	28	.....	1,405	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fourth.....	.....	.....	.....	.....	316	2,300	.....	.....	.....	.....	.....	.....	.....	.....
Fifth.....	150	.....	.....	.....	138	975	300	375	.....	48	183	6	.....	.....
Sixth.....	562	.....	.....	.....	370	2,215	562	.....	.....	.....	.....	.....	.....	.....
Seventh.....	50	.....	83	.....	.....	.....	20	1,200	1,663	450	.....	166	.....	.....
Eighth.....	3,160	8,186	.....	85	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,936
Total.....	3,983	8,185	111	85	138	5,761	4,815	957	1,200	1,711	638	6	166	2,936

The regular maintenance of the Aqueduct has been continued as usual during the past quarter, such as the care of dam, lake, gate-houses, machinery and grounds; attending leaks; patrolling Aqueduct property and building and repairing fences.

The more particular work has been as follows:

First Division—Erecting telephone poles; attending leaks; cutting brush along line; cutting grass; cutting ice and snow from culverts, drains and ditches; building and repairing fences.

Second Division—Erecting telephone poles; building and repairing fences; cleaning up line; keeping culverts, drains and crosswalks free from ice and snow; painting roof of gate-house on Ann street, Sing Sing; attending leaks, which have not been very troublesome this quarter.

Third Division—Rebuilding retaining-wall, also rebuilding culvert on the Aspinwall bank; building shed for storing brick; erecting telephone poles; building and repairing fence; cleaning up line, and keeping drains and culverts clear of ice and snow. The leaks on this Division have needed but little attention during the quarter.

Fourth Division—Building and repairing fences; erecting telephone poles; attending leaks; cleaning up line, and keeping culverts, drains and ditches free from snow and ice; this with the general maintenance.

Fifth Division—Erecting telephone poles; building subway for telephone cable at Ashburton and Palisade avenues, Yonkers; filling and grading; building fences and fence-gates; cleaning drains, culverts and crosswalks.

Sixth Division—Filling and grading on Mosholu avenue and Gun Hill road; erecting telephone poles; attending leaks which have not been so troublesome this quarter; building and repairing fences; cleaning culverts, drains and ditches.

Seventh Division—The bridge and its approaches have been kept in order; the iron railing, gas-lamps and manhole covers on bridge, the iron and woodwork in the gate-houses have been painted; new stoves have been placed in the gate-house; new planks have been put in dam in east gate-house; all stop-cocks have been wrapped with straw and are well protected from the frost; a fire is kept in the tower during the winter months; culverts, drains and ditches have been kept clean, also the reservoir and bridge with all their approaches; the roof on the keepers' house has been put in good order; a retaining-wall between cliff and Aqueduct property has been rebuilt; this with the general maintenance.

Eighth Division—Cleaning and repairs to Forty-second Street Reservoir, gate-house, chambers and outside mains; cleaning, repairs and maintenance of High Service Works, Ninth and Tenth avenues gate-houses and grounds; cleaning up line; doing odd jobs of carpentering and mason work; patrolling Central Park Reservoir and general maintenance.



## Croton Aqueduct—Repairs, Maintenance and Strengthening for the Year 1890.

DIVISIONS.	Earth Excavation, Cubic Yards.	Stone Q. arried, Cubic Yards.	Dry Masonry, Cubic Yards.	Stone Masonry, Cubic Yards.	Brick Masonry, Cubic Feet.	Concrete Masonry, Cubic Yards.	Subway Laid, Lineal Feet.	Fence Built, Lineal Feet.	Fence Repaired, Lineal Feet.	Paving, Square Yards.	Filling and Grading, Cubic Yards.	Sodding, Square Yards.	Flagging Laid, Square Feet.	Curb Set, Lineal Feet.	Telephone Poles Erected.	Seeding, Square Yards.	Fence Gates Built.
First.....	.....	25	.....	.....	.....	.....	600	300	.....	.....	.....	.....	.....	.....	100	.....	.....
Second.....	.....	63	.....	.....	.....	.....	4,290	.....	.....	.....	.....	.....	.....	.....	474	.....	.....
Third.....	356	.....	278	.....	60	.....	1,818	66	55	60	.....	.....	.....	.....	329	.....	.....
Fourth.....	.....	.....	.....	.....	.....	.....	1,295	7,740	.....	.....	.....	.....	.....	.....	136	.....	.....
Fifth.....	240	.....	115	.....	138	30	353	1,910	1,450	.....	970	.....	48	.....	299	350	6
Sixth.....	2,122	462	.....	.....	.....	.....	629	2,464	.....	2,852	.....	.....	.....	.....	103	.....	.....
Seventh.....	150	.....	83	.....	.....	.....	450	1,120	.....	70	7,133	1,663	166	.....	.....	.....	.....
Eighth.....	9,132	13,338	.....	630	.....	2,936	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	12,000	13,800	569	630	108	2,972	808	11,663	12,020	55	3,962	7,133	1,711	166	1,441	350	6

The general character of the work has been maintenance and strengthening.

The more particular work has been erecting telephone poles, from Croton Dam to High Bridge, and constructing an entirely new telephone line, connecting with New Aqueduct at One Hundred and Thirty-fifth street gate-house, Shaft No. 25, Ardsley and Pocantico blow-offs and Croton Dam; hard drawn copper wire was used in the construction, and where the Aqueduct crosses Ashburton and Palisade avenues, Yonkers, and at High Bridge, a section of subway was built and cable used.

The Engineer's Office building at High Bridge was completed and taken possession of November 22, 1890.

Water was admitted to the New Aqueduct and entered the Central Park Reservoir July 15, 1890. The contract for removing twenty thousand cubic yards of material from the old reservoir was completed and a new one for continuing the improvement of the same was begun during the year.

The keepers have a general surveillance of water running and work being done along the New Aqueduct, in addition to their present duties.

First Division—The work on this division has been care of dam, lake, gate-houses, machinery, erecting telephone poles, cutting grass along line of Aqueduct and brush around lake, keeping the lake free from vegetable growth, building and repairing fences, patrolling Aqueduct property.

Second Division—The work on this division has been rebuilding retaining-walls, erecting telephone poles, cutting grass, building and repairing fences, attending leaks, which at times have been very troublesome, keeping line clean, and culverts and drains free from ice and snow.

Third Division—The work on this division has been rebuilding retaining-walls, paving gutters, erecting telephone poles, building and repairing fences, attending leaks, cleaning up line, and keeping culverts free from ice and snow.

Fourth Division—The work on this division has been erecting telephone poles and wires, building and repairing fences, cutting grass, keeping line clean, and culverts, drains and ditches free from ice and snow, and general maintenance.

Fifth Division—The work on this division has been building retaining walls, filling and grading, erecting telephone poles, building fences and fence gates, building subway for telephone cable, keeping line, culverts, drains and crosswalks clean and free from ice and snow, seeding banks, cutting grass.

Sixth Division—The work on this division has been erecting telephone poles, building and repairing fences, filling and grading, cutting grass, keeping line, culverts and drains clean, attending leaks which have been quite troublesome at times during the year.

Seventh Division—The work on this division has been care of tower, gate-houses, machinery, bridge and reservoir, building and repairing fences, keeping the steps and all the roads leading to and from the bridge and reservoir in a presentable condition, painting iron railing on bridge and around the reservoir, also the iron and wood work in gate-houses and boiler room, putting new floor in coal dock, building subway for telephone cable, setting, flagging and curbing around Engineer's Office building, rebuilding retaining-wall between Cliff avenue and Aqueduct property; this in addition to hoisting coal and general maintenance.

Eighth Division—The work on this division has been cleaning and repairs to Central Park and Forty-second street reservoirs, care of High Service works, machinery, Ninth and Tenth avenues gate-houses, outside mains and chambers.

Water was introduced through the New Aqueduct and entered Central Park Reservoir July 15, 1890.

The contract for the removal of twenty thousand cubic yards of material from the old reservoir was completed during the past year, and a new contract for continuing the improvement of the same was commenced; patrolling Central Park Reservoir, cutting grass and general maintenance.

The work on the masonry and concrete in the old reservoir in Central Park was rapidly carried on until stopped by the weather in October.

The work on the excavation at the old reservoir has been carried on actively when the weather would permit.

The contract for connecting new gate-house at One Hundred and Thirty-fifth street with the old aqueduct, and the removal of the old gate-houses at One Hundred and Thirty-fourth and One Hundred and Forty-second streets and Tenth avenue, has been let, but being so late in the season no work can be done until the Spring.

The Aqueduct has furnished an uninterrupted supply during the quarter, and, with the reduced quantity passing through same, the repairs can be made during next year as the wants of Sing Sing prison and the pumping station at High Bridge will permit.

The pumping engines at Ninety-eighth street and at High Bridge have been run steadily during the year, and the quantities pumped at Ninety-eighth street has been increased during the past quarter from eight to twelve million gallons per day.

The contractors for the new pumping-engine have delivered the same in the engine and boiler house, and are putting same together as rapidly as possible, and will have steam on in January, 1891.

One contract for excavating rock and earth from the Aqueduct property between Ninetieth and Ninety-first streets, has been completed.

## HIGH BRIDGE, 1890.

## Performance of High Service Pumping Engines at High Bridge.

NUMBER OF DAYS PUMPED.	NUMBER OF STROKES.	HEIGHT PUMPED, FEET.	NUMBER OF GALLONS PUMPED.	POUNDS OF COAL CONSUMED.	GALLONS OF OIL EXPENDED.	POUNDS OF WASTE EXPENDED.
365	31,733,140	1,200	2,219,185,345	3,795,100	825	365
Average per month..	2,644,428	100	184,937,112	316,258	69	30

Average duty, 48,794,200 pounds raised 1 foot high with 100 pounds of coal.  
584 gallons raised 100 feet high with 1 pound of coal.  
Average amount pumped daily, 6,079,959 gallons.  
Average pounds of coal consumed per day, 10,397.  
Average cost of pumping 1,000,000 gallons 100 feet high, \$8.11.  
20,000,000 gallons pumped 214 feet high into a tank in tower during the year.

## NINETY-EIGHTH STREET, 1890.

## Performance of High Service Pumping Engine at Ninety-eighth Street Engine House.

NUMBER OF DAYS PUMPED.	NUMBER OF STROKES.	HEIGHT PUMPED, FEET.	NUMBER OF GALLONS PUMPED.	POUNDS OF COAL CONSUMED.	GALLONS OF OIL EXPENDED.	POUNDS OF WASTE EXPENDED.
365	39,759,772	744	4,333,876,543	5,288,273	1,206	706
Average per month..	3,313,314	62	361,156,379	440,690	101	59

Average duty, 42,353,900 pounds raised 1 foot with 100 pounds of coal.  
820 gallons pumped 62 feet high with 1 pound of coal.  
Average amount pumped daily, 11,873,634 gallons.  
Average pounds of coal consumed per day, 14,488.  
Average cost of pumping 1,000,000 gallons 100 feet high, \$5.03.

## LAYING CROTON PIPES.

Contracts for laying water-mains in the following streets and avenues have been completed during the quarter:

Fourth avenue, between One Hundred and Fifteenth and One Hundred and Sixteenth streets.

One Hundred and Sixteenth street, between Madison and Fifth avenue.

Eightieth street, between Tenth avenue and Boulevard.

Kelly street, between Robbins and Union avenues.

## Amount of Pipe Laid, Stop-cocks Set, and Hydrants Placed.

PIPES.			STOP-COCKS.			HYDRANTS.		
Diameter.	During Quarter Ending December 31, 1890.	During Year 1890.	Diameter.	During Quarter Ending December 31, 1890.	During Year 1890.	Diameter.	During Quarter Ending December 31, 1890.	During Year 1890.
48-inch....	Lineal feet. ....	Lineal feet. 2,569	48-inch....	.....	.....	"A"....	8	*109
36-inch....	3,400	7,400	36-inch....	.....	1	No. 1....	4	*47
20-inch....	3,150	4,530	20-inch....	1	5	Total..	12	156
12-inch....	209	8,679	12-inch....	10	41			
6-inch....	2,883	60,255	6-inch....	31	137			
4-inch....	.....	3,130	4-inch....	.....	6			
Total..	9,642	86,563	Total..	42	190			

\* Less 7 No. 1 Hydrants.  
" 27 "A" "  
34  
Replaced by new.

## Summary, 1890.

PIPE.				STOP-COCKS.			HYDRANTS.			
Diameter of Pipe.	Pipe Laid to Dec. 31, 1889.	Pipe Laid from Dec. 31, 1889, to Dec. 31, 1890.	Total Pipe Laid to Dec. 31, 1890.	Stop-cocks Set to Dec. 31, 1889.	Stop-cocks Set from Dec. 31, 1889, to Dec. 31, 1890.	Total Stop-cocks Set to Dec. 31, 1890.	Pattern.	Hydrants Placed to Dec. 31, 1889.	Hydrants Placed from Dec. 31, 1889, to Dec. 31, 1890.	Total Hydrants placed to Dec. 31, 1890.
48-inch.....	73,167	2,569	75,736	17	....	17	Nos. 1, 2 and 3	3,534	*47	3,581
36-inch.....	95,442	7,400	102,842	40	1	41	Victor.....	139	....	139
30-inch.....	41,773	.....	41,773	29	....	29	"A" hydrants	2,959	*109	3,068
24-inch.....	11,542	.....	11,542	13	....	13	"B" hydrants	1,788	....	1,788
20-inch.....	194,153	4,530	198,683	182	5	187	Totals.....	8,420	156	8,576
16-inch.....	17,130	.....	17,130	22	....	22				
12-inch.....	852,585	8,679	*857,187	1,566	41	1,607				
10-inch.....	6,629	.....	6,629	15	....	15				
6-inch.....	2,144,718	60,255	*2,181,045	4,757	137	4,894				
4-inch.....	32,867	3,130	*32,936	119	6	125				
Total feet.	3,470,006	86,563	3,525,503	6,760	190	6,950				
Miles.....	657.19	16.39	667.71							

\* NOTE—Less the following lengths of the various sizes of pipe discontinued:

12-inch pipe.....	4,077 feet.
6-inch pipe.....	23,928 "
4-inch pipe.....	3,061 "
Total.....	31,066 feet or 5.88 miles.

## HIGH SERVICE.

The number of buildings built during the past 10 years in the High Service District have drawn upon the pumping capacity provided to such an extent that there is now no reserve.

The pressures in this district have been increased since the new supply has been obtained about 15 feet, and when the new pumping engine, now being erected, is completed in January, 1891, a further increase of 10 feet will be given.

This district extending along the high grounds of the city from Thirty-fourth street to the upper end of the island, and from 60 to 200 feet above mean high tide is so irregular, both as to distance and grades, that it is impracticable to fully satisfy every one, especially where they have high buildings on high points of the district.

The continued large building operations of this district demand that immediate measures be taken to increase the pumping plant.

The most available point at present is on property of the city east of Tenth avenue and over and adjacent to the New Aqueduct, at and near One Hundred and Seventy-ninth street, where provision has been made to get water from the New Aqueduct, and as the means provided for laying water-mains, etc., are only sufficient for that purpose, I recommend that the Legislature be called upon to enact a law to obtain \$500,000 for the purpose of erecting the necessary pumping machinery, structures and appurtenances, and to lay the necessary mains to deliver water at higher elevations. This would nearly double our present pumping capacity, and it will be necessary as soon as they can be erected.

## ONE HUNDRED AND FIFTY-FIFTH STREET VIADUCT.

Under the provisions of chapter 576, Laws of 1887, plans and specifications for an iron and steel viaduct with a granite roadway 40 feet wide, asphalt sidewalks 10 feet wide on each side and the necessary abutments extending on One Hundred and Fifty-fifth street, from the top of the hill at St. Nicholas place to the McComb's Dam Bridge, with an approach to the McComb's Dam road, and steps leading from the plaza of the viaduct above Eighth avenue to Eighth avenue and steps leading to One Hundred and Fifty-fifth street and exterior street, from McComb's Dam road, were made by this Department and submitted to the Board of Estimate and Apportionment and approved by the Board May 6, 1890.

The contract was advertised and entered into July 14, 1890.

The contractor immediately commenced preparation for the work and has vigorously carried on the work on the foundations until stopped by the weather; rock excavation and dry wall will be carried on during the winter.

In order not to complicate the work of building the viaduct with the necessary work to be done in connection therewith of changing the present approaches to the McComb's Dam Bridge, of protecting the private property adjacent to Eighth avenue and One Hundred and Fifty-fifth street liable to be more or less injured by the deep foundations of the structures, for the changes necessary in the structures of the Manhattan Elevated Railroad at Eighth avenue and of changing the steps at St. Nicholas place, these were left out of the contract as it was a mooted point whether half the cost of same could under the law be assessed on the property.

As fast as these several pieces of contingent work can be fully studied out and the parties interested satisfied, they will be brought before the Board of Estimate and Apportionment for their approval and to provide means therefor.

I have no doubt but what they should be paid for from the funds provided for the viaduct, but, not to complicate the assessment, should not be paid for by the property owners.

## DISTRIBUTION OF WATER.

The pressures on the mains supplying that portion of the city supplied direct from the reservoirs in the city have been increased from 20 to 25 feet and has given the repair gangs a large amount of work attending to small leaks on the 500 miles of pipes, 5,000 hydrants and 100,000 taps and service pipes affected by same.

No bad breaks have so far been found, and as the cold weather has arrived when it is impracticable to take up pavements and find and repair leaks to advantage, I have thought it best to defer



until spring the opening of all the gates from the reservoirs so as to give the 5 to 10 feet additional pressure that can be obtained for this service.

There is a large amount of pipe along the river front that requires replacing and will require at least two years more to fully replace in an economical manner.

The steady supply from the New Aqueduct was obtained so late in the year that no measures have been taken in changing from high to low service that portion of the city supplied by pumping and which is below 65 feet above mean high tide, as it requires warm weather to place new stop-cocks, take pressures from hydrants and regulate the same.

This work will be commenced and carried on to completion in the spring, provided the supply from the New Aqueduct is assured as steady and continuous.

REPAIRING AND RENEWAL OF PIPES, STOP-COCKS, ETC.

A gang of men have been employed relaying mains, changing taps, etc., along West, South and connecting streets, and in the Twenty-third and Twenty-fourth Wards, where the grades of the streets have been changed, as follows:

Canal street, south side, between West and Greenwich streets.  
Canal street, north side, between West and Greenwich streets.  
Spring street, between West and Washington streets.  
Charlton street, between West and Washington streets.  
King street, between West and Washington streets.  
Twentieth street, between Tenth and Thirteenth avenues.  
Peck Slip, between South and Water streets.  
Front street, between Peck Slip and Roosevelt street.  
Dover street, between South and Water streets.  
Water street, between Dover street and James Slip.  
Roosevelt street, between South and Water streets.  
South street, between Roosevelt street and James Slip.  
Tompkins street, between Grand and Rivington streets.  
One Hundred and Fifty-sixth street, between St. Nicholas and Tenth avenues.  
One contract for relaying mains in—  
Gerard avenue, between One Hundred and Sixty-fifth and One Hundred and Sixty-ninth streets.  
One Hundred and Sixty-first street, between Tenth avenue and Boulevard.  
One Hundred and Fifty-sixth street, between Tenth avenue and Boulevard.  
One Hundred and Fifty-fifth street, between Tenth avenue and Boulevard.  
One Hundred and Thirtieth street, between Broadway and Twelfth avenue.  
Boulevard, between One Hundred and Twelfth and One Hundred and Thirteenth streets.  
—has been completed.

One contract for furnishing dock hydrants, etc., and one contract for furnishing stop-cocks, hydrants, etc., have been completed during the quarter.

The force at the Pipe-yard have been fully employed receiving and delivering pipe, stop-cocks, etc., and making repairs to the tools, etc., of the repair gang.

TAPS.

Number of taps put in during the quarter ending December 31, 1890	728
Number of taps put in during the year ending December 31, 1890	3,029

METERS.

Meters placed during the quarter ending December 31, 1890	482
Meters placed during the year ending December 31, 1890	2,202
Number of meters now in use	22,072

Water-meters in use, December 31, 1890.

WHERE PLACED.	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	TOTAL.
Hotels	13	66	146	78	54	23	7	..	387
Breweries, bottlers, etc.	19	98	127	57	81	21	2	..	405
Charitable institutions, etc.	..	5	31	40	43	10	2	..	131
Offices	38	773	819	338	97	38	19	..	2,122
Manufacturing establishments	129	284	496	369	209	28	9	..	1,524
Gas-works	2	4	14	5	4	14	11	..	54
Railroads	7	100	58	6	12	16	28	3	230
Stables	408	1,076	493	80	28	8	1	..	2,094
Apartment-houses	10	19	71	66	64	7	4	..	241
Docks	22	18	17	10	39	55	36	..	197
Riverdale	47	33	13	1	..	1	..	2	97
Miscellaneous	5,070	4,475	3,526	890	494	108	19	8	14,590
Total	5,765	6,951	5,811	1,940	1,125	329	138	13	22,072

STYLE OF METER.	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	TOTAL.
Gem	..	..	..	..	2	7	1	..	10
Crown	3,450	3,099	2,052	276	148	37	25	10	9,097
Worthington	633	2,652	2,514	1,463	851	249	94	1	8,457
Thomson	1,682	1,200	1,245	201	124	36	18	2	4,508
Total	5,765	6,951	5,811	1,940	1,125	329	138	13	22,072

Average Number of Gallons used per Day through Meters.

NUMBER OF METERS.	WHERE USED.	GALLONS.	NUMBER OF METERS.	WHERE USED.	GALLONS.
387	Hotels	1,713,000	2,076	Stables	1,231,000
405	Breweries, bottlers, etc.	1,778,000	236	Apartment-houses	422,000
131	Charitable institutions	759,000	197	Docks	1,607,300
2,100	Offices	1,994,000	97	Riverdale	50,500
1,475	Manufacturing establishments	3,217,000	13,882	Miscellaneous	12,747,000
54	Gas-works	1,060,200	..	..	..
230	Railroads	1,923,100	21,270	Total	28,508,100

WASTE AND USE OF WATER.

During the quarter a supply has been obtained from the New Aqueduct: 11 days in October, 28 days in November, and 29 days in December, with a prospect of a regular supply through same hereafter. The pressures have been increased from ten to twenty-five feet, according to location, and as freezing weather came early, it would not be wise to further increase the pressures until the weather is such that repairs can be rapidly made, if any breaks in the mains should occur.

The present supply of the city is—

From the Old Aqueduct	75,000,000	gallons per day.
" New Aqueduct	60,000,000	"
" Bronx River Conduit	10,000,000	"
Total	145,000,000	"

There has been more or less waste of water found from tanks overflowing and defective plumbing, and I recommend that the examinations of sewers at night for leaks and waste from houses, and a regular examination of the plumbing of houses be carried on during the winter so as to locate and stop the leaks and waste.

Yours, respectfully,

G. W. BIRDSALL, Chief Engineer, Croton Aqueduct.

STREETS AND AVENUES IN WHICH WATER-MAINS HAVE BEEN LAID IN 1890.

Forty-eight-inch Pipe.

Ninetieth street (2 lines), between Eighth avenue and 125 feet west of Ninth avenue.  
One Hundred and Twenty-fifth street, between Eighth and Ninth avenues.

Thirty-six-inch Pipe.

Moshulu Parkway, from Van Cortlandt avenue to Harlem Railroad.  
Bronx Park, between Harlem Railroad and Southern Boulevard.  
Southern Boulevard, between Bronx Park and Pelham avenue.

Twenty-inch Pipe.

Eighth avenue, between Ninety-seventh and One Hundredth streets.  
Transverse Road (No. 4), between Fifth and Eighth avenues.  
Fifth avenue, between Ninety-third and Ninety-seventh streets.  
Ninety-third street, between Fifth and Madison avenues.

Twelve-inch Pipe.

Southern Boulevard, between Hunt's Point road and Home street.  
Park avenue, between Ninety-fourth and Ninety-fifth streets.  
New street, between Beaver and Wall streets.  
Pelham avenue, between Pyne street and Southern Boulevard.  
Madison avenue, between One Hundred and Sixteenth and One Hundred and Eighteenth streets.  
Ninth avenue, west side, between One Hundred and Twenty-third and One Hundred and Twenty-seventh streets.  
One Hundred and Forty-ninth street, between Brook and St. Ann's avenues.  
Tenth avenue, west side, between One Hundred and Thirty-first and One Hundred and Thirty-third streets.  
Fourth avenue, west side, between One Hundred and Fifteenth and One Hundred and Sixteenth streets.

Six-inch Pipe.

Kingsbridge road, between Main street and Adams avenue.  
Tinton avenue, between Denman place and One Hundred and Sixty-first street.  
Edgecombe avenue, between One Hundred and Thirty-eighth and One Hundred and Forty-first streets.  
One Hundred and Thirty-second street, between St. Ann's and Willow avenues.  
One Hundred and Thirty-first street, between Boulevard and Twelfth avenue.  
Tenth avenue, between One Hundred and Thirty-fifth and One Hundred and Thirty-sixth streets.  
One Hundred and Thirty-fifth street, between Tenth and Convent avenues.  
Convent avenue, between One Hundred and Thirty-third and One Hundred and Thirty-fifth streets.  
Manhattan avenue, between One Hundred and Fourth and One Hundred and Fifth streets.  
Fourteenth street, between end of old Main and East river.  
Ninety-fifth street, between Tenth and West End avenues.  
One Hundred and Twenty-eighth street, between Eighth and St. Nicholas avenues.  
One Hundred and Thirty-eighth street, between Eighth and Edgcombe avenues.  
One Hundred and Forty-fifth street, between Tenth and Eleventh avenues.  
One Hundred and Thirty-fifth street, between Southern Boulevard and 500 feet east.  
One Hundred and Sixty-fifth street, between Tenth avenue and Kingsbridge road.  
Ninety-first street, between First and Second avenues.  
One Hundred and Seventieth street, between Tenth and Eleventh avenues.  
One Hundred and Eighty-eighth street, between Washington and Hoffman avenues.  
Sherwood street, between Marion and Bainbridge avenues.  
Bainbridge avenue, 300 feet north and south of Sherwood street.  
One Hundred and Fourteenth street, between Eighth and Manhattan avenues.  
Ninety-second street, between West End avenue and Boulevard.  
Seventy-seventh street, between West End and Riverside avenues.  
One Hundred and Eighth street, between Ninth and Tenth avenues.  
One Hundred and Sixteenth street, between Fifth and Lenox avenues.  
One Hundred and Third street, between First avenue and East river.  
Trinity avenue, between One Hundred and Thirty-second street and Southern Boulevard.  
Ryer avenue, between One Hundred and Eighty-third street and Kirk place.  
Kirk place, between Ryer and Anthony avenues.  
Ninetieth street, between First and Second avenues.  
One Hundred and Sixty-second street, between Prospect and Westchester avenues.  
Union avenue, between One Hundred and Sixty-fifth and One Hundred and Sixty-sixth streets.  
One Hundred and Sixty-fourth street, between Morris avenue and 200 feet west of Teller place.  
One Hundred and Fourth street, between Boulevard and Riverside avenue.  
Railroad avenue, East, between One Hundred and Sixty-fifth and One Hundred and Sixty-sixth streets.  
Talmadge street, between Washington and Railroad avenues.  
One Hundred and Twenty-first street, between Eighth and Manhattan avenues.  
One Hundred and Twenty-sixth street, between Ninth and St. Nicholas avenues.  
Ninety-sixth street, between Lexington and Fourth avenues.  
One Hundred and Third street, between Tenth avenue and Boulevard.  
One Hundred and Twelfth street, between Tenth avenue and Boulevard.  
One Hundred and Twenty-sixth street, between Tenth avenue and Boulevard.  
One Hundred and Fortieth street, between Tenth avenue and Boulevard.  
One Hundred and Thirty-sixth street, between Fifth and Lenox avenues.  
One Hundred and Thirty-seventh street, between Alexander and Lincoln avenues.  
One Hundred and Thirty-sixth street, between Willis avenue and Brown place.  
Highbridge street, between Claremont and First avenues.  
Daily avenue, between Kingsbridge road and Samuel street.  
First avenue, between Highbridge and Devoe streets.  
Samuel street, between Daily and Honeywell avenues.  
Honeywell avenue, between Samuel street and 600 feet south.  
Ninth and Morningside avenues, east side, between One Hundred and Tenth and One Hundred and Twenty-seventh streets.  
One Hundred and Seventy-sixth street, between Washington and Third avenues.  
One Hundred and Ninth street, between Tenth avenue and Boulevard.  
One Hundred and Sixteenth street, between Madison and Fifth avenues.  
Eightieth street, between Tenth avenue and Boulevard.  
Kelly street, between Robbins and Union avenues.

"A" Hydrants Set in 1890.

West side Southern Boulevard, between Westchester avenue and Home street	1
North side Kingsbridge road, 200 feet east of Southern Boulevard	1
Northeast corner Kingsbridge road and Taylor street	1
Northwest corner Kingsbridge road and Broadway	1
Northeast corner Kingsbridge road and Monroe avenue	1
Northeast corner Kingsbridge road and Madison avenue	1
Northwest corner Kingsbridge road and Cambrelling avenue	1
West side Tinton avenue, between Denman place and One Hundred and Sixty-first street	1
East side Edgecombe avenue, between One Hundred and Fortieth and One Hundred and Forty-first streets	1
Northeast corner Edgecombe avenue and One Hundred and Thirty-ninth street	1
North side One Hundred and Thirty-second street, between Trinity and Willow avenues	2
Northwest corner Boulevard and One Hundred and Thirty-first street	1
North side One Hundred and Thirty-fifth street, between Tenth and Convent avenues	1
East side Convent avenue, between One Hundred and Thirty-third and One Hundred and Thirty-fifth street	3
Northwest corner Boulevard and Ninety-fifth street	1
Northwest corner West Vanderbilt avenue and One Hundred and Seventy-fourth street	1
East side Park avenue, between Ninety-fourth and Ninety-fifth streets	1
Northwest corner Eighth avenue and One Hundred and Twenty-eighth street	1
Northeast corner One Hundred and Thirty-eighth street and Edgecombe avenue	1
Northwest corner One Hundred and Thirty-eighth street and Eighth avenue	1
South side One Hundred and Forty-fifth street, between Boulevard and Tenth avenue	2
Northeast corner One Hundred and Thirty-fifth street and Southern Boulevard	1
North side One Hundred and Thirty-fifth street, between Southern Boulevard and Willow avenue	1



Northeast corner One Hundred and Sixty-fifth street and Kingsbridge road. .... 1  
 Northwest corner One Hundred and Sixty-fifth street and Tenth avenue. .... 1  
 Northeast corner Ninety-first street and Second avenue. .... 1  
 Northwest corner Ninety-first street and First avenue. .... 1  
 North side One Hundred and Seventieth street, between Tenth and Audubon avenues. .... 1  
 North side One Hundred and Seventieth street, between Eleventh and Audubon avenues. .... 1  
 North side One Hundred and Eighty-eighth street, between Washington and Hoffman avenues. .... 3  
 Northeast corner Bainbridge avenue and Sherwood street. .... 1  
 West side Bainbridge avenue, 300 feet south of Sherwood street. .... 1  
 West side Bainbridge avenue, 300 feet north of Sherwood street. .... 1  
 North side of Pelham avenue, between Pyne street and Southern Boulevard. .... 1  
 North side One Hundred and Fourteenth street, between Eighth and Manhattan avenues. .... 1  
 Northeast corner Ninety-second street and West End avenue. .... 1  
 Northeast corner Seventy-seventh street and Riverside avenue. .... 1  
 Northwest corner Seventy-seventh street and West End avenue. .... 1  
 North side One Hundred and Eighth street, between Ninth and Tenth avenues. .... 1  
 Northwest corner One Hundred and Eighth street and Ninth avenue. .... 1  
 Northwest corner One Hundred and Sixteenth street and Fifth avenue. .... 1  
 North side One Hundred and Sixteenth street, between Fifth and Sixth avenues. .... 1  
 North side One Hundred and Third street, between First avenue and East river. .... 2  
 West side Trinity avenue, between One Hundred and Thirty-second street and Southern Boulevard. .... 1  
 West side Rye avenue, between One Hundred and Eighty-third street and Kirk place. .... 2  
 North side Kirk place, between Rye and Anthony avenues. .... 1  
 North side Ninetieth street, between First and Second avenues. .... 2  
 Northeast corner One Hundred and Sixty-second street and Prospect avenue. .... 1  
 Northwest corner One Hundred and Sixty-second street and Westchester avenue. .... 1  
 Northwest corner Union avenue and One Hundred and Sixty-fifth street. .... 1  
 Southwest corner Union avenue and One Hundred and Sixty-sixth street. .... 1  
 North side One Hundred and Sixty-fourth street, between Morris avenue and Teller place. .... 1  
 North side One Hundred and Fourth street, between Riverside and West End avenues. .... 1  
 Northwest corner One Hundred and Fourth street and Boulevard. .... 1  
 East side Railroad avenue, between One Hundred and Sixty-fifth and One Hundred and Sixty-sixth streets. .... 1  
 North side Talmadge street, between Washington and Railroad avenues. .... 1  
 Northeast corner One Hundred and Twenty-first street and Manhattan avenue. .... 1  
 North side One Hundred and Twenty-first street, between Eighth and Manhattan avenues. .... 1  
 Northeast corner Railroad avenue and One Hundred and Seventy-second street. .... 1  
 East side Railroad avenue, between One Hundred and Seventieth and One Hundred and Seventy-first streets. .... 1  
 Northwest corner One Hundred and Seventeenth street and Madison avenue. .... 1  
 Southeast corner One Hundred and Twenty-sixth street and Ninth avenue. .... 1  
 Southwest corner Manhattan street and Ninth avenue. .... 1  
 Southwest corner One Hundred and Twenty-fourth street and Ninth avenue. .... 1  
 Northwest corner One Hundred and Twenty-third street and Ninth avenue. .... 1  
 Northeast corner One Hundred and Twenty-first street and Morningside avenue, East. .... 1  
 Northeast corner One Hundred and Fourteenth street and Morningside avenue, East. .... 1  
 Northeast corner One Hundred and Tenth street and Manhattan avenue. .... 1  
 Northeast corner Ninety-sixth street and Fourth avenue. .... 1  
 North side Ninety-sixth street, between Lexington and Fourth avenue. .... 1  
 Northwest corner One Hundred and Third street and Tenth avenue. .... 1  
 North side One Hundred and Twelfth street, between Tenth avenue and Boulevard. .... 1  
 North side One Hundred and Twenty-sixth street, between Tenth avenue and Boulevard. .... 1  
 Northwest corner One Hundred and Fortieth street and Tenth avenue. .... 1  
 Northwest corner One Hundred and Fortieth street and Hamilton place. .... 1  
 Northeast corner One Hundred and Fortieth street and Boulevard. .... 1  
 North side One Hundred and Thirty-sixth street, between Fifth and Sixth avenues. .... 1  
 Northeast corner One Hundred and Thirty-seventh street and Lincoln avenue. .... 1  
 Northwest corner One Hundred and Thirty-seventh street and Alexander avenue. .... 1  
 North side One Hundred and Thirty-sixth street, between Willis avenue and Brown place. .... 1  
 North side One Hundred and Forty-ninth street, between Brook and St. Ann's avenue. .... 1  
 Northwest corner One Hundred and Fifty-sixth street and Tenth avenue. .... 1  
 Northwest corner One Hundred and Thirty-third street and Tenth avenue. .... 1  
 Northeast corner High Bridge street and Second avenue. .... 1  
 West side First avenue, between High Bridge and Devoe street. .... 2  
 North side Devoe street, between First avenue and McComb's Dam road. .... 1  
 West side Daily Avenue, between Kingsbridge road and Samuel street. .... 2  
 Southwest corner Honeywell avenue and Samuel street. .... 1  
 West side Honeywell avenue, 500 feet south Samuel street. .... 1  
 North side One Hundred and Seventy-sixth street, between Washington and Third avenues. .... 1  
 North side One Hundred and Ninth street, between Tenth avenue and Boulevard. .... 2  
 West side Gerard avenue, between One Hundred and Sixty-fifth and One Hundred and Sixty-seventh streets. .... 1  
 South side One Hundred and Sixteenth street, between Madison and Fifth avenues. .... 1  
 North side Eightieth street, between Tenth avenue and Boulevard. .... 1  
 South side Kelly street, between Robbins and Wales avenues. .... 1  
 Southeast corner Kelly street and Beach avenue. .... 1  
 Northeast corner One Hundred and Fifty-eighth street and Mott avenue. .... 1

#### "No. 1" Hydrants Set in 1890.

South side One Hundred and Twenty-fifth street, between Seventh and Eighth avenues. .... 1  
 Southeast corner One Hundred and Twenty-fifth street and St. Nicholas avenue. .... 1  
 Foot of East Fourteenth street. .... 1  
 West side Kingsbridge road, between One Hundred and Ninetieth and Inwood streets. .... 3  
 West side Kingsbridge road, between Inwood street and the Canal. .... 2  
 West side New street, between Beaver street and Exchange place. .... 2  
 West side New street, between Wall street and Exchange place. .... 2  
 North side Fifty-second street, between Eleventh and Twelfth avenues. .... 2  
 Northwest corner Fifty-second street and Eleventh avenue. .... 1  
 Northeast corner Fifty-second street and Eleventh avenue. .... 1  
 Northwest corner Fifty-second street and Tenth avenue. .... 1  
 Northeast corner Fifty-second street and Tenth avenue. .... 1  
 North side Sixty-eighth street, between Lexington and Third avenues. .... 1  
 Northeast corner Sixty-seventh street and Lexington avenue. .... 1  
 Northeast corner sixty-sixth street and Lexington avenue. .... 1  
 South side Sixty-seventh street, between Second and Third avenues. .... 1  
 Southeast corner Sixty-ninth street and Fourth avenue. .... 1  
 Northeast corner Sixty-ninth street and Lexington avenue. .... 1  
 Northwest corner Sixty-ninth street and Lexington avenue. .... 1  
 Northwest corner Sixty-eighth street and Lexington avenue. .... 1  
 Northwest corner Seventy-fourth street and First avenue. .... 1  
 Southeast corner Seventy-first street and Madison avenue. .... 1  
 Northeast corner Seventieth street and Madison avenue. .... 1  
 Northwest corner Eighty-fifth street and Second avenue. .... 1  
 Northwest corner Eighty-second street and Second avenue. .... 1  
 North side Eighty-second street, between Avenue A and First avenue. .... 1  
 North side Seventy-seventh street, between First and Second avenues. .... 1  
 Northeast corner Sixty-eighth street and Fourth avenue. .... 1  
 Northeast corner Eighty-sixth street and Tenth avenue. .... 1  
 Northwest corner Eighty-sixth street and Tenth avenue. .... 1  
 Northeast corner Eighty-sixth street and Ninth avenue. .... 1  
 Northwest corner Eighty-sixth street, between Ninth and Tenth avenues. .... 1  
 Southwest corners Eighth avenue and Ninety-seventh street. .... 1  
 North side Transverse road (No. 4), between Fifth and Eighth avenues. .... 1  
 East side Southern Boulevard, between Pelham avenue and Bronx Park. .... 3  
 Northeast corner One Hundred and Sixteenth street and Madison avenue. .... 1  
 Southwest corner Water and Roosevelt streets. .... 1  
 Southeast corner Water street and James slip. .... 1

#### PERMITS TO OPEN STREETS ISSUED IN 1890.

##### *The Consumers' Hygiene Ice Manufacturing Company.*

Fifty-third street, from one hundred and seventy-five feet east of First avenue to East river.

##### *New York Steam-power Company.*

Ann street, from No. 39 to No. 59.

##### *Third Avenue Railroad Company.*

Park Row and Chatham Square, from Frankfort street to Bowery.

##### *New York Refrigerating Construction Company.*

West street, between No. 532 and Gansevoort street.

##### *Figge Bros.*

West Fortieth street, from three hundred and forty feet east of North river to the North river.

##### *The Sixth Avenue Railroad Company.*

Sixth avenue, between Forty-third and Fifty-ninth streets.

##### *The Broadway and Seventh Avenue Railroad Company.*

Broadway, between Whitehall and Thirty-second streets.

##### *H. Koehler & Co.*

Thirtieth street, from one hundred feet west of First avenue to East river.

##### *Consumers' and Henry Elias Brewing Company.*

Fifty-fourth street, between First avenue and East river.

Avenue A, between Fifty-fifth and Fifty-fourth streets.

##### *William Ottiman & Co.*

Front street, from thirty feet north to one hundred and fifteen feet south of Beekman street.

##### *The Crane Elevator Company.*

Caroline street, between Duane and Jay streets.

##### *The Metropolitan Cross-town Railway Company.*

East street, between Grand and Delancey streets.

Delancey street, between East street and Bowery.

Bowery, between Delancey and Spring streets.

Spring street, between Bowery and South Fifth avenue.

South Fifth avenue, between Spring and Fourth streets.

Fourth street, between Macdougall street and South Fifth avenue.

Macdougall street, between Fourth street and Waverley place.

Waverley place, between Macdougall and Bank streets.

Bank street, between Waverley place and Greenwich avenue.

Greenwich avenue, between Bank street and Eighth avenue.

Houston street, between Greenwich and Eighth avenues.

Eighth avenue, between Horatio and West Thirtieth streets.

West Thirtieth street, between Eighth and Thirtieth avenues.

Thirtieth avenue, between West Thirtieth and Fourteenth streets.

##### *Amour & Co.*

Thirty-fifth street, from three hundred and feet east of Eleventh avenue to North river.

##### *The Forty-second Street, Manhattanville and St. Nicholas Avenue Railroad Company.*

Tenth avenue, between Seventy-first and Manhattan streets.

##### *The Western Union Telegraph Company.*

Park Row, between Ann and Frankfort streets.

##### *The New York Steam Company.*

Temple street, between Liberty and Cedar streets.

Dutch street, between John and Fulton streets.

One Hundred and Sixteenth street, between Pleasant avenue and East river.

Washington street, between Dey and Liberty streets.

New street, between Wall street and Exchange place.

##### *The Equitable Gas-light Company.*

Broome street, between Pitt and Hudson streets.

Delancey street, between Pitt street and Bowery.

Stanton street, between Pitt street and Bowery.

Bond street, between Bowery and Broadway.

Lafayette place, between Eighth and Great Jones streets.

Bayard street, between Baxter and Division streets.

Mulberry street, between Bayard and Bleecker streets.

Division street, between Chatham Square and Canal street.

Elizabeth street, between Bleecker and Bayard streets.

Fiftieth street, between First and Third avenues.

Fifty-first street, between First and Third avenues.

Twenty-fifth street, between Seventh and Tenth avenues.

Twenty-sixth street, between Seventh and Eighth avenues.

Twenty-seventh street, between Seventh and Eighth avenues.

Fifty-ninth street, between First avenue and Avenue A.

Bond street, between Bowery and Broadway.

Houston street, between South Fifth avenue and Hancock street.

Twenty-fourth street, between Seventh and Eighth avenues.

Twenty-eighth street, between Sixth and Tenth avenues.

Bedford street, between Hancock and Christopher streets.

Twenty-ninth street, between Seventh and Ninth avenues.

Thirtieth street, between Seventh and Tenth avenues.

Forty-sixth street, between Sixth and Seventh avenues.

Forty-sixth street, between Ninth and Tenth avenues.

Fifty-third street, between Sixth and Tenth avenues.

Seventh avenue, between Forty-fifth and Fifty-third streets.

Forty-fourth street, between Seventh and Eighth avenues.

Fifty-ninth street, between Eighth and Ninth avenues.

Sixty-third street, between Eighth and Ninth avenues.

Thirtieth street, between Ninth and Tenth avenues.

Twelfth street, between University place and Hudson street.

Tenth avenue, between Sixty-fourth and Sixty-ninth streets.

Bond street, between Bowery and Broadway.

Charlton street, between Varick and Macdougall streets.

Forty-fifth street, between Second and Third avenues.

Fourth street, between Macdougall street and Sixth avenue.

Fourth street, between Sixth avenue and Jane street.

West Washington place, between Macdougall street and Sixth avenue.

West Washington place, between Sixth avenue and Barrow street.

Barrow street, between West Washington place and Fourth street.

Christopher street, between Bleecker and West streets.

Jones street, between Bleecker and West streets.

Prince street, between Mulberry and Macdougall streets.

Mercer street, between Bleecker and West Third streets.

Grove street, between Bleecker West Fourth streets.

Houston street, between Bowery and Broadway.

Houston street, between Broadway and South Fifth avenue.

Barrow street, between Bleecker and Fourth streets.

Ninth street, between Broadway and University place.

Greene street, between Third and Fourth streets.

Nineteenth street, between Ninth and Tenth avenues.

Grand street, between Sullivan street and South Fifth avenue.

Sullivan street, between Grand and Watt streets.

##### *Fire Department.*

Ninth avenue, between Seventy-first and Seventy-third streets.

Sixty-fifth street, between Boulevard and Tenth avenue.

Sixty-ninth street, between Boulevard and Tenth avenue.

Seventy-fourth street, between Boulevard and West End avenue.

Seventy-eighth street, between Boulevard and West End avenue.

Duane street, between West Broadway and Church street.

East Broadway, between Oliver and Market streets.

Duane street, between Church and Hudson streets.

Walker street, between Church and West Broadway.

Twenty-ninth street, between Sixth and Seventh avenues.

Seventh avenue, between Thirty-seventh and Thirty-eighth streets.

Thirty-seventh street, between Seventh and Eighth avenues.

Eighty-fifth street, between Third and Lexington avenues.

Eighty-fifth street, between Lexington and Fifth avenues.

Forty-second street, between Lexington and Fourth avenues.

Fifty-third street, between Lexington and Fourth avenues.

Sixty-sixth street, between Eighth avenue and Boulevard.

Eighty-first street, between Eighth and Ninth avenues.

Seventy-fifth street, between Lexington and Second avenues.



University place, between Thirteenth and Fourteenth streets.  
 Catharine street, between East Broadway and Cherry street.  
 Forty-second street, between Lexington and Fourth avenues.  
 Eighth avenue, between Seventeenth and Eighteenth streets.  
 Twentieth street, between Seventh and Eighth avenues.  
 Eighth avenue, between Twenty-third and Twenty-fourth streets.  
 Twenty-fifth street, between Eighth and Ninth avenues.  
 Eighth avenue, between Twenty-seventh and Twenty-eighth streets.  
 Eighth avenue, between Thirtieth and Thirty-first streets.  
 Thirty-third street, between Eighth and Tenth avenues.  
 Eighth avenue, between Thirty-fifth and Thirty-sixth streets.  
 Thirty-sixth street, between Eighth and Tenth avenues.  
 Pearl street, between Broad street and Coenties Slip.  
 Coenties Slip, between Pearl and Front streets.  
 Broad street, between Water and South streets.  
 Morris street, between Broadway and Washington street.  
 Fifty-eighth street, between Broadway and Seventh avenue.  
 Battery place, between Greenwich and West streets.  
 West street, between Battery place and three hundred and eighty feet south.

*The Standard Gas-light Company.*

Eighth avenue, between Thirteenth and Fifty-ninth streets.  
 Fifty-eighth street, between Madison and Fifth avenues.  
 Sixth avenue, between Thirteenth and Fifty-ninth streets.  
 Forty-fifth street, between Madison and Seventh avenues.  
 Fourth avenue, between Forty-ninth and Fifty-ninth streets.  
 Fifty-fourth street, between Fourth and Sixth avenues.  
 Fiftieth street, between Fifth and Seventh avenues.  
 Forty-fifth street, between Madison and Sixth avenues.  
 Fourth avenue, between One Hundred and Twenty-third and One Hundred and Twenty-fifth streets.  
 Pleasant avenue, between One Hundred and Tenth and One Hundred and Fifteenth streets.  
 One Hundred and Tenth street, between First and Pleasant avenues.  
 First avenue, between One Hundred and Eighth and One Hundred and Tenth streets.  
 One Hundred and Eighth street, between First avenue and river.  
 Forty-second street, between Madison and Sixth avenues.  
 Fifty-ninth street, between Madison and Sixth avenues.  
 Forty-eighth street, between Third and Lexington avenues.  
 Fiftieth street, between Third and Lexington avenues.  
 Fifty-first street, between Third and Lexington avenues.  
 Fifty-second street, between Third and Lexington avenues.  
 Fifty-third street, between Third and Lexington avenues.  
 Fifty-fourth street, between Third and Lexington avenues.  
 Fifty-fifth street, between Third and Lexington avenues.  
 Sixtieth street, between Third and Lexington avenues.  
 Fifty-seventh street, between Third and Lexington avenues.  
 Sixty-first street, between Third and Lexington.  
 Sixty-second street, between Third and Lexington avenues.  
 Sixty-third street, between Third and Lexington avenues.  
 Sixty-fourth street, between Third and Lexington avenues.  
 Sixty-fifth street, between Third and Lexington avenues.  
 Sixty-sixth street, between Third and Lexington avenues.  
 One Hundred and Fifteenth street, between Pleasant avenue and Harlem river.  
 Sixty-ninth street, between Third and Lexington avenues.  
 Seventieth street, between Third and Lexington avenues.  
 Seventy-first street, between Third and Lexington avenues.  
 Seventy-second street, between Third and Lexington avenues.  
 Seventy-fourth street, between Third and Lexington avenues.  
 Seventy-fifth street, between Third and Lexington avenues.  
 Seventy-sixth street, between Third and Lexington avenues.  
 Seventy-eighth street, between Third and Lexington avenues.  
 Seventy-ninth street, between Third and Lexington avenues.  
 Eightieth street, between Third and Lexington avenues.  
 Eighty-first street, between Third and Lexington avenues.  
 Eighty-second street, between Third and Lexington avenues.  
 Eighty-third street, between Third and Lexington avenues.  
 Eighty-fourth street, between Third and Lexington avenues.  
 Eighty-fifth street, between Third and Lexington avenues.  
 Sixty-eighth street, between Third and Lexington avenues.  
 Sixth avenue, between Thirteenth and Fourteenth streets.  
 Seventh avenue, between Thirteenth and Fourteenth streets.  
 Seventh avenue, between Thirteenth and Twenty-third streets.  
 Thirteenth street, between Sixth and Seventh avenues.  
 One Hundred and Fifteenth street, between Pleasant avenue and East river.  
 Seventy-second street, between Lexington and Madison avenues.  
 Fourth avenue, between Seventy-first and Seventy-second streets.  
 Seventy-third street, between Lexington and Third avenues.  
 Fourteenth street, between Seventh and Fifth avenues.  
 Fifteenth street, between Seventh and Fifth avenues.  
 Sixteenth street, between Fifth and Seventh avenues.  
 Seventeenth street, between Fifth and Seventh avenues.  
 Eighteenth street, between Fifth and Seventh avenues.  
 Nineteenth street, between Fifth and Seventh avenues.  
 Twentieth street, between Fifth and Seventh avenues.  
 Twenty-first street, between Fifth and Seventh avenues.  
 Twenty-second street, between Fifth and Seventh avenues.  
 Fourteenth street, between Fifth and Seventh avenues.  
 Fifty-ninth street, between Fifth and Sixth avenues.  
 Sixth avenue, between Fifty-eighth and Fifty-ninth streets.  
 Fourth avenue, between Fifty-seventh and Seventy-ninth streets.  
 Madison avenue, between Sixty-seventh and Seventy-ninth streets.  
 Sixty-first street, between Lexington and Fifth avenues.  
 Sixty-second street, between Lexington and Fifth avenues.  
 Sixty-third street, between Lexington and Fifth avenues.  
 Sixty-fourth street, between Lexington and Fifth avenues.  
 Sixty-fifth street, between Lexington and Fifth avenues.  
 Sixty-sixth street, between Lexington and Fifth avenues.  
 Third avenue, between One Hundred and Thirty-fifth and One Hundred and Forty-ninth streets.  
 Sixty-ninth street, between Lexington and Fifth avenues.  
 Seventieth street, between Lexington and Fifth avenues.  
 Seventy-first street, between Lexington and Fifth avenues.  
 Seventy-second street, between Madison and Fifth avenues.  
 Seventy-third street, between Lexington and Fifth avenues.  
 Seventy-fourth street, between Lexington and Fifth avenues.  
 Seventy-fifth street, between Lexington and Fifth avenues.  
 Seventy-sixth street, between Lexington and Fifth avenues.  
 Seventy-seventh street, between Lexington and Fifth avenues.  
 Seventy-eighth street, between Lexington and Fifth avenues.  
 Seventy-ninth street, between Lexington and Fifth avenues.  
 Third avenue, between One Hundred and Thirty-fifth and One Hundred and Forty-ninth streets.  
 One Hundred and Thirty-seventh street, between Third and Lincoln avenues.  
 Fortieth street, between First and Fourth avenues.  
 One Hundred and Thirty-fifth street, between Third and Willis avenues.  
 One Hundred and Forty-eighth street, between Third and Willis avenues.  
 Willis avenue, between One Hundred and Thirty-fifth and One Hundred and Forty-ninth streets.  
 Sixty-eighth street, between Madison and Fifth avenues.  
 Madison avenue, between Sixty-first and Seventy-ninth streets.  
 Sixth avenue, between Fifty-third and Fifty-seventh streets.  
 Fifty-seventh street, between Lexington and Madison avenues.  
 Forty-third street, between Second and Third avenues.  
 Fifty-ninth street, between First and Second avenues.  
 Lincoln avenue, between Third avenue and Harlem river.  
 Alexander avenue, between Third avenue and One Hundred and Thirty-sixth street.  
 Willis avenue, between Third avenue and One Hundred and Thirty-fifth street.  
 One Hundred and Thirty-fifth street, between Lincoln and Willis avenues.  
 One Hundred and Thirty-ninth street, between Alexander and Brook avenues.  
 One Hundred and Fortieth street, between Willis and Brook avenues.  
 One Hundred and Forty-first street, between Willis and Brook avenues.  
 One Hundred and Forty-second street, between Willis and Brook avenues.

One Hundred and Forty-fourth street, between Willis and Brook avenues.  
 One Hundred and Forty-fifth street, between Willis and Brook avenues.  
 One Hundred and Forty-third street, between Willis and Alexander avenues.  
 Fortieth street, between Broadway and Sixth avenue.

*The Consolidated Telegraph and Electrical Subway Company.*

Whitehall street, between Beaver and South streets.  
 Madison avenue, between Forty first and Fifty-ninth streets.  
 Leonard street, between Broadway and Hudson streets.  
 Beaver street, between Broadway and Wall streets.  
 Broad street, between Beaver street and Exchange place.  
 William street, between South William street and Exchange place.  
 Hanover street, between Pearl street and Exchange place.  
 Fifty-fifth street, between Fourth and Sixth avenues.  
 Forty-eighth street, between Fifth and Seventh avenues.  
 Forty-fifth street, between Fifth and Sixth avenues.  
 Forty-fourth street, between Sixth and Eighth avenues.  
 Duane street, between Broadway and West Broadway.  
 Warren street, between Broadway and Greenwich street.  
 Murray street, between Broadway and Greenwich street.  
 Horatio street, between Fourth street and Greenwich avenue.  
 Greenwich avenue, between Horatio street and Eighth avenue.  
 Eighth avenue, between Thirteenth and Forty-fifth streets.  
 Stone street, between Broad and William streets.  
 William street, between Exchange place and Wall street.  
 Greene street, between Spring and Canal streets.  
 Eighteenth street, between Seventh and Eighth avenues.  
 Lexington avenue, between Thirty-second and Fifty-eighth streets.  
 Broad street, between Beaver and Pearl streets.  
 Lexington avenue, between Eighty-seventh and Seventy-ninth streets.  
 Fortieth street, between Third avenue and Broadway.  
 William street, between Wall and Frankfort streets.  
 South William street, between Broad and Beaver streets.  
 Pearl street, between Fulton and Oak streets.  
 William street, between Wall and Beaver streets.  
 Canal street, between Bowery and Hudson streets.  
 Forty-ninth street, between Madison and Sixth avenues.  
 Exchange place, between William and Hanover streets.  
 Hanover street, between Exchange place and Pearl street.  
 Forty-seventh street, between Madison and Eighth avenues.  
 Twenty-sixth street, between Third and Eighth avenues.  
 Thirty-ninth street, between Sixth and Eighth avenues.  
 Broadway, between Beaver street and Exchange place.  
 Fifty-eighth street, between Madison and Sixth avenues.  
 Fifty-first street, between Madison and Sixth avenue.  
 Thirty-sixth street, between Third and Fourth avenues.  
 Reade street, between Broadway and Centre streets.  
 Thirty-third street, between Madison avenue and Broadway.  
 Thirty-ninth street, between Madison and Fifth avenues.  
 Fiftieth street, between Fourth and Sixth avenues.  
 Fifty-second street, between Fifth and Sixth avenues.  
 Fifty-third street, between Madison and Sixth avenues.  
 Fifty-fourth street, between Madison and Sixth avenues.  
 Greenwich street, between Vesey and Canal streets.  
 Eighth avenue, between Forty-fifth and Fifty-ninth streets.  
 Broome street, between Centre street and Broadway.  
 Thomas street, between Church and Hudson streets.  
 Park Row, between Frankfort and Chatham streets.  
 Catharine street, between Bowery and Cherry streets.  
 Elizabeth street, between Spring and Houston streets.  
 Fifty-fifth street, between Ninth and Twelfth avenues.  
 Thirty-second street, between Madison and Fifth avenues.  
 Howard street, between Broadway and Mercer street.  
 New Bowery, between Oak street and Chatham Square.  
 Eighty-sixth street, between Lexington and Third avenues.  
 Elizabeth street, between Spring and Canal streets.  
 Lexington avenue, between Thirty-second and Forty-second streets.  
 Thirty-seventh street, between Fourth and Sixth avenues.  
 Eighth avenue, between Thirty-eighth and Fifty-eighth streets.  
 William street, between Wall and Frankfort streets.  
 Thirty-second street, between Lexington and Fourth avenues.  
 Fourth avenue, between Fourteenth and Thirty-second streets.  
 Greenwich street, between Vesey and Canal streets.  
 Forty-second street, between Broadway and Eighth avenue.  
 Bowery, between Chatham Square and Sixth street.  
 West Broadway, between Canal and Chambers street.  
 Fourteenth street, between Sixth and Eighth avenues.  
 Canal street, from Bowery to Hudson street.  
 Broadway, between Tenth and Broome streets.  
 William street, between Spruce and Pine streets.  
 New Bowery, between East Broadway and Pearl street.  
 Pearl street, between Hague and Beekman streets.  
 Greenwich street, between Canal and Chambers streets.  
 Bowery, between Doyer and Division streets.  
 Park Row, between Worth and New Chambers streets.  
 Franklin street, between Broadway and Centre street.  
 Elm street, between Worth and Franklin streets.  
 Fifteenth street, between Fifth and Sixth avenues.  
 Seventeenth street, between Fifth and Sixth avenues.  
 Forty-fifth street, between Fifth and Madison avenues.  
 Fifty-third street, between Fourth and Madison avenues.  
 Madison avenue, between Fifty-ninth and Sixtieth streets.  
 Duane street, between Washington and Centre streets.  
 Eighteenth street, between Broadway and Seventh avenue.  
 Canal street, between Elizabeth and Vestry streets.  
 Broadway, between Thirty-second and Thirty-fourth streets.  
 Eighty-sixth street, between Lexington and Third avenues.  
 Third avenue, between Eighth-sixth and One Hundred and Sixth streets.  
 Vesey street, between Broadway and West street.  
 Canal street, between Greenwich and Hudson streets.  
 Twenty-third street, between Third avenue and Broadway.  
 Broadway, between Eighth and Fourteenth streets.  
 Twenty-third street, between Sixth and Eighth avenues.  
 Greenwich street, between Canal and Vandam streets.  
 Greenwich street, between Vesey and Fulton streets.  
 Fifty-sixth street, between Park and Sixth avenues.  
 Third avenue, between One Hundred and Sixth and One Hundred and Thirtieth streets.  
 New Bowery, between Oak street and Chatham Square.  
 Exchange place, between Broadway and New street.  
 New street, between Marketfield street and Exchange place.  
 Seventy-ninth street, from First avenue to Avenue A.  
 Fifth avenue, between Waverley place and Fifty-ninth street.  
 South William street, between Broad and Alley and William streets.  
 One Hundred and Twenty-fourth street, between Lexington and St. Nicholas avenues.  
 Seventy ninth street, between Avenue A and First avenue.  
 Forty-third street, between Fifth and Sixth avenues.  
 Duane street, between Park Row and Centre street.  
 Fifth avenue, between Waverley place and Fourth street.  
 North William street, between Frankfort street and Park Row.  
 Seventh avenue, between Fifty-eighth and Fifty-ninth streets.  
 Thirty-seventh street, between Park and Third avenues.  
 Fulton street, between Broadway and William street.  
 Centre street, between Reade street and Park Row.  
 One Hundred and Twenty-fourth street, between Third and Lexington avenues.  
 Lexington avenue, between One Hundred and Twenty-fourth and One Hundred and Twenty-fifth streets.  
 Seventy-ninth street, between Fourth and Fifth avenues.  
 Cortlandt street, between Broadway and Church streets.  
 Pearl street, between Oak street and Broadway.  
 Front street, between Old Slip and Wall street.  
 Frankfort street, between Park Row and William street.  
 Old Slip, between William and South streets.



The Consolidated Gas-light Company.

Manhattan avenue, between One Hundred and Fourth and One Hundred and Fifth streets.  
One Hundred and Forty-sixth street, between St. Nicholas and Tenth avenues.  
Goerck street, between Grand and Third streets.  
One Hundred and Sixty-eighth street, between Tenth and Audubon avenues.  
Sixty-ninth street, between Eighth and Ninth avenues.  
Seventy-seventh street, between West End avenue and Riverside Drive.  
One Hundred and Third street, between First and Second avenues.  
One Hundred and Forty-seventh street, between Tenth and St. Nicholas avenues.  
One Hundred and Fourteenth street, between Eighth and Manhattan avenues.  
One Hundred and Seventeenth street, between Eighth and Ninth avenues.  
Park avenue, between Ninety-fourth and Ninety-fifth streets.  
Eighth avenue, between One Hundred and Twenty-fifth and One Hundred and Forty-fifth streets.  
One Hundred and Forty-eighth street, between Eighth and Bradhurst avenues.  
Ninety-fifth street, between Boulevard and Tenth avenue.  
Elizabeth street, between Bleecker and Canal streets.  
New Bowery, between Oak street and Chatham Square.  
East Broadway, between Catharine and Grand streets.  
Greenwich street, between Chambers and Canal streets.  
Leroy street, between Washington and West streets.  
Twenty-fifth street, between Fourth and Madison avenues.  
Twentieth street, between Tenth and Thirtieth avenues.  
Seventy-eighth street, between Boulevard and Riverside Drive.  
Seventy-third street, between West End avenue and Riverside Drive.  
One Hundred and First street, between Eighth and Ninth avenues.  
Thirty-sixth street, between Madison and Fifth avenues.  
Washington street, between Clarkson and Spring streets.  
One Hundred and Nineteenth street, between Eighth and Ninth avenues.  
One Hundred and Forty-third street, between Seventh and Eighth avenues.  
Seventy-seventh street, between Boulevard and Riverside Drive.  
One Hundred and Twentieth street, between St. Nicholas and Eighth avenues.  
One Hundred and Sixth street, between Ninth and Tenth avenues.  
One Hundred and Sixth street, between Tenth avenue and Boulevard.  
Broadway, between Duane street and Bowling Green.  
Eighth avenue, between Thirteenth and Fourteenth streets.  
Desbrosses street, between Greenwich and Hudson streets.  
One Hundred and Second street, between Eighth and Ninth avenues.  
One Hundred and First street, between Ninth and Tenth avenues.  
Eighty-sixth street, between Eighth and Ninth avenues.  
Thirty-seventh street, between Fourth and Sixth avenues.  
Thirty-eighth street, between Fourth and Fifth avenues.  
Forty-third street, between Fifth and Sixth avenues.  
Broadway, between Eighth and Twelfth streets.  
Eighth street, between Broadway and Mercer streets.  
Mercer street, between Eighth and Broome streets.  
Waverley place, between Mercer street and Broadway.  
Spring street, between Mercer street and Broadway.  
Broadway, between Fourth and Grand streets.  
Broadway, between Twenty-third and Thirty-second streets.  
Third avenue, between Thirty-second and Thirty-fourth streets.  
Thirty-second street, between Third and Fourth avenues.  
Eighth avenue, between Thirteenth and Fifty-ninth streets.  
Ninety-sixth street, between Lexington and Fifth avenues.  
Ninth avenue, between One Hundred and Nineteenth and One Hundred and Twentieth streets.  
Ninety-fourth street, between First and Second avenues.  
One Hundred and Thirty-fourth street, between Lexington and Seventh avenues.  
Ninety-fifth street, between First and Second avenues.  
Forty-fourth street, between Madison and Fifth avenues.  
Forty-fourth street, between Fifth and Sixth avenues.  
Madison avenue, between One Hundred and Sixteenth and One Hundred and Twentieth streets.  
Little West Twelfth street, between West and Washington streets.  
Park avenue, between One Hundred and Fifth and One Hundred and Sixth streets.  
Twenty-seventh street, between Fourth and Madison avenues.  
West End avenue, between Sixty-second and Sixty-sixth streets.  
Tenth avenue, between One Hundred and Thirtieth and One Hundred and Thirty-first streets.  
Seventh avenue, between One Hundred and Forty-first and One Hundred and Forty-second streets.  
Sixty-third street, between Tenth and Eleventh avenues.  
Eighty-first street, between Eighth and Ninth avenues.  
Hamilton place, between One Hundred and Thirty-seventh and One Hundred and Thirty-eighth streets.  
Thirty-fifth street, between First avenue and East river.  
One Hundred and Forty-fourth street, between Seventh and Eighth avenues.  
Manhattan avenue, between One Hundredth and One Hundred and Fourth streets.  
One Hundred and Twenty-fifth street, between Manhattan street and Boulevard.  
One Hundred and Third street, between First avenue and East river.  
One Hundred and Fifth street, between Park and Madison avenues.  
One Hundred and Sixteenth street, between St. Nicholas and Eighth avenues.  
One Hundred and Thirty-first street, between Boulevard and Twelfth avenue.  
One Hundred and Thirty-fifth street, between Lenox and Seventh avenues.  
Nineteenth street, between Tenth and Eleventh avenues.  
Mangin street, between Houston and Grand streets.  
Fifteenth street, between Fifth and Sixth avenues.  
Seventeenth street, between Fifth and Sixth avenues.  
Madison avenue, between Fifty-eighth and Sixtieth streets.  
First avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-sixth streets.  
One Hundred and Twenty-sixth street, between Tenth avenue and Boulevard.  
Park avenue, between One Hundred and Nineteenth and One Hundred and Twentieth streets.  
Duane street, between Broadway and Greenwich street.  
Eighty-fourth street, between Tenth avenue and Boulevard.  
One Hundred and Forty-second street, between Tenth avenue and Hamilton place.  
Twelfth avenue, between One Hundred and Thirty-third and One Hundred and Thirty-fourth streets.  
One Hundredth street, between Madison and Park avenues.  
One Hundred and Forty-second street, between Eighth and Bradhurst avenues.  
Tomkins street, between Grand and Stanton streets.  
Fifty-third street, between Ninth and Tenth avenues.  
One Hundred and Thirtieth street, between Amsterdam avenue and Boulevard.  
Thirteenth avenue, between Seventeenth and Eighteenth streets.  
Broadway, between Beaver and Wall streets.  
One Hundred and Forty-third street, between Eighth and Bradhurst avenues.  
One Hundred and Twenty-fourth street, between Ninth and Tenth avenues.  
One Hundred and Sixteenth street, between Fifth and Seventh avenues.  
Sixty-eighth street, between Eighth and Ninth avenues.  
One Hundred and Thirteenth street, between Fifth and Lenox avenues.  
Broadway, between Wall and Ann streets.  
Edgecombe avenue, between One Hundred and Forty-first and One Hundred and Forty-third streets.  
One Hundred and Twenty-second street, between Manhattan and Eighth avenues.  
Thirty-fifth street, between Fifth and Sixth avenues.  
Twelfth avenue, between One Hundred and Twenty-ninth and One Hundred and Thirtieth streets.  
Park avenue, between One Hundred and Fifteenth and One Hundred and Sixteenth streets.  
Nineteenth street, between First and Second avenues.  
Madison avenue, between Ninetieth and Ninety-first streets.  
Twenty-second street, between Tenth and Eleventh avenues.

Document "E."

REPORT OF THE WATER PURVEYOR.

DEPARTMENT OF PUBLIC WORKS,  
WATER PURVEYOR'S OFFICE, NO. 31 CHAMBERS STREET, ROOM 1, }  
NEW YORK, January 1, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works :

SIR—In compliance with your letter of the 10th of December, 1890, I have the honor to submit the following report of the transactions of this Bureau for the quarter ending December 31, 1890, together with a summary of all the principal work done during the year.

This summary will show a very decided advance in work done when compared with any preceding year in the history of the Department of Public Works, and that, too, without any increase in the clerical or the laboring force of the Bureau.

The most careful attention has been given to the construction of new pavements and the results obtained in this work are of the most satisfactory kind.

Prompt attention has been given to complaints referring to the condition of the old pavements and in most instances the necessary repairs have been made within twenty-four hours of the receipt of the complaint.

Nearly eleven hundred letters have been referred to this Bureau for attention during the past year, upon which reports have been made in writing, showing what disposition has been made in each case.

REPORT FOR THE QUARTER ENDING DECEMBER 31, 1890.

RECEIPTS.

For permits to construct vaults .....	\$34,805 10
For labor and materials.....	16,301 28
Total receipts.....	\$51,106 38

EXPENDITURES.

Three hundred and fifty-three vouchers were transmitted, amounting in the aggregate to one million sixty-one thousand sixty-three dollars and forty-two cents, and were charged as follows :

Public Drinking-hydrants, 1890.....	\$741 47
Public Drinking-hydrants—Salaries.....	300 00
Repairs and Renewal of Pavements and Regrading, 1886.....	333 63
Repairs and Renewal of Pavements and Regrading, 1889.....	1,074 47
Repairs and Renewal of Pavements and Regrading, 1890.....	99,650 61
Repairs and Renewal of Pavements and Regrading—Salaries.....	4,230 98
Repaving Streets and Avenues, 1889.....	52,122 39
Repaving Streets and Avenues, 1890.....	115,378 16
Repaving Streets and Avenues—Salaries.....	2,809 25
Wells and Pumps—Repairing and Cleaning.....	149 58
Repairing and Renewal of Pipes, Stop-cocks, etc., 1890.....	28,206 81
Street Improvement Fund.....	244,632 23
Restoring and Repaving—Special Fund—Department of Public Works.....	6,708 00
Repaving, chapter 346, Laws of 1889, 1889.....	173,441 65
Repaving, chapter 346, Laws of 1889, 1890.....	331,271 84
Contingencies—Department of Public Works.....	12 35
Total.....	\$1,061,063 42

PERMITS ISSUED.

94 for the construction of vaults.  
50 for repairing vaults.  
126 for erecting guy posts.  
78 to build fires on pavements for roofing purposes, etc.  
28 to repair pavements at expense of property owners.  
The following permits were granted under authority by the Board of Aldermen :  
Resolution, October 17, 1890.—To Solomon Loeb, to lay a crosswalk at his expense across Cortlandt street, from the northeast to southeast corner of Washington street.  
Resolution, November 20, 1890.—To George E. Hamlin & Co., to lay a crosswalk across Duane street, opposite No. 104.

REPAIRS AND RENEWAL OF PAVEMENTS AND REGRADING.

The force employed in making repairs to street pavements during the quarter averaged as follows :

In October.....	224	mechanics,	287	laborers,	78	horses and carts,	5	teams.
In November.....	221	"	283	"	75	"	5	"
In December.....	214	"	272	"	72	"	5	"

The force took up and relaid 118,289 square yards of pavement. In addition to the above 330 square yards of asphalt pavement and 452 square yards of granite-block pavement were taken up and relaid, orders for the performance amounting to less than one thousand dollars being given in each case.

One contract for taking up and relaying pavement was completed, the area so relaid amounting to 10,870 square yards, making a total of pavement taken up and relaid of 129,941 square yards.

WELLS AND PUMPS, REPAIRING AND CLEANING.

The public pump at the corner of Greenwich and North Moore streets was renewed and the well cleaned out, this work costing \$149.58.

REPAIRING AND RENEWAL OF PIPES, STOP-COCKS, ETC.

The force employed repairing water-mains, fire hydrants, stop-cocks, etc., was as follows :  
In October..... 29 mechanics, 95 laborers, 15 horses and carts.  
In November..... 32 " 96 " 15 "  
In December..... 34 " 96 " 15 "  
Among other work performed by this force was the following :  
130 new fire hydrants were substituted for old ones.  
2 new fire hydrants were erected.

PUBLIC DRINKING-HYDRANTS.

4 new public drinking-hydrants were erected at the following locations :  
No. 911 Eighth avenue.  
No. 54 Essex street.  
No. 939 East One Hundred and Forty-ninth street.  
Southeast corner Boulevard and One Hundred and Forty-seventh street.  
A number of new hydrants were substituted for old ones, full details in relation to which will appear in the summary of work done during the year.

REPAVING STREETS AND AVENUES.

Work on contracts for repaving the following-named thoroughfares was completed :  
With Granite Blocks.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Lewis street.....	Delancey to Houston street.....	601.2	227.4
Pearl street.....	Fulton to Oak street.....	6,436.2	1,559.3
New Bowery.....	Oak street to Chatham Square.....	5,153.4	1,040.3
Little West Twelfth street.....	Washington street to Tenth avenue.....	644.5	337.0
Leroy street.....	West to Washington street.....	395.1	112.8
East Broadway.....	Chatham Square to Grand street.....	19,129.8	4,160.9
Elizabeth street.....	Bleecker to Bayard street.....	10,708.0	3,823.3
Total, including crosswalks...	.....	43,068.2	11,261.0

With Asphalt.

Wall street.....	Nassau to Hanover street.....	2,253.7	695.6
Madison avenue.....	Thirty-second to Thirty-third, Thirty-sixth to Forty-first and Forty-second to Fifty-eighth street.....	25,963.2	5,722.7
Fifty-eighth street.....	Madison to Fifth avenue.....	1,476.7	443.9
Total, including crosswalks...	.....	29,693.6	6,862.2

Summary.

Repavement with granite.....	43,068.2	11,261.0
Repavement with asphalt.....	29,693.6	6,862.2
Total.....	72,761.8	18,123.2



REPAVING (CHAPTER 346, LAWS OF 1889).

Work on contracts for repaving the following-named thoroughfares was completed :

With Granite-blocks.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Duane street.....	Washington to Centre street.....	9,391.0	2,554.3
Greenwich street.....	Chambers to Canal street.....	11,825.1	3,083.1
Thirteenth street.....	Avenue B to Fifth avenue.....	14,704.1	4,447.9
Lexington avenue.....	Thirty-fourth to Thirty-fifth street, Fifty-ninth to Sixty-sixth street and Sixty-ninth to Ninety-seventh street.....	42,604.4	9,520.6
Total, including crosswalks.....		78,524.6	19,605.9

With Asphalt.

Madison avenue.....	Fifty-eighth to Sixtieth street.....	2,470.4	526.1
Fifteenth street.....	Fifth to Sixth avenue.....	3,138.2	946.3
Seventeenth street.....	".....	3,140.2	946.0
Fifty-third street.....	Madison to Fourth avenue.....	1,403.4	421.0
Forty-fifth street.....	Madison to Fifth avenue.....	1,498.6	453.3
Fifty-fourth street.....	Madison to Sixth avenue.....	4,656.5	1,398.2
Sixty-ninth street.....	Lexington to Fifth avenue.....	4,833.9	1,404.7
Fifty-third street.....	Madison to Sixth avenue.....	4,672.2	1,396.6
Sixty-eighth street.....	Third to Fourth avenue.....	3,413.1	992.2
Forty-ninth street.....	Madison to Sixth avenue.....	4,665.0	1,402.7
Fiftieth street.....	Fourth to Fifth avenue.....	2,909.9	874.1
Fifty-first street.....	Madison to Sixth avenue.....	4,656.1	1,399.2
Thirty-seventh street.....	Fourth to Sixth avenue.....	6,081.3	1,827.8
Thirty-eighth street.....	Fifth to Sixth avenue.....	3,139.6	946.2
Eighth avenue.....	Thirteenth to Thirty-fourth street.....	27,220.9	5,421.0
".....	Thirty-fourth to Fifty-ninth streets.....	31,702.5	6,193.0
Boulevard.....	Fifty-ninth to Seventy-ninth street.....	53,383.4	5,751.1
Lexington avenue.....	Twenty-first to Thirty-second street, Forty-second to Fifty-ninth street and Sixty-sixth to Sixty-ninth street.....	34,919.7	8,002.9
Forty-third street.....	Madison to Fifth avenue.....	1,512.2	453.2
Sixtieth street.....	Fourth to Fifth avenue.....	2,925.3	865.2
Sixty-seventh street.....	".....	2,901.6	852.2
Sixty-eighth street.....	".....	2,904.8	861.7
Total (including crosswalks).....		208,148.8	43,344.7

Summary.

Repaving (chapter 346) granite.....	78,524.6	19,605.9
Repaving (chapter 346) asphalt.....	208,148.8	43,344.7
Total, including crosswalks.....	286,673.4	62,950.6

Recapitulation.

	Sq. Yards.	Feet.		
Granite—Repaving streets and avenues.....	43,068.2	11,261.0		
Repaving (chapter 346, Laws 1889).....	78,524.6	19,605.9		
			121,592.8	30,866.9
Asphalt—Repaving streets and avenues.....	29,693.6	6,862.2		
Repaving (chapter 346, Laws 1889).....	208,148.8	43,344.7		
			237,842.4	50,206.9
Total repavement.....			359,435.2	81,073.8

Length in miles, 15.35.

NEW PAVEMENTS UNDER ASSESSMENT.

Contracts for paving the following-named streets, avenues, etc., were completed :

With Granite-blocks.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Eighty-fourth street.....	Tenth avenue to Boulevard.....	1,364.6	402.0
Sylvan place.....	One Hundred and Twentieth to One Hundred and Twenty-first street.....	949.0	231.8
One Hundred and Fifth street.....	Park to Fifth avenue.....	3,126.4	923.5
One Hundred and Fourth street.....	Boulevard to Riverside Drive.....	2,801.4	818.7
One Hundred and Thirtieth street.....	Tenth avenue to Boulevard.....	2,501.0	771.8
Eighty-ninth street.....	Boulevard to Riverside Drive.....	3,287.4	936.5
One Hundred and Second street.....	First avenue to Harlem river.....	2,692.0	807.2
One Hundred and Fourteenth.....	Madison to Fifth avenue.....	1,424.4	458.0
Sixty-ninth street.....	West End avenue to Hudson River Railroad..	1,623.0	487.0
First avenue.....	One Hundred and Twenty-fifth to One Hundred and Twenty-sixth street.....	1,459.7	218.3
One Hundred and Twenty-fifth street.....	Manhattan street to Boulevard.....	8,688.7	1,305.0
Ninety-sixth street.....	Tenth avenue to Boulevard.....	1,782.6	357.0
Seventy-eighth street.....	Boulevard to Riverside Drive.....	2,368.7	714.4
Ninety-fourth street.....	Second to Third avenue.....	2,104.0	631.2
One Hundred and First street.....	Eighth avenue to Boulevard (except from Ninth to Tenth avenue).....	4,010.4	1,117.0
One Hundred and Eighteenth street.....	Eighth avenue to Morningside Park road.....	2,526.0	758.0
Total (crosswalks included).....		42,769.3	10,987.4

Length in miles, 2.08.

With Asphalt.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
One Hundred and Third street.....	Amsterdam avenue to Boulevard.....	1,185.1	348.0
Eighty-seventh street.....	Eighth to Ninth avenue, and from Tenth avenue to Boulevard.....	3,896.6	1,171.0
Seventy-fifth street.....	Eighth to Ninth avenue.....	2,740.0	821.5
Ninety-sixth street.....	".....	4,100.5	819.8
".....	Ninth to Tenth avenue.....	4,084.5	816.0
Eighty-fifth street.....	Boulevard to Riverside Drive.....	3,423.0	1,033.0
Eighty-eighth street.....	Boulevard to West End avenue.....	1,185.0	357.0
Eighty-seventh street.....	West End avenue to Riverside Drive.....	2,396.0	718.8
One Hundred and Seventeenth street.....	St. Nicholas to Eighth avenue.....	2,003.0	600.0
One Hundred and Nineteenth street.....	St. Nicholas to Seventh avenue.....	1,462.8	438.8
One Hundred and Twenty-eighth street.....	St. Nicholas to Eighth avenue.....	972.2	288.0
One Hundred and Thirty-third street.....	".....	985.6	295.5
One Hundred and Thirty-fourth street.....	".....	1,128.5	340.0
One Hundred and Sixth street.....	Eighth avenue to Boulevard.....	14,813.3	2,215.8
Total (crosswalks included).....		44,376.1	10,263.7

Length in miles, 1.944.

NEW PAVEMENTS UNDER ASSESSMENT IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 449, LAWS OF 1889, RELATING TO STREETS LYING WITHIN THE LIMITS OF GRANTS OF LAND UNDER WATER.

Under the above heading the following contracts were completed. The streets were paved with cobble-stones and the pavements were in a most wretched condition. The new pavements have been laid on firm foundations of concrete.

The streets referred to are these :

Granite-block Pavements, Chapter 449, Laws of 1889.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Eighteenth street.....	Eleventh to Thirteenth avenue.....	512.6	158.0
Bethune street.....	West street to Thirteenth avenue.....	1,099.6	424.0
Lewis street.....	Delancey to Houston street.....	3,043.4	1,078.0
Little West Twelfth street.....	Washington street to Tenth avenue.....	467.0	280.0
Twenty-sixth street.....	Tenth to Eleventh avenue.....	2,269.4	656.0
Mangin street.....	Grand to Houston street.....	3,857.2	1,476.0
Sixteenth street.....	Tenth avenue to Hudson river.....	3,542.3	1,020.0
Total (crosswalks included).....		14,791.5	5,092.0

Length in miles, 0.964.

Recapitulation.

Granite (chapter 449, Laws of 1889), assessment work.....	14,791.5	5,092.0
Granite, assessment work.....	42,769.3	10,987.4
Asphalt, assessment work.....	44,376.1	10,263.7
Total (including crosswalks).....	101,936.9	26,343.1

Length in miles (streets paved for the first time), 4.024.

Summary.

Square yards of pavement completed during the quarter, repaving and assessment work combined.

PAVEMENT.	SQUARE YARDS.	LINEAL FEET.
Granite.....	179,153.6	45,946.3
Asphalt.....	282,218.5	60,470.6
Total.....	461,372.1	107,416.9

Length in miles, 20.338.

STREET OPENINGS.

The following is a summary of work performed under the direct supervision of the General Inspector during the quarter :

6,436 openings were made to repair mains and make repairs and connections for gas, steam, sewer, water, electric-lights and subways.

740 notices were sent to corporations and others to repair defective places in the pavement where such openings were made, and, in conformity with said notices, 846 bad places in the pavement were repaired.

15.51 miles of gas-mains were laid.

22.26 miles of trenches were opened for subways and other electrical appliances.

1,263 feet of steam-pipes were laid.

639 feet of salt water-mains were laid.

630 feet of pneumatic tubes were relaid.

518 feet of refrigerating pipes were laid.

134 poles were erected, and

3,236 feet of double car-tracks were laid.

SUMMARY OF THE BUSINESS OF THE BUREAU FOR THE YEAR 1890.

RECEIPTS.

For construction of vaults.....	\$138,793.93
For labor and materials furnished.....	29,382.12
Total.....	\$168,176.05
Total for the year 1889.....	\$107,489.01
Total for the year 1888.....	66,572.86
Total for the year 1887.....	90,044.73

EXPENDITURES.

1,065 vouchers were transmitted and charged as follows :

Public Drinking Hydrants, 1889.....	\$2,791.88
Public Drinking Hydrants, 1890.....	1,775.00
Public Drinking Hydrants—Salaries.....	1,200.00



Repairs and Renewal of Pavements and Regrading, 1886.....	\$333 63
Repairs and Renewal of Pavements and Regrading, 1889.....	32,618 75
Repairs and Renewal of Pavements and Regrading, 1890.....	287,889 06
Repairs and Renewal of Pavements and Regrading—Salaries.....	16,225 86
Repaving Streets and Avenues—1888.....	45,096 65
Repaving Streets and Avenues—1889.....	225,802 13
Repaving Streets and Avenues—1890.....	177,623 26
Repaving Streets and Avenues—Salaries.....	9,255 75
Wells and Pumps, Repairing and Cleaning.....	149 58
Repairing and Renewal of Pipes, Stop-cocks, etc.—1889.....	216 35
Repairing and Renewal of Pipes, Stop-cocks, etc.—1890.....	107,085 90
Street Improvement Fund.....	650,784 31
Restoring and Repaving—Special Fund Department Public Works.....	30,523 50
Repaving—Chapter 346, Laws of 1889—1889.....	787,238 14
Repaving—Chapter 346, Laws of 1889—1890.....	462,062 13
Contingencies—Department of Public Works.....	58 40
<b>Total.....</b>	<b>\$2,801,916 26</b>

Total for the year 1889.....	\$1,228,591 06
Total for the year 1888.....	1,408,322 47
Total for the year 1887.....	1,679,126 01

## PERMITS ISSUED.

329 for the construction of vaults under sidewalks.  
 233 for repairing vaults.  
 618 to erect guy posts.  
 380 to build fires on the pavements, for roofing purposes, etc.  
 255 to repair pavement at the expense of property owners.  
 In addition to the above the following special permits were granted, authority having been given at various times by the Board of Aldermen:  
 The Brooklyn and New York Ferry Co.—To lay a crosswalk from the old crosswalk at Grand street, East river, to the ferry entrance.  
 The Mercantile National Bank—To lay a crosswalk across Broadway, in front of No. 191.  
 Messrs. Campbell, Nichols and Gwyer—To lay a crosswalk across Thirteenth avenue, about midway between West Twelfth and Bethune streets.  
 The Equitable Gas-light Company—To pave, at their own expense, the roadway of Fortieth street, from First avenue to the bulkhead line of East river.  
 The Bank of New York—To pave with asphalt the roadway of William street, from Wall to Pine street, the work to be done at the expense of said bank.  
 M. Rosendorff & Sons—To lay a crosswalk at their expense, across Grand street, from No. 277.  
 Ehlers & Rossmid—To lay a crosswalk at their own expense, across One Hundred and Twenty-fifth street, from Nos. 109 to 110.  
 Solomon Loeb—To lay a crosswalk at his own expense, across Cortlandt street, from northeast to southeast corner of Washington street.  
 George E. Hamlin & Co.—To lay a crosswalk across Duane street, opposite No. 104.

## REPAIRS AND REMOVAL OF PAVEMENTS AND REGRADING.

The amount of work done by the force engaged in repairing street pavements consisted in taking up and relaying 341,123 square yards of pavement, repairing 3,047 bad places and repairing 1,124 crosswalks. The force thus employed was composed of 38 single gangs of 8 and in some cases 10 men each, 2 double gangs and 3 triple gangs, being equal to 54 single gangs in the aggregate. This was 10 gangs less than were employed in 1889. The double and treble gangs referred to were engaged in taking up and relaying the pavement from curb to curb, and from half a block to two or more blocks in length. The following is a list of streets wherein the pavement was taken up and relaid from curb to curb and not less than a block in extent.

One Hundred and Seventeenth street, from First to Third avenue.  
 One Hundred and Eleventh street, from Madison to Third, and intersection of Park avenue.  
 One hundred and Fifth street, from Second to Third avenue.  
 Seventy-ninth street, from Fifth to Madison avenue, and intersection of Madison avenue.  
 Seventy-eighth street, from Columbus to Amsterdam avenue.  
 Seventy-sixth street, from West End avenue to Boulevard.  
 Seventy-fourth street, from Park to Lexington avenue.  
 Sixty-third street, from First avenue to Avenue A.  
 Sixtieth street, from First to Second avenue.  
 Fifty-eighth street, from east side of Park avenue to Madison avenue.  
 Fifty-fourth street, from Park to Third avenue.  
 Fifty-third street, from Park to Lexington avenue.  
 Fifty-second street, from Lexington to Third avenue, and from Eighth avenue to Broadway.  
 Fifty second street, from Broadway to Seventh avenue.  
 Fiftieth street, from Tenth to Eleventh avenue.  
 Forty-sixth street, from Eighth avenue to Broadway.  
 Forty-fifth street, from Sixth avenue to Broadway.  
 Fortieth street, from Seventh to Eighth avenue.  
 Thirty-eighth street, from Seventh to Eighth avenue.  
 Thirtieth street, from First to Second avenue.  
 Thirty-first street, from Sixth avenue to west side Seventh avenue.  
 Twenty-ninth street, from Broadway to Fifth avenue.  
 Twenty-ninth street, from Fifth to Madison avenue.  
 Twenty-ninth street, from Madison to Fourth avenue.  
 Nineteenth street, from Broadway to Fifth avenue.  
 Stuyvesant street, from Second to Third avenue.

## Avenues Relaid by Blocks.

Madison avenue, from Ninety-first to Ninety-second street, and intersection of Ninety-second street.  
 Second avenue, from One Hundred and First to One Hundred and Second street, and intersection of One Hundred and First street.  
 Second avenue, from One Hundred and Third and One Hundred and Fourth street.  
 Third avenue, from Fifty-seventh street to Fifty-eighth street, and intersection of Fifty-eighth street.  
 Sixth avenue, from Thirteenth to Fourteenth street, and intersection of Thirteenth street.  
 Sixth avenue, from Twenty-second to Twenty-third street, and intersection of Twenty-third street.

## Avenues and Streets Relaid by Half-blocks.

Church street, between Leonard and Worth streets, west side.  
 Church street, between Leonard and Franklin streets, west side.  
 Lispenard street, between Church street and West Broadway, south side.  
 Twenty-first street, between Tenth and Eleventh avenues, and intersection of Tenth avenue.  
 Nineteenth street, between Sixth and Seventh avenues.  
 Twenty-seventh street, between Fourth and Madison avenues.  
 Fifty-ninth street, between Ninth avenue and Boulevard, north side, and half south side.  
 Fifty-ninth street, between Fifth and Sixth avenues.  
 Eighteenth street, between Sixth and Seventh avenues, north side.  
 Madison avenue, between Sixtieth and Sixty-first street, east side.  
 Madison avenue, between Seventy-eighth and Seventy-ninth street, west side.  
 Madison avenue, between Eighty-fourth and Eighty-fifth street, east side.  
 Madison avenue, between Ninety-second and Ninety-fourth street, west side, and intersection of Ninety-second street.  
 Park avenue, between Sixty-sixth and Sixty-seventh streets, west side.  
 Park avenue, between Seventy-third and Seventy-fourth street, west side, and intersection of Seventy-fourth street.  
 Fourth avenue, between Ninth and Tenth streets, east side.  
 Fourth avenue, between Twenty-fourth and Twenty-fifth streets, west side.  
 Fourth avenue, between Twenty-sixth and Twenty-seventh streets, west side.  
 Third avenue, between Seventy-second and Seventy-third streets, west side.  
 Third avenue, between Eighty-eighth and Eighty-ninth streets, west side, and intersection of Eighty-ninth street.  
 Second avenue, between Fifty-second and Fifty-third, and Fifty-sixth and Fifty-seventh streets, east side.  
 Second avenue, between Eighty-first and Eighty-third, and Eighty-third and Eighty-fourth streets.  
 Second avenue, between Ninety-ninth and One Hundredth streets, east side, and One Hundredth to One Hundred and First street, east side.  
 Second avenue, between One Hundred and Tenth and One Hundred and Eleventh streets, east side.  
 First avenue, between Fifty-ninth and Sixtieth streets, west side.  
 First avenue, between Sixty-fifth and Sixty-sixth streets, west side.

Sixth avenue, between Twenty-seventh and Twenty-eighth streets, east side, and intersection of Twenty-eighth street.

Sixth avenue, between Fifty-eighth and Fifty-ninth streets, west side.  
 Seventh avenue, between Thirty-eighth and Thirty-ninth streets, west side.  
 Seventh avenue, between Fortieth and Forty-first streets, east side.  
 Seventh avenue, between Fifty-eighth and Fifty-ninth streets, west side.  
 Eighth avenue, between Eighty-second and Eighty-third streets, west side.  
 Eighth avenue, between One Hundred and Tenth and One Hundred and Eleventh streets, east side.  
 Tenth avenue, between Twentieth and Twenty-first streets, west side.  
 Tenth avenue, between Twenty-eighth and Twenty-ninth streets, west side.  
 Columbus avenue, between Sixty-first and Sixty-second streets, east side, and intersection of Sixty-second street.  
 Columbus avenue, between Sixty-sixth and Sixty-seventh streets, west side.  
 Columbus avenue, between Eighty-sixth and Eighty-seventh streets, east side, and intersection of Eighty-seventh street.  
 Columbus avenue, between Eighty-seventh and Ninetieth streets, east side.

## Relaid with Square Granite Blocks.

Gouverneur's lane, from South to Water street.

## Intersections Relaid.

Fifth avenue and Thirty-fourth street, tar and gravel joints.  
 Hudson and Perry street, tar and gravel joints.  
 Hudson and Clarkson street, tar and gravel joints.  
 Leonard and Elm streets, west side.  
 New Chambers and William streets, south side.  
 Church and Reade streets.  
 Broad and Bridge streets.  
 Eldridge and Delancey streets.  
 Madison avenue and One Hundred and Second street.  
 Lexington avenue, at One Hundred and Eighth, One Hundred and Seventeenth, and Forty-seventh streets.  
 Third avenue, at Twenty-seventh and Ninety-fifth streets.  
 Second avenue, at Thirtieth street, east side.  
 Second avenue, at Eighty-third and Eighty-fourth streets, west side.  
 Second avenue, at One Hundred and Seventeenth street, east and west sides.  
 First avenue, at Twentieth street.  
 Sixth avenue, at Fifty-ninth street.  
 Seventh avenue, at Twenty-sixth street.  
 Columbus avenue, at Sixty-first, Sixty-third, Sixty-sixth, Seventieth and Seventy-fifth streets.

## Avenues Repaired.

Madison avenue, between Eighty-third and Eighty-fourth, and One Hundred and Fourteenth and One Hundred and Sixteenth streets.  
 Lexington avenue, between Thirty-third and Thirty-fourth, and One Hundred and Ninth and One Hundred and Tenth streets.  
 Park avenue, between Fifty-first and Fifty-second, and One Hundred and Seventh and One Hundred and Eighth streets.  
 Depew avenue, between Forty-second and Forty-third streets.  
 First avenue, from Tenth to Twelfth, Eighteenth to Twentieth, and Twenty-first to Twenty-second streets.  
 First avenue, from Twenty-eighth to Twenty-ninth, Thirty-eighth to Thirty-ninth, and Eighty-first to Eighty-second streets.  
 First avenue, from One Hundredth to One Hundred and First, One Hundred and Sixth to One Hundred and Seventh, One Hundred and Sixteenth to One Hundred and Seventeenth streets.  
 Second avenue, from First to Fifth, Nineteenth to Twentieth, Seventy-fourth to Seventy-fifth, and Eighty-third to Eighty-fifth streets.  
 Second avenue, from One Hundred and Third to One Hundred and Fourth, One Hundred and Tenth to One Hundred and Twelfth, and One Hundred and Thirteenth to One Hundred and Fourteenth streets.  
 Third avenue, from Thirty-seventh to Fortieth, Forty-second to Forty-third, Eighty-ninth to Ninetieth, and Ninety-second to Ninety-sixth streets.  
 Fourth avenue, from Twenty-sixth to Twenty-ninth, and Thirty-first to Thirty-second streets.  
 Fifth avenue, from Twenty-first to Twenty-second, Thirty-second to Thirty-fourth, and Fortieth to Forty-first streets.  
 Fifth avenue, from Fiftieth to Fifty-first, Fifty-fifth to Fifty-ninth, One Hundred and Thirty-first to One Hundred and Thirty-second, and One Hundred and Thirty-third to One Hundred and Thirty-fourth streets.  
 Avenue A, between Eighty-sixth and Eighty-seventh streets.  
 Avenue B, between Eighty-third and Eighty-fourth streets.  
 South Fifth avenue, between Houston and Bleecker streets.  
 Columbus avenue, from Sixty-sixth to Sixty-ninth, and Seventy-second to Seventy-eighth streets.  
 Columbus avenue, from Eighty-second to Eighty-third, Eighty-seventh to Eighty-ninth, and Ninetieth to Ninety-fourth streets.  
 Columbus avenue, from Ninety-sixth to Ninety-seventh, Ninety-eighth to Ninety-ninth, and One Hundred and Sixth to One Hundred and Seventh streets.  
 Amsterdam avenue, from Sixtieth to Sixty-first, and One Hundred and Eighth to One Hundred and Ninth streets.  
 West End avenue, from Seventy-sixth to Seventy-seventh, Eighty-sixth to Eighty-seventh, and Eighty-eighth to Eighty-ninth streets.  
 Sixth avenue, between Eighth and Tenth and Thirty-sixth and Thirty-seventh streets.  
 Seventh avenue, between Twentieth and Twenty-first, Thirty-first and Thirty-second and Thirty-third and Thirty-fifth streets.  
 Eighth avenue, between Sixty-seventh and Sixty-eighth, One Hundredth and One Hundred and First and One Hundred and Tenth and One Hundred and Twelfth streets.  
 Eighth avenue, between One Hundred and Twenty-sixth and One Hundred and Twenty-seventh and One Hundred and Thirty-first and One Hundred and Thirty-second streets.  
 Eighth avenue, between One Hundred and Forty-third and One Hundred and Forty-fourth, One Hundred and Forty-sixth and One Hundred and Forty-seventh and One Hundred and Fifty-fourth and One Hundred and Fifty-fifth streets.  
 Ninth avenue, between Seventeenth and Eighteenth, Thirtieth and Thirty-first and Fifty-second and Fifty-third streets.  
 Tenth avenue, between Fifty-first and Fifty-second streets.  
 Eleventh avenue, between Sixtieth and Sixty-first streets.

## Streets Repaired.

Attorney street, between Delancey and Rivington and Stanton and Houston streets.  
 Allen street, between Broome and Delancey streets.  
 Ann street, between Park Row and Nassau street.  
 Astor place, between Broadway and Fourth avenue.  
 Beekman street, between William and Cliff streets.  
 Broadway, between Thirty-first and Thirty-second, Thirty-fifth and Thirty-seventh and Thirty-eighth and Thirty-ninth streets.  
 Bowery, between Grand and Broome streets.  
 Barrow street, between Bedford and Bleecker streets.  
 Bleecker street, between Barrow and Commerce streets.  
 Broome, between Bowery and Cannon streets.  
 Clinton place, between Fifth and Sixth avenues.  
 Clinton place, between Greene street and University place.  
 Centre street, between Franklin and White and Grand and Broome streets.  
 Coenties Alley, between Pearl and Stone streets.  
 Canal street, between Bowery and Chrystie street and Allen street and East Broadway.  
 Chrystie street, between Broome and Delancey streets.  
 Charles street, between West Fourth street and Greenwich avenue.  
 Cuyler's Alley, between South and Front streets.  
 Carlyle street, between West and Washington streets.  
 Delancey street, between Ludlow and Essex streets.  
 Eldridge street, between Division and Grand and Broome and Rivington streets.  
 Front street, between Beekman street and Peck Slip.  
 Gold street, between Fulton and Ann streets.  
 Greenwich street, between Morris and Rector and Jane and Horatio streets.  
 Greenwich street, between Leroy and Morton streets.  
 Grand street, between Sheriff and Willett streets.  
 Gramercy Park, between Twentieth to Twenty-first streets.  
 Gouverneur slip, between Water and South streets.  
 Greene street, between West Fourth street and Washington place.  
 Houston street, between Essex and Norfolk streets.  
 King street, between Varick and Macdougall streets.  
 Lispenard street, between Church street and West Broadway.



Lafayette place, between Fourth street and Astor place.  
 Leonard street, between Elm and Centre streets.  
 Mail street, between Broadway and Park Row.  
 Mercer street, between Broome and Spring streets.  
 Mulberry street, between Prince and Spring streets.  
 Nassau street, between Ann and Fulton streets.  
 Old Slip, between Pearl and Water streets.  
 Prince street, between Elizabeth and Mott streets, and Broadway and Crosby street.  
 Peck Slip, between Pearl and South streets.  
 Sheriff street, between Broome and Grand streets.  
 Temple street, between Cedar and Thames streets.  
 University place, between Christopher street and Waverley place.  
 Vestry street, between Hudson and Greenwich streets.  
 Van Ness place, between Fourth and Bleecker streets.  
 West Broadway, between Leonard and Worth streets.  
 Walker street, between Centre and Elm streets.  
 Second street, between Avenue B and Second avenue.  
 Third street, between Greene and Mercer streets and Macdougall street and Sixth avenue.  
 Fifth street, between First avenue and Avenue A.  
 Seventh street, between First and Third avenues.  
 Eighth street, between Second and Third avenues and Lewis street and Avenue D.  
 Ninth street, between University place and Fifth avenue.  
 Tenth street, between First and Third avenues.  
 Eleventh street, between Second and Third avenues.  
 Twelfth street, between Fifth and Sixth, Third and Fourth avenues and Avenue A and Avenue B.  
 Thirteenth street, between Washington street and Tenth avenue, and Fifth and Seventh avenues.  
 Sixteenth street, between Seventh and Eighth avenues.  
 Eighteenth street, between Broadway and Fifth avenues.  
 Nineteenth street, between First avenue and Avenue A.  
 Twentieth street, between Fifth and Sixth and Second and Third avenues, and Gramercy Park and Third avenue.  
 Twenty-first street, between Fifth and Sixth avenues, and Gramercy Park and Third avenue.  
 Twenty-second street, between Seventh and Eighth, and Eighth and Tenth avenues.  
 Twenty-third street, between First and Third avenues.  
 Twenty-fourth street, between Broadway and Sixth avenue, and Third and Fourth avenues.  
 Twenty-fifth street, between Fourth and Lexington avenues.  
 Twenty-sixth street, between Second and Third, Fourth and Fifth, and Sixth and Eighth avenues.  
 Twenty-seventh street, between First and Second and Third and Fourth avenues, and Broadway and Sixth avenue.  
 Twenty-eighth street, between Third and Lexington avenues.  
 Twenty-ninth street, between Second avenue and Avenue A and Third and Lexington avenues.  
 Thirtieth street, between Broadway and Sixth avenue, and Eighth and Ninth avenues.  
 Thirty-first street, between Sixth and Seventh avenues.  
 Thirty-second street, between Madison and Fourth avenues, and Second avenue and East river.  
 Thirty-third street, between Sixth and Seventh and Fourth and Madison avenues.  
 Thirty-fourth street, between Tenth and Eleventh avenues.  
 Thirty-fifth street, between Madison and Fifth avenues.  
 Thirty-sixth street, between Lexington and Park avenues.  
 Thirty-seventh street, between First and Second avenues.  
 Thirty-ninth street, between Broadway and Sixth avenue.  
 Fortieth street, between Seventh avenue and Broadway, and First and Third avenues.  
 Fortieth street, between Eighth and Tenth avenues.  
 Forty-third street, between Eighth and Tenth avenues.  
 Forty-fourth street, between Fifth and Sixth avenues.  
 Forty-sixth street, between Second avenue and East river.  
 Forty-seventh street, between Tenth and Eleventh avenues.  
 Forty-eighth street, between Tenth and Eleventh avenues, and First avenue and East river.  
 Forty-ninth street, between Tenth and Eleventh avenues.  
 Fiftieth street, between Lexington and Park avenues.  
 Fifty-first street, between Madison and Park, and Eighth and Tenth avenues.  
 Fifty-second street, between Fifth and Sixth, Tenth and Eleventh and Second and Lexington avenues.  
 Fifty-third street, between Madison and Park, and Eighth and Ninth avenues.  
 Fifty-fourth street, between First and Third avenues.  
 Fifty-fifth street, between Third and Park avenues, and Tenth avenue and North river.  
 Fifty-sixth street, between Second and Third avenues, and Broadway and Seventh avenue.  
 Fifty-seventh street, between Broadway and Seventh avenue, and Eleventh avenue and North river.  
 Fifty-eighth street, between Tenth and Eleventh avenues, and Avenue A and East river.  
 Fifty-ninth street, between Ninth avenue and Boulevard.  
 Sixty-first street, between Lexington and Park avenues.  
 Sixty-first street, between Amsterdam and Eleventh avenues.  
 Sixty-first street, between Columbus and Eighth avenues.  
 Sixty-second street, between Columbus avenue and Boulevard, and Fifth and Madison avenues.  
 Sixty-third street, between Fifth and Madison, and Second and Third avenues.  
 Sixty-sixth street, between Second avenue and Avenue A.  
 Sixty-sixth street, between Boulevard and Amsterdam avenues.  
 Sixty-seventh street, between Lexington and Third, and Amsterdam and Eleventh avenues.  
 Sixty-eighth street, between First and Second avenues, and Eighth avenue and Boulevard.  
 Sixty-ninth street, between Eighth avenue and Boulevard.  
 Seventieth street, between Amsterdam and Eleventh avenues.  
 Seventy-first street, between Columbus and Eighth, and Fifth and Madison avenues.  
 Seventy-second street, between Madison and Park avenues.  
 Seventy-third street, between Eighth and Amsterdam avenues.  
 Seventy-fourth street, between Fifth and Madison, and Park and Lexington avenues.  
 Seventy-fifth street, between First avenue and Avenue A.  
 Seventy-sixth street, between Fifth and Park avenues, and Eighth avenue and Boulevard.  
 Seventy-seventh street, between Second and Third, and Lexington and Park avenues.  
 Seventy-eighth street, between First avenue and Avenue A, and Park and Lexington avenues.  
 Seventy-ninth street, between Second and Third, and Fifth and Madison avenues.  
 Eighty-first street, between Eighth and Amsterdam avenues.  
 Eighty-second street, between Avenue A and East river.  
 Eighty-third street, between Lexington and Park avenues, and Avenues A and B.  
 Eighty-fourth street, between Eighth and Columbus avenues.  
 Eighty-fifth street, between Fourth and Madison avenues, and Second avenue and Avenue B.  
 Eighty-sixth street, between Columbus and Amsterdam avenues.  
 Eighty-sixth street, between First avenue and Avenue A, and Fifth and Madison avenues.  
 Eighty-seventh street, between Third and Lexington avenues and Second avenue and Avenue B.  
 Eighty-eighth street, between Second and Third avenues.  
 Ninetieth street, between Eighth and Columbus avenues.  
 Ninety-first street, between Lexington and Park avenues.  
 Ninety-second street, between Eighth and Columbus avenues.  
 Ninety-fourth street, between Park and Lexington and Eighth and Columbus avenues.  
 Ninety-fifth street, between Third and Park avenues.  
 Ninety-seventh street, between Eighth and Columbus avenues.  
 Ninety-ninth street, between Columbus and Amsterdam avenues.  
 One Hundredth street, between Columbus and Amsterdam avenues.  
 One Hundred and Third street, between Second and Third avenues.  
 One Hundred and Fifth street, between Second and Third and Columbus and Amsterdam avenues.  
 One Hundred and Sixth street, between Second avenue and East river.  
 One Hundred and Seventh street, between First and Second avenues.  
 One Hundred and Ninth street, between First and Third avenues.  
 One Hundred and Twelfth street, between First and Third and Park and Madison avenues.  
 One Hundred and Thirteenth street, between Third and Fourth and First and Second avenues.  
 One Hundred and Fourteenth street, between Third and Pleasant avenues.  
 One Hundred and Fifteenth street, between Third and Lexington, Fifth and Lenox and Eighth and St. Nicholas avenues.  
 One Hundred and Seventeenth street, between First and Second avenues.  
 One Hundred and Eighteenth street, between First and Second avenues.  
 One Hundred and Nineteenth street, between Fifth avenue and East river.  
 One Hundred and Twentieth street, between Fourth and Madison and Lenox and Mount Morris avenues.  
 One Hundred and Twentieth street, between Second and Pleasant avenues.  
 One Hundred and Twenty-first street, between First and Second avenues.  
 One Hundred and Twenty-second street, between Madison and Park and First and Third avenues.  
 One Hundred and Twenty-third street, between Lexington and Third avenues.

One Hundred and Twenty-fourth street, between Fifth and Lenox and Seventh and Eighth avenues.

One Hundred and Twenty-seventh street, between Fifth and Lenox and Second and Third avenues.

One Hundred and Twenty-ninth street, between Eighth and St. Nicholas avenues and Broadway and Boulevard.

One Hundred and Thirtieth street, between Fifth and Madison and Seventh and Eighth avenues.

One Hundred and Forty-first street, between Hamilton place and St. Nicholas avenue.

One Hundred and Fifty-fifth street, between Boulevard and North river.

As will be seen below, the work performed by the street repair force in 1890 compares favorably with that done in 1889, although the number of square yards relaid in 1890 was less than in 1889.

The square yards of pavement relaid in 1889, was.....	386,087
The square yards of pavement relaid in 1890, was.....	341,123
The number of days on which the force worked in 1889, was.....	249
While in 1890 it was but.....	194
The number of gangs working in 1889 was.....	64
And in 1890.....	54
The average number of yards relaid per day, by each gang in 1889, was.....	24½
And in 1890.....	32½

In addition to the work done by the repair force during the year, pavements in the following named streets aggregating 62,500.64 square yards were taken up and relaid, all the work being done under contract:

Centre street and Tryon Row, from Chambers street to west side Park Row.

Twenty-ninth street, from Fourth to Lexington avenue.

Twenty-ninth street, from Lexington to Third avenue.

Thirty-first street, from Broadway to Fifth avenue.

Forty-eighth street, from Second to Third avenue.

One Hundred and Fourth street, from Fourth to Madison avenue.

One Hundred and Fifth street, from First to Second avenue.

One Hundred and Eighth street, from Lexington to Fourth avenue.

One Hundred and Eighth street, from Fourth to Madison avenue.

One Hundred and Ninth street, from Third to Fourth avenue.

Sixty-sixth street, from Fourth to Lexington avenue.

Sixty-eighth street, from Second to Third avenue.

Seventieth street, from Lexington to Park avenue.

Seventy-third street, from Second to Third avenue.

Seventy-third street, from Lexington to Park avenue.

Ninety-fifth street, from First to Second avenue.

Sixth avenue, west side, from Forty-ninth to Fiftieth street.

Sixth avenue, east side, from Fiftieth to Fifty-first street.

Fifty-second street, from First to Second avenue.

Fifty-seventh street, from First to Fourth avenue.

Fifty-eighth street, from Avenue A to Third avenue.

Sixty-ninth street, from First to Third avenue.

Eightieth street, from Avenue A to Second avenue.

Eightieth street, from Fourth to Madison avenue.

1,222.4 square yards of pavement, of which 770.4 square yards were asphalt, were repaired during the year, making a total of 405,856 square yards taken up and relaid during the year.

Several contracts for taking up and relaying the pavement in various streets were let in December, but as they have not been fully signed up no positive information can be given as to the estimated amount of this work so given out.

#### REPAIRING AND RENEWAL OF PIPES, STOP-COCKS, ETC.

The force employed under this appropriation has been busily engaged in making repairs to hydrants, Croton water-mains and stop-cocks, and stop-cock boxes, erecting twelve new fire-hydrants, and substituting four hundred and twenty new fire-hydrants for old ones.

#### PUBLIC DRINKING HYDRANTS.

95 public drinking hydrants were repaired.

11 new public drinking hydrants were erected at the following locations:

Northwest corner of First avenue and Ninety-second street.

Northwest corner of One Hundred and Nineteenth street and Lexington avenue.

Northwest corner of Boulevard and One Hundred and Twenty-ninth street.

Northeast corner of One Hundred and Eighteenth street and Pleasant avenue.

Southwest corner of Broadway and Church street, Kingsbridge.

No. 1849 Washington avenue.

Northeast corner of Eighty-fifth street and Madison avenue.

No. 911 Eighth avenue.

No. 54 Essex street.

No. 939 East One Hundred and Forty-ninth street.

Southeast corner of Southern Boulevard and One Hundred and Forty-seventh street.

The public drinking hydrant at southeast corner of Broadway and Forty-first street, was removed July 7, in compliance with a resolution of the Board of Aldermen.

22 old Nash hydrants were removed and replaced with improved iron drinking fountains.

#### WELLS AND PUMPS—REPAIRING AND CLEANING.

The well at the corner of Greenwich and North Moore streets was cleaned, the old pump taken out and a new one put in. This was the only work of this kind found to be necessary in 1890.

#### REPAVING STREETS AND AVENUES UNDER CHAPTER 476, LAWS OF 1875.

Work on the following contracts was completed in 1890:

##### Granite.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
New Chambers street.....	Park Row to Cherry street.....	7,267.94	1,643.75
Cherry street.....	Clinton to Jefferson street.....	1,235.30	370.60
Seventy-second street.....	Second to Third avenue.....	2,792.00	626.10
Wall street.....	Broadway to Nassau street.....	773.04	297.20
".....	Hanover to Pearl street.....	648.56	261.30
Madison avenue.....	(Thirty-third to Thirty-fourth and Forty-fifth streets.....)	5,496.70	1,193.70
Hudson street.....	Beach to Spring street.....	10,886.60	1,874.10
Canal street.....	Hudson to Greenwich street.....	3,437.00	444.80
Catharine street.....	Division to Cherry street.....	3,681.95	1,466.50
Harrison street.....	Hudson to Washington street.....	2,275.30	550.50
Desbrosses street.....	Hudson to Greenwich street.....	1,462.50	369.60
Whitehall street.....	Beaver street to South Ferry.....	10,571.10	1,337.20
Washington street.....	(Houston to Clarkson and King to Charlton streets.....)	916.35	303.00
Lewis street.....	Delancey to Houston street.....	601.20	227.40
Pearl street.....	Fulton to Oak street.....	6,436.20	1,559.30
New Bowery.....	Oak street to Chatham Square.....	5,153.40	1,040.30
Little West Twelfth street.....	Washington street to Tenth avenue.....	644.50	337.00
Leroy street.....	West to Washington street.....	395.10	112.80
East Broadway.....	Chatham Square to Grand street.....	19,129.80	4,160.90
Elizabeth street.....	Bleecker to Bayard street.....	10,708.00	3,823.30
Total (crosswalks included).....		94,422.54	21,939.35

Length in miles, 4.155.



## Asphalt.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
William street	Wall to Pine street	459.40	175.00
Wall street	Nassau to Hanover street	2,253.70	695.60
Madison avenue	{ Thirty-second to Thirty-third, Thirty-sixth to Forty-first and Forty-second to Fifty- eighth streets	25,963.20	5,722.70
Fifty-eighth street	Madison to Fifth avenue	1,476.70	443.90
Total (crosswalks included)		30,153.00	7,037.20

Length in miles, 1.332.

Contracts for repaving the following streets were let, but owing to various causes no work has yet been done upon them:

	Estimated number of Square Yards.
William street, from Wall to Frankfort street, and South William street, from William to Broad street	5,496.
Park Row, from Frankfort street, to and including Chatham Square	13,700.
Fifty-second street, from Tenth to Twelfth avenue	2,750.
Church street, from Chambers to Canal street	5,000.
Twenty-sixth street, from Tenth to Eleventh avenue	620.
Mangin street, from Grand to Houston street	1,590.

It is not deemed advisable to begin work on any of the above streets until the weather becomes more favorable, or until next spring.

## Repaving (Chapter 346, Laws of 1889).

The Legislature of 1889 authorized this city to expend annually for three years a million dollars for repaving such streets as might be deemed necessary by the Board of Estimate and Apportionment, and the close of the second year shows a decided improvement in the appearance of the city's thoroughfares. The following list of contracts completed in 1890 will show that great care has been taken to divide the work under this appropriation, so that not only the business portion of the city, but also the residential part, might be benefited. Where the traffic is heavy substantial granite pavements have been constructed, while in residential streets, where traffic is light, noiseless asphalt pavements have been laid.

The streets referred to are the following:

## Granite.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Worth street	Broadway to Hudson street	4,161.84	1,244.00
Cliff street	Ferry to John street	2,100.20	891.30
Platt street	Pearl to William street	1,135.34	583.00
Stone street	William to Broad street	1,140.10	567.80
Leonard street	Broadway to Hudson street	3,591.50	1,354.60
Laight street	Canal to Greenwich street	4,619.13	1,138.70
Broad street	Exchange place to Pearl street	4,719.97	1,010.00
Cedar street	Broadway to Greenwich street	977.90	538.20
"	Pearl to Nassau street	1,557.00	742.80
Bridge street	Broad to State street	1,525.70	655.70
Thomas street	Church to Hudson street	1,446.43	665.00
Howard street	Broadway to Mercer street	579.60	210.50
Greenwich avenue	Eighth avenue to West Thirteenth street	666.22	174.00
Horatio street	Greenwich avenue to West Fourth street	1,451.70	376.90
Varick street	Franklin to Canal street	3,852.55	1,047.40
Broome street	Centre street to Broadway	2,491.70	613.10
Bleecker street	Bowery to Crosby street	2,685.90	795.50
Spring street	Bowery to Broadway	4,150.93	982.30
Reade street	Elm to Washington street	6,740.60	1,929.00
Duane street	Washington to Centre street	9,391.00	2,554.30
Greenwich street	Chambers to Canal street	11,825.10	3,083.10
Thirteenth street	Avenue B to Fifth avenue	14,704.10	4,447.90
Lexington avenue	{ Thirty-fourth to Thirty-fifth street, Fifty-ninth to Sixty-sixth street, and Sixty-ninth to Ninety-seventh street	42,604.10	9,520.60
Total (crosswalks included)		128,118.91	35,126.30

Length in miles, 6.652.

## Asphalt.

Broad street	Wall street to Exchange place	1,554.70	303.50
Forty-sixth street	Madison to Sixth avenue	4,644.70	1,411.20
Forty-seventh street	"	4,547.50	1,402.00
Thirty-third street	Madison avenue to Broadway	4,376.53	1,321.50
Thirty-sixth street	Fourth to Sixth avenue	6,108.10	1,822.00
Thirty-eighth street	Fourth to Madison avenue	1,453.40	436.30
Twenty-fifth street	Broadway to Sixth avenue	2,609.70	786.30
Thirty-second street	Madison to Fifth avenue	1,502.60	452.30
Fortieth street	Fourth to Fifth avenue	2,939.02	881.10
Fifty-eighth street	Fifth to Sixth avenue	3,130.15	911.20
Sixtieth street	Lexington to Fourth avenue	1,404.50	423.30
Hanover street	{ Pearl street to Exchange place, and Exchange place, from Hanover to William street	837.90	323.60
William street	Beaver to Wall street	982.60	427.50
Madison avenue	Fifty-eighth to Sixtieth street	2,470.40	526.10
Fifteenth street	Fifth to Sixth avenue	3,138.20	946.30
Seventeenth street	"	3,140.20	946.00
Fifty-third street	Madison to Fourth avenue	1,493.40	421.00
Forty-fifth street	Madison to Fifth avenue	1,438.60	453.30
Fifty-fourth street	Madison to Sixth avenue	4,656.50	1,398.20
Sixty-ninth street	Lexington to Fifth avenue	4,833.90	1,404.70
Fifty-third street	Madison to Sixth avenue	4,672.20	1,396.60
Sixty-eighth street	Third to Fourth avenue	3,413.10	922.20
Forty-ninth street	Madison to Sixth avenue	4,665.00	1,402.70

## STREET.

## FROM

## SQUARE YARDS.

## LINEAL FEET.

Fiftieth street	Fourth to Fifth avenue	2,909.90	874.10
Fifty-first street	Madison to Sixth avenue	4,656.10	1,399.20
Thirty-seventh street	Fourth to Sixth avenue	6,081.30	1,827.80
Thirty-eighth street	Fifth to Sixth avenue	3,139.60	946.20
Eighth avenue	Thirteenth to Thirty-fourth street	27,220.90	5,421.00
"	Thirty-fourth to Fifty-ninth street	31,702.50	6,193.00
Boulevard	Fifty-ninth to Seventy-ninth street	53,383.40	5,751.10
Lexington avenue	{ Twenty-first to Thirty-second street; Forty- second to Fifty-ninth street, and Sixty-sixth to Sixty-ninth street	34,919.70	8,002.90
Forty-third street	Madison to Fifth avenue	1,512.20	453.20
Sixtieth street	Fourth to Fifth avenue	2,925.30	865.20
Sixty-seventh street	"	2,901.60	862.20
Sixty-eighth street	"	2,904.80	861.70
Total (crosswalks included)		244,241.20	54,276.90

Length in miles, 10.28.

Contracts were let to repave the following named streets:

	Estimated Area.
Canal street, from Hudson street to Bowery, granite	26,400 square yards.
Bowery and Union Square, West, from Bowling Green to Thirty-second street, granite	60,200 "
Sixty-sixth and Sixty-seventh streets, from Lexington to Third avenue, asphalt	2,950 "

Owing to the severity of the weather, when the contract for repaving Sixty-sixth and Sixty-seventh streets was let, and since that time, no work has yet been done on these streets, and for a similar reason the work on Canal street, about seventy-five per cent. of which has been completed, was suspended.

Nothing whatever has been done towards laying the pavement in Broadway, owing to the tardiness of the Broadway and Seventh Avenue Railroad Company in constructing a conduit for a cable to run its cars. The condition of the pavement in Broadway is a disgrace to a city of the size and importance of New York, and the utmost efforts should be made to compel the corporations retarding the paving work to complete their structures without further delay.

The pavement in the streets mentioned below has become so poor that it should be removed and replaced with a substantial granite block pavement. The estimated area amounts to about 350,000 square yards, and the work would cost nearly \$1,500,000, which being in excess of the appropriation for 1891, would of course necessitate the striking out of some of the streets mentioned, which are:

Beach street, from West Broadway to Greenwich street.  
Beckman street, from Park Row to Pearl street.  
Bleecker street, from Broadway to Eighth avenue.  
Bowery, from Chatham Square to Sixth street.  
Canal street, Bowery to East Broadway.  
Grand street, from Broadway to Goerck street.  
Hubert street, from Hudson to Greenwich street.  
Houston street, from Bowery to Lewis street.  
Lispenard street, from Broadway to West Broadway.  
Park place, from Broadway to Greenwich street.  
Second avenue, from Houston to West Nineteenth street.  
Third avenue, from Sixth to Fifty-ninth street and One Hundred and Ninth to One Hundred and Thirtieth street.  
Fourth avenue, from Sixth to Fourteenth street.  
Sixth avenue, from Carmine to Twenty-third street.  
Eighth avenue, from Hudson to Thirteenth street.  
Ninth avenue, from Forty-second street to Fifty-ninth street.  
Twenty-third street, from Third to Eighth avenue.  
North Moore street, from West Broadway to Greenwich street.  
West Third street, from Broadway to Sixth avenue.

The following being mostly residential streets and not subject to heavy traffic, might be repaved with asphalt.

One Hundred and Twenty-sixth street, from Madison to Seventh avenue.  
Fifth avenue, from One Hundred and Twenty-fourth to One Hundred and Thirty-fifth street.  
Mount Morris avenue, from One Hundred and Twentieth to One Hundred and Twenty-fourth street.

Boulevard, from Seventy-ninth to Ninety-second street.  
Madison avenue, from Sixtieth to Seventieth street.  
Seventy-seventh street, from Fourth to Lexington avenue.  
Fifty-seventh street, from Fourth to Sixth avenue.  
Fifty-fifth street, from Fifth to Madison avenue.  
Fifty-fifth street, from Fifth to Sixth avenue.  
Fifty-fourth street, from Broadway to Eighth avenue.  
Fifty-second street, from Madison to Fourth avenue.  
Fiftieth street, from Fifth to Sixth avenue.  
Fiftieth street, from Lexington to Fourth avenue.  
Forty-ninth street, from Lexington to Fourth avenue.  
Forty-eighth street, from Sixth to Seventh avenue.  
Forty-eighth street, from Madison to Sixth avenue.  
Forty-seventh street, from Sixth to Seventh avenue.  
Forty-fifth street, from Vanderbilt to Sixth avenue, except from Madison to Fifth avenue.  
Forty-fourth street, from Fifth to Sixth avenue.  
Forty-third street, from Fifth to Sixth avenue.  
Forty-third street, from Seventh to Eighth avenue.  
Forty-third street, from Broadway to Sixth avenue.  
Fortieth street, from Fifth to Sixth avenue.  
Thirtieth street, from Madison avenue to Broadway.  
Thirtieth street, from Fourth to Fifth avenue.  
Twenty-sixth street, from Fifth avenue to East river.  
Twenty-second street, from Lexington to Third avenue.  
Twenty-first street, from Fifth to Sixth avenue.  
Twentieth street, from Fifth to Sixth avenue.  
Nineteenth street, from Fifth to Sixth avenue.  
Twelfth street, from Sixth to Seventh avenue.  
Ninth street, from Fifth avenue to University place.  
Fifth street, from Avenue B to Avenue C.

These streets aggregate in area about 165,000 square yards, and the cost of repavement would be about \$650,000.

## ASSESSMENT WORK (CHAPTER 449, LAWS OF 1889).

The law quoted above refers to streets lying within the limits of grants of land under water, and was enacted for the purpose of supplying such streets with good pavements which were to be constructed at the expense of the owners of the grants in question, who in most cases were under obligation to keep the pavements in their respective streets in good order, but failed to do so. These streets lie near the water-fronts, and being mostly on made ground it has been considered prudent to construct the new pavement in a most substantial manner, and therefore such pavements have been laid in all cases on a bed of concrete six inches in depth. The following shows what was done in the year 1890:

## Granite.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Fifteenth street	Tenth avenue to Hudson river	3,287.77	935.00
Washington street	Clarkson to Spring street	3,538.92	1,152.50
Twentieth street	Tenth avenue to Hudson river	4,250.00	1,226.00
Houston street	Washington to West street	1,111.29	287.62



STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Leroy street.....	Washington to West street.....	706.33	199.91
Bank street.....	Washington to West street.....	1,145.00	275.00
Eighteenth street.....	Eleventh to Thirteenth avenue.....	512.60	158.00
Bethune street.....	West street to Thirteenth avenue.....	1,099.60	424.00
Lewis street.....	Delancey to Houston street.....	3,043.40	1,078.00
Little West Twelfth street.....	Washington street to Tenth avenue.....	467.00	280.00
Twenty-sixth street.....	Tenth to Eleventh avenue.....	2,269.40	656.00
Mangin street.....	Grand to Houston street.....	3,857.20	1,476.00
Sixteenth street.....	Tenth avenue to Hudson river.....	3,542.30	1,027.00
Total (crosswalks included)....		28,830.81	9,169.03

Length in miles, 1.736.

## Trap Blocks.

Nineteenth street.....	Tenth avenue, to about 300 feet west.....	889.00	275.00
------------------------	---	--------	--------

Length, .052 mile.

The following are the uncompleted contracts:

	Estimated area.
Eleventh avenue, from Twenty-seventh to Thirtieth streets, granite.....	4,935 square yards.
Thirty-fourth street, from First avenue to East river, trap.....	1,910 "
Thirteenth avenue, from Seventeenth to Eighteenth street, granite.....	1,804 "
Tompkins street, from Grand to Stanton street, granite.....	4,400 "
Goerck street, from Grand to Third street, granite.....	5,950 "

## ASSESSMENT WORK.

Pavements were laid in the streets mentioned below where no pavement ever existed before, and the cost of the work was assessed upon the adjacent property. The following contracts were completed:

## Granite.

STREET.	FROM	SQUARE YARDS.	LINEAL YARDS.
One Hundred and Forty-second.....	Seventh to Eighth avenue.....	2,702.18	807.40
Ninety-fifth street.....	Lexington to Madison avenue.....	2,815.22	842.20
Seventy-ninth street.....	Twelfth avenue to Hudson River Railroad.....	1,723.65	261.00
Seventy-fifth street.....	Avenue A to East river.....	2,725.62	815.20
One Hundred and Eighth street.....	Boulevard to Riverside Drive.....	1,382.16	414.00
Sixty-seventh street.....	Ninth avenue to Boulevard.....	789.46	238.00
One Hundred and Forty-fourth street.....	Eighth avenue to first new avenue west.....	949.66	283.25
Ninety-second street.....	West End avenue to Boulevard.....	1,156.66	352.00
Eightieth street.....	West End avenue to Boulevard.....	898.66	292.00
One Hundred and Nineteenth street.....	Manhattan to Ninth avenue.....	1,225.33	367.55
One Hundred and Nineteenth street.....	Manhattan to Eighth avenue.....	1,305.33	391.90
Sixty-ninth street.....	Eighth to Ninth avenue.....	2,760.44	828.75
One Hundred and Second street.....	Ninth to Tenth avenue.....	2,698.00	815.66
One Hundred and Forty-third street.....	Seventh to Eighth avenue.....	2,724.66	817.50
One Hundred and Thirty-fourth street.....	Fifth to Lenox avenue.....	3,113.00	937.00
One Hundred and Twenty-sixth street.....	St. Nicholas to Ninth avenue.....	1,617.82	461.00
Eighty-eighth street.....	Park to Madison avenue.....	1,399.33	421.00
One Hundred and Forty-first street.....	Tenth avenue to Boulevard.....	2,760.24	807.00
Seventy-fourth street.....	Eighth to Ninth avenue.....	2,743.00	827.00
Madison avenue.....	Ninety-fourth to One Hundred and Third street.....	11,296.55	2,385.16
Tenth avenue.....	One Hundred and Fortieth to One Hundred and Fifty-first street.....	16,404.00	2,827.00
One Hundred and Thirty-fifth street.....	Madison avenue to bulkhead-line of Harlem river.....	3,362.66	504.50
One Hundred and Fourteenth street.....	Eighth to Manhattan avenue.....	1,305.00	391.50
One Hundredth street.....	Boulevard to Riverside Drive.....	1,382.16	956.00
Sixty-sixth street.....	Eighth to Ninth avenue.....	2,753.56	827.00
Sixty-fifth street.....	Tenth avenue to Boulevard.....	2,452.55	737.00
Fifty-third street.....	Tenth to Eleventh avenue.....	2,755.80	831.50
One Hundred and Forty-sixth street.....	St. Nicholas to Tenth avenue.....	2,769.66	833.00
Seventy-seventh street.....	Boulevard to Riverside Drive.....	2,652.00	795.50
One Hundred and Thirty-sixth street.....	Seventh to Eighth avenue.....	2,698.00	817.00
Avenue B.....	Seventy-ninth to Eighty-sixth street.....	12,336.88	1,816.00
One Hundred and First street.....	Ninth to Tenth avenue.....	2,717.00	816.30
Seventieth street.....	Eighth to Ninth avenue.....	2,750.66	826.00
Eighty-eighth street.....	West End avenue to Riverside Drive.....	2,737.00	819.50
Eighty-fourth street.....	Tenth avenue to Boulevard.....	1,346.00	402.00
Sylvan place.....	One Hundred and Twentieth to One Hundred and Twenty-first street.....	949.00	231.80
One Hundred and Fifth street.....	Park to Fifth avenue.....	3,126.40	923.50
One Hundred and Fourth street.....	Boulevard to Riverside Drive.....	2,801.40	818.75
One Hundred and Thirtieth street.....	Tenth avenue to Boulevard.....	2,501.00	771.75
Eighty-ninth street.....	Boulevard to Riverside Drive.....	3,287.40	986.50
One Hundred and Second street.....	First avenue to Harlem river.....	2,692.00	807.16
One Hundred and Fourteenth street.....	Madison to Fifth avenue.....	1,484.40	458.00
Sixty-ninth street.....	West End avenue to Hudson River Railroad.....	1,623.00	487.00
First avenue.....	One Hundred and Twenty-fifth to One Hundred and Twenty-sixth street.....	1,459.70	218.30
One Hundred and Twenty-fifth street.....	Manhattan street to Boulevard.....	8,688.70	1,305.00
Ninety-sixth street.....	Tenth avenue to Boulevard.....	1,782.60	357.00
Seventy-eighth street.....	Boulevard to Riverside Drive.....	2,368.70	714.40
Ninety-fourth street.....	Second to Third avenue.....	2,104.00	631.20
One Hundred and First street.....	Eighth avenue to Boulevard (except from Ninth to Tenth avenue.....	4,010.40	1,117.00
One Hundred and Eighteenth street.....	Eighth avenue to Morning-side Park road.....	2,526.00	758.00
Ninety-eighth street.....	Ninth to Tenth avenue.....	2,712.44	815.00
Total (crosswalks included)....		153,328.14	38,965.73

Length in miles, 7.380.

STREET.	FROM	SQUARE YARDS.	LINEAL YARDS.
One Hundred and Third street.....	Amsterdam avenue to Boulevard.....	1,185.10	348.00
Eighty-seventh street.....	Eighth to Ninth avenue and Tenth avenue to Boulevard.....	3,896.60	1,171.00
Seventy-fifth street.....	Eighth to Ninth avenue.....	2,740.00	821.50
Ninety-sixth street.....	Eighth to Ninth avenue.....	4,100.50	819.75
Ninety-sixth street.....	Ninth to Tenth avenue.....	4,084.50	816.00
Eighty-fifth street.....	Boulevard to Riverside Drive.....	3,423.00	1,033.00
Eighty-eighth street.....	Boulevard to West End avenue.....	1,185.00	357.00
Eighty-seventh street.....	West End avenue to Riverside Drive.....	2,396.00	713.80
One Hundred and Seventeenth street.....	St. Nicholas to Eighth avenue.....	2,003.00	600.50
One Hundred and Nineteenth street.....	St. Nicholas to Seventh avenue.....	1,462.80	438.80
One Hundred and Twenty-eighth street.....	St. Nicholas to Eighth avenue.....	972.20	288.00
One Hundred and Thirty-third street.....	St. Nicholas to Eighth avenue.....	985.60	295.50
One Hundred and Thirty-fourth street.....	St. Nicholas to Eighth avenue.....	1,128.50	340.00
One Hundred and Sixth street.....	Eighth avenue to Boulevard.....	14,813.30	2,215.80
Seventy-third street.....	West End avenue to Riverside Drive.....	1,235.33	371.20
Total (crosswalks included)....		45,611.43	10,634.85

Length in miles, 2.014.

## Trap Blocks.

Fortieth street.....	First avenue to East river.....	1,500	450
----------------------	---------------------------------	-------	-----

Length in miles, 0.085.

Contracts were let to pave the following-named streets, but too late to permit the work being done in 1890. Work will be commenced upon these thoroughfares as soon as the weather will permit:

	Estimated Area Sq. Yds.
One Hundred and Twentieth street, from Seventh to Eighth avenue, asphalt.....	2,487
One Hundred and Thirty-eighth street, from Eighth to Edgecombe avenues, asphalt.....	1,225
One Hundred and Fifty-first street, from Tenth to St. Nicholas avenue, granite.....	2,213
Sixty-fourth street, from Tenth to Eleventh avenue.....	2,714
Eightieth street, from Amsterdam avenue to Boulevard.....	1,380
Twelfth avenue, from One Hundred and Twenty-ninth to One Hundred and Thirtieth street.....	4,196
Sixty-seventh street, from Eighth to Ninth avenue.....	2,749
Eighty-seventh street, from Madison to Fifth avenue.....	1,404
One Hundred and Fourth street, from First avenue to East river.....	2,802
Madison avenue, from One Hundred and Sixteenth to One Hundred and Twentieth street.....	4,710
Eighty-eighth street, from Madison to Fifth avenue.....	1,495
Eighty-ninth street, from Tenth avenue to Boulevard.....	1,142
Ninety-fifth street, from Tenth avenue to Boulevard.....	1,147
One Hundred and Ninth street, from Madison to Fifth avenue.....	1,487
One Hundred and Forty-second street, from Tenth to Eleventh avenue.....	2,600

One of the most important pieces of work contemplated for this year is the repaving of West street, from Battery place to Gansevoort street. The requisite ordinance and resolution has been approved, and the preparation of contracts will be commenced at once.

A portion of this work is to be done at the expense of the City, while the remainder, being within the limits of grants of land under water, will be assessed upon the property benefited.

South street, from Whitehall to Corlears street, is a very busy thoroughfare, and, like West street, lies mostly within the limits of grants of land under water. The pavement is in a very unsatisfactory condition, and should receive immediate attention. I would recommend that efforts be made to have this street repaved with granite blocks on concrete foundation.

## SUMMARY.

Showing areas and lengths of pavements constructed in 1890.

	Granite.	Asphalt.	Trap.
Repaving streets and avenues.....	94,422.54	30,153.00	889.00
Repaving, chapter 346, Laws 1889.....	128,118.91	244,241.20	1,500.00
Assessment, chapter 449, Laws 1889.....	28,830.81	45,611.43	
Assessment.....	153,328.14		
Total.....	404,700.40	320,005.63	2,389.00
Total area of new pavements constructed in 1890.....			727,095.03
Total length of new pavements constructed in 1890.....			33.686

1884: 11.11 miles; 1885, 9.61 miles; 1886, 8.53 miles; 1887, 19.10 miles; 1888, 16.54 miles; 1889, 10.87 miles.

Below is appended a list of streets in which the pavement is in bad condition, but as the paving-stones are good the streets named might be benefited by taking up the paving blocks and relaying them to a correct grade:

Spruce street, from Nassau to Gold street.  
One Hundred and Twelfth street, from Lexington to Madison avenue.  
One Hundred and Twentieth street, from Fourth to Madison avenue.  
One Hundred and Twentieth street, from Second to Third avenue.  
One Hundred and Twenty-third street, from First to Second avenue.  
One Hundred and Twenty-fourth street, from Seventh to Eighth avenue.  
One Hundred and Nineteenth street, from Fourth to Lexington avenue.  
Fifty-second street, from Fifth to Sixth avenue.  
Fifty-eighth street, from Eighth to Ninth avenue.  
Ninety-seventh street, from Eighth to Ninth avenue.  
Eighty-fourth street, from Eighth to Ninth avenue.  
Park avenue, from One Hundred and Nineteenth to One Hundred and Twenty-first street.  
One Hundred and Fifteenth street, from Fourth to Lexington avenue.  
Forty-second street, from Sixth to Eleventh avenue.  
Ninety-third street, from Lexington to Third avenue.  
Fourth avenue, from Fourteenth to Thirty-third street.  
Lexington avenue, from Thirty-second to Thirty-fourth street.  
Charles street, from Greenwich avenue to Hudson river.  
West Third street, from Broadway to Sixth avenue.  
Broadway, from Thirty-second to Fifty-ninth street.



Forty-sixth street from Ninth to Tenth avenue.  
Forty-seventh street, from Sixth to Seventh avenue.  
Thirty-ninth street, from Seventh to Eighth avenue.  
Twenty-first street, from Fifth to Sixth avenue.  
Eighty-third street, from Second to Third avenue.  
Eighty-third street, from Lexington to Fourth avenue.

STREET OPENINGS.

The following is a summary of work done under the direct supervision of the General Inspector during the year:

- 27,088 openings were made to repair all mains other than Croton water mains, and to make repairs and connections for gas, steam, water, sewer, electric light and subways.
- 3,976 notices were sent to corporations and others to repair defective places in the pavement over such openings.
- 2,806 defective places in the pavements were repaired in response to said notices.
- 53.72 miles of gas mains were laid.
- 48.97 miles of trench were opened for subways.
- 1,263 feet of steam pipe were laid.
- 2,723 feet of salt water mains were laid.
- 630 feet of pneumatic tubes were laid.
- 1,396 feet of refrigerating pipe were laid.
- 134 new poles were erected.
- 250 feet of single car tracks were laid.
- 16,734 feet of double car tracks were laid.
- 296 miles of electrical conduits were laid by the Fire Department.

The large difference between notices sent to repair pavements and places repaired is explained by the fact that very many repairs have been made which could not be credited to the proper parties, by reason of their having been covered with snow.

The construction of the cable railroad on Broadway has been materially delayed by various corporations in locating gas-mains, steam pipes, pneumatic tubes, etc., and in determining its interference with the sewer or water mains, and having made the necessary arrangements with this Department and the different corporations regarding the changes required, the gas-mains below No. 120 Broadway have been shifted, and temporary tracks have been laid in that section from Fulton to Beaver street, and so as to facilitate the shifting of pipes and mains in the upper section to be repaved, tracks have been laid on the west side of Broadway, from Thirty-second to Twenty-third street.

The New York Steam Company and the Broadway and Seventh Avenue Railroad Company have come to a mutual understanding that the work of shifting the steam pipes and putting in the cable conduit shall be simultaneously carried on. Trouble is constantly arising by the close proximity of the steam pipes, to the water and gas mains, and is found due, in all cases, to faulty workmanship by the steam company.

The work of inspecting water and sewer house connections was recently transferred to the direct control of the General Inspector of Street Openings, and he reports that during the year the following permits were issued:

- To make new connections for water service and repairs. 2,117
- To make new connections for sewer service and repairs. 1,553

—and during the year over \$1,600 was collected from plumbers who made openings in the pavement in excess of the amounts paid by them for permits.

Below is a table showing the areas and lengths of the different kinds of pavements in the city south of the Harlem river, December 31, 1890:

KIND OF PAVEMENT.	SQUARE YARDS.	LINEAL FEET.	MILES.
Specification granite	2,500,051.53	607,983.56	113.83
Block granite	671,783.00	136,256.00	25.80
Specification trap	1,226,652.03	350,096.90	66.31
Belgian	2,699,228.30	608,926.70	115.33
Cobble	71,772.35	17,555.77	3.32
Asphalt	379,983.76	86,349.30	16.35
Wood	516.00	158.00	.03
Macadam	854,970.60	127,996.90	24.24
Total	8,404,967.57	1,928,323.13	365.21

Respectfully,  
WM. H. BURKE, Water Purveyor.

Document "F."

DEPARTMENT OF PUBLIC WORKS,  
OFFICE OF CONSULTING ENGINEER,  
NEW YORK, January 7, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

DEAR SIR—In compliance with your desire I herewith submit a statement of work done in connection with the city's pavement during the past two years.

The following is a list of streets contracted for during the years 1889 and 1890:

Repavements with Granite, 1889—Repavement, by Authority of Chapter 321, Laws of 1875.

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Hudson street	Spring to Fourteenth street	31,898.11	5,462.00
Hudson street	Beach to Spring street	10,886.60	1,874.10
Canal street	Hudson to Greenwich street	3,437.00	444.80
Little West Twelfth street	Ninth avenue to Washington street	1,631.90	489.80
Twenty-eighth street	Ninth to Tenth avenue	2,688.00	816.50
Thirteenth street	Ninth avenue to Washington street	1,456.00	437.50
Scammel street	Water street to East Broadway	1,528.80	933.50
Perry street	Waverley place to Fourth street	1,001.66	417.40
Commerce street	Bleecker to Barrow street	1,423.00	500.00
Liberty place	Liberty street to Maiden Lane	228.77	237.00
Theatre Alley	Ann to Beekman street	450.00	329.80
Hague street	Pearl to Cliff street	198.00	187.50
Birmingham street	Madison to Henry street	293.00	210.80
Staple street	Jay to Harrison street	332.00	202.20
Collister street	Beach to Lighthouse street	593.67	410.10
Thirty-third street	Fourth to Lexington avenue	1,414.11	439.50
Washington street	Gansevoort to Little Twelfth street	1,043.33	307.00
First street	Avenue A to Houston street	574.44	181.90
New Chambers street	Park Row to Cherry street	7,267.94	1,643.75
Chambers street	Park Row to Greenwich street	7,381.67	1,863.80
Thirty-seventh street	First avenue to One Hundred and Ninth street, East	361.00	109.00

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Whitehall street	Beaver street to South Ferry	10,571.10	1,337.02
Wall street	Broadway to Nassau street, Hanover to Pearl street	773.04 648.56	297.20 261.30
Madison avenue	Thirty-third to Thirty-sixth street, and Forty-first to Forty-second street	5,406.70	1,193.70
		93,498.40	20,557.17

Asphalt Pavements, 1889—Chapter 321, Laws of 1875.

Madison avenue	Thirty-second to Thirty-third street, Thirty-sixth to Forty-first street, and Forty-second to Fifty-eighth street	25,923.20	5,722.70
Fifty-eighth street	Fifth to Madison avenue	1,476.70	443.90
	Asphalt (Private).		
William street	Wall to Pine street	459.40	175.00
		27,859.30	6,341.60

Stone Pavements by Assessment, 1889.

One Hundred and Thirteenth street	Fourth to Madison avenue	1,373.00	411.00
Eighty-seventh street	Avenue A to Avenue B	2,210.80	669.40
Sixtieth street	Ninth to Tenth avenue	2,726.33	818.90
One Hundred and Eighteenth street	Fifth to Sixth avenue	3,139.00	947.60
One Hundred and Fifty seventh street	Tenth to Eleventh avenue	2,721.00	821.10
Tenth avenue	One Hundred and Tenth to Manhattan street	28,034.90	4,256.93
One Hundred and Twentieth street	Seventh to Lenox avenue	2,697.33	819.70
One Hundred and Fiftieth street	St. Nicholas to Tenth avenue	2,410.00	728.20
West End avenue	Sixty-fifth to Sixty-ninth street	7,501.20	1,187.33
One Hundred and Fifty-eighth street	Tenth to Eleventh avenue	2,718.55	821.70
One Hundred and Thirty-fourth street	Sixth to Seventh avenue	2,681.00	820.20
Manhattan avenue	(One Hundred and Thirteenth to One Hundred and Sixteenth street)	3,181.00	686.10
One Hundred and Ninth street	First avenue to East river	1,935.00	579.20
One Hundred and Thirty-first street	Broadway to Tenth avenue	1,615.16	485.00
Sixty-seventh street	Ninth avenue to Boulevard	783.46	238.00
One Hundred and Thirteenth street	Boulevard to Riverside Drive	1,699.22	506.80
Ninety-ninth street	Eighth to Ninth avenue	2,733.33	819.30
Eighty-eighth street	West End avenue to Riverside Drive	2,737.00	819.50
One Hundred and Fifty-ninth street	Tenth avenue to Boulevard	2,729.66	820.90
Ninety-eighth street	Second to Third avenue	2,098.00	627.70
Madison avenue	Ninety-fourth to One Hundred and Third street	11,296.55	2,385.16
Thirty-seventh street	(One hundred and nine feet east of First avenue to East river)	264.66	79.30
	Laid by Permit by Equitable Gas-light Co.		
Fortieth street	First avenue to East river	1,500.00	450.00
One Hundred and Fifty-sixth street	Tenth to Eleventh avenue	2,723.33	817.60
One Hundred and Sixth street	Park to Fifth avenue	6,228.24	868.70
Seventy-fifth street	Avenue A to East river	2,725.62	815.20
Seventy-fifth street	Ninth to Tenth avenue	2,741.66	827.00
Ninety-eighth street	Ninth to Tenth avenue	2,712.44	815.00
Sixty-sixth street	Tenth to Eleventh avenue	2,729.50	816.80
Eighty-eighth street	Eighth to Ninth avenue	2,737.00	819.00
Eighty-seventh street	Boulevard to West End avenue	1,153.00	352.00
Ninety-fourth street	Madison to Fifth avenue	1,491.00	459.80
Ninety-fifth street	Lexington to Madison avenue	2,815.22	842.20
Ninetieth street	Boulevard to Riverside Drive	2,711.44	816.00
Tenth avenue	(One Hundred and Fortieth to One Hundred and Fifty-first street)	16,404.00	2,827.00
Seventy-ninth street	Twelfth avenue to Harlem river	1,723.66	261.00
One Hundred and First street	Ninth to Tenth avenue	2,717.00	816.30
One Hundred and Thirty-fifth street	Madison avenue to Harlem river	3,362.66	504.50
One Hundred and Forty-first street	Tenth avenue to Boulevard	2,760.24	807.00
One Hundred and Forty-second street	Seventh to Eighth avenue	2,722.18	807.40
Seventy-fourth street	Eighth to Ninth avenue	2,743.00	827.00
		153,949.34	35,799.52

Asphalt Pavements by Assessment, 1839.

Pleasant avenue	(One Hundred and Fifteenth to One Hundred and Nineteenth street)	6,234.00	963.70
Eighty-second street	Boulevard to Riverside	2,224.35	669.30
One Hundred and Twenty-second street	Lenox to Mt. Morris avenue	1,496.00	450.40
Ninety-sixth street	Eighth to Ninth avenue	4,100.50	819.75
Ninety-sixth street	Ninth to Tenth avenue	4,084.50	816.00
One Hundred and Twenty-first street	Mt. Morris to Lenox avenue	1,482.00	444.20
		19,621.35	4,163.35

Repaving, Chapter 346, Laws of 1889—Granite.

Thomas street	Church to Hudson street	1,446.43	665.00
Howard street	Broadway to Mercer street	579.60	210.50
Greenwich avenue	Eighth avenue to West Thirteenth street	666.22	174.00
Horatio street	Greenwich avenue to West Fourth street	1,451.70	376.90
Cliff street	Ferry to John street	2,100.20	891.30
Platt street	Pearl to William street	1,435.34	583.00
Stone street	William to Broad street	1,140.10	567.80
Cedar street	Broadway to Greenwich street	977.90	538.80



STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Cedar street.....	Pearl to Nassau street.....	1,557.00	712.80
Bridge street.....	Broad to State street.....	1,525.70	655.70
Lexington avenue.....	{ Thirty-fourth to Thirty-fifth, Fifty-ninth to Sixty-sixth, and Sixty-ninth to Ninety-seventh street.....	42,604.40	9,520.60
Worth street.....	Broadway to Hudson street.....	4,161.84	1,244.00
Franklin street.....	West Broadway to Washington street.....	4,927.74	1,122.00
Thirteenth street.....	Avenue B to Fifth avenue.....	14,704.10	4,447.90
Reade street.....	Elm to Washington street.....	6,740.60	1,929.00
Leonard street.....	Broadway to Hudson street.....	3,591.50	1,354.60
Laight street.....	Canal to Greenwich street.....	4,619.13	1,138.70
Broome street.....	Centre to Broadway.....	2,492.70	613.10
Bleecker street.....	Bowery to Crosby street.....	2,685.90	795.50
Varick street.....	Franklin to Canal street.....	3,852.55	1,047.40
Spring street.....	Bowery to Broadway.....	4,150.93	982.30
Broad street.....	Exchange place to Pearl street.....	4,719.97	1,010.00
		111,830.55	30,610.90

*Repaving, Chapter 346, Laws of 1889—Asphalt, 1889.*

Park avenue.....	Thirty-fourth to Fortieth street.....	10,647.61	1,512.40
Boulevard.....	Fifty-ninth to Seventy-ninth street.....	53,383.40	5,751.50
Forty-third street.....	Madison to Fifth avenue.....	1,512.20	453.20
Sixtieth street.....	Fourth to Fifth avenue.....	2,925.30	865.20
Sixty-seventh street.....	".....	2,901.60	862.20
Sixty-eighth street.....	".....	2,904.80	861.70
Lexington avenue.....	{ Twenty-first to Thirty-second, Forty-second to Fifty-ninth, and Sixty-sixth to Sixty-ninth street.....	34,919.70	8,002.90
Forty-sixth street.....	Madison to Sixth avenue.....	4,644.70	1,411.20
Forty-seventh street.....	".....	4,547.50	1,402.00
Twenty-fifth street.....	Broadway to Sixth avenue.....	2,609.70	786.30
Thirty-second street.....	Madison to Fifth avenue.....	1,503.60	452.30
Fortieth street.....	Fourth to Fifth avenue.....	2,039.20	881.10
		125,439.13	23,242.00

*Recapitulation, 1889.*

APPROPRIATION.	KIND OF PAVEMENT.	SQUARE YARDS.	LINEAL FEET.
Chapter 321, Laws, 1875.....	Granite.....	93,498.40	20,557.35
".....	Asphalt.....	27,859.30	6,341.60
Assessment.....	Stone.....	153,949.34	35,799.52
".....	Asphalt.....	19,621.35	4,163.35
Chapter 346, Laws, 1889.....	Granite.....	111,830.55	30,610.90
".....	Asphalt.....	125,439.13	23,242.00
	Total.....	532,198.07	120,714.72

Total miles, 22.86.

*Assessment—Stone, 1890.*

STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Sixteenth street.....	Tenth avenue to Hudson river.....	3,542.30	1,020.00
Bank street.....	West to Washington street.....	1,145.00	275.00
Houston street.....	Washington to West street.....	1,111.29	257.62
Sixty-ninth street.....	West End avenue to Hudson River Railroad.....	1,623.00	487.00
Eighty-ninth.....	Boulevard to Riverside Drive.....	3,287.40	986.50
Ninety-sixth street.....	Tenth avenue to Boulevard.....	1,782.60	357.00
One Hundred and First street.....	{ Eighth to Ninth avenue and Tenth avenue to Boulevard.....	4,010.40	1,117.00
One Hundred and Eighteenth street.....	Eighth to Morningside avenue.....	2,516.00	758.00
Twenty-sixth street.....	Tenth to Eleventh avenue.....	1,269.40	656.00
Eleventh avenue.....	Twenty-seventh to Thirtieth street.....	4,935.00	740.20
Nineteenth street.....	Tenth avenue to three hundred feet west.....	889.00	275.00
Lewis street.....	Delancey to Houston street.....	3,043.40	1,078.00
Mangin street.....	Grand to Houston street.....	3,857.20	1,476.00
Ninety-fourth street.....	Second to Third avenue.....	2,104.00	631.20
Sylvan place.....	{ One Hundred and Twentieth to One Hundred and Twenty-first street.....	949.20	231.80
First avenue.....	{ One Hundred and Twenty-fifth to One Hundred and Twenty-sixth street.....	1,459.70	218.30
Madison avenue.....	{ One Hundred and Sixteenth to One Hundred and Twentieth street.....	4,710.00	1,010.00
Eighty-fourth street.....	Tenth avenue to Boulevard.....	1,346.00	402.00
Eighty-eighth street.....	Madison to Fifth avenue.....	1,495.00	449.50
Eighty-ninth street.....	Tenth avenue to Boulevard.....	1,142.00	342.60
Ninety-fifth street.....	Tenth avenue to Boulevard.....	1,147.00	244.10
One Hundred and Second street.....	First avenue to Harlem river.....	2,692.00	807.16
One Hundred and Fourth street.....	Boulevard to Riverside Drive.....	2,801.40	818.75
One Hundred and Fifth street.....	Park to Fifth avenue.....	3,126.40	923.50
One Hundred and Ninth street.....	Madison to Fifth avenue.....	1,487.00	446.10
One Hundred and Fourteenth street.....	Madison to Fifth avenue.....	1,484.40	458.00
One Hundred and Twenty-fifth street.....	Manhattan street to Boulevard.....	8,688.70	1,305.00
		67,654.59	17,801.43

*Assessment—Granite, 1890.*

STREET.	FROM	AREA, SQ. YDS. INCLUDING BRIDGE.	LINEAL FEET.
One Hundred and Twenty-sixth street.....	St. Nicholas to Ninth avenue.....	1,617.52	462.00
One Hundred and Forty-third street.....	Seventh to Eighth avenue.....	2,724.66	817.50
One Hundred and Thirty-fourth street.....	Fifth to Lenox avenue.....	3,113.00	937.00
One Hundred and Second street.....	Ninth to Tenth avenue.....	2,698.00	815.6
One Hundred and Eighth street.....	Boulevard to Riverside Drive.....	1,382.16	414.00
One Hundred and Forty-fourth street.....	Eighth avenue to first new avenue west.....	949.60	283.25
One Hundred and Forty-sixth street.....	St. Nicholas to Tenth avenue.....	2,769.66	833.00
One Hundredth street.....	Boulevard to Riverside Drive.....	1,382.16	956.00
Eighty-eighth street.....	Park to Madison avenue.....	1,399.33	421.00
Sixty-sixth street.....	Eighth to Ninth avenue.....	2,753.66	827.00
Sixty-fifth street.....	Tenth avenue to Boulevard.....	2,452.55	737.00
Seventy-seventh street.....	Boulevard to Riverside Drive.....	2,652.00	795.50
Seventy-eighth street.....	Boulevard to Riverside Drive (no record).....	2,368.70	714.40
Ninety-second street.....	West End avenue to Boulevard.....	1,156.66	352.00
Seventieth street.....	Eighth to Ninth avenue.....	2,750.66	827.00
Avenue B.....	Seventy-ninth to Eighty-sixth street.....	12,336.88	1,816.00
One Hundred and Thirty-sixth street.....	Seventh to Eighth avenue.....	2,698.00	817.00
Sixty-ninth street.....	Eighth to Ninth avenue.....	2,761.44	828.75
Eightieth street.....	Boulevard to West End avenue.....	898.66	292.00
One Hundred and Fourteenth street.....	Eighth to Manhattan avenue.....	1,305.00	391.50
One Hundred and Nineteenth street.....	Eighth to Manhattan avenue.....	1,307.33	391.90
One Hundred and Nineteenth street.....	Ninth to Manhattan avenue.....	1,225.33	367.55
Fifteenth street.....	Tenth avenue to Hudson river.....	3,287.77	936.00
Washington street.....	Spring to Clarkson street.....	3,538.92	1,152.50
Fifty-third street.....	Tenth to Eleventh avenue.....	2,755.80	831.50
Twentieth street.....	Tenth avenue to Hudson river.....	4,250.00	1,226.00
Little West Twelfth street.....	Tenth avenue to Washington street.....	407.00	280.00
Leroy street.....	Washington to West street.....	700.31	199.91
One Hundred and Thirtieth street.....	Tenth avenue to Boulevard.....	2,501.00	771.75
One Hundred and Forty-second street.....	Tenth to Eleventh avenue (trap).....	2,692.00	807.00
Bethune street.....	West street to Thirteenth avenue.....	1,009.60	424.00
Eighteenth street.....	Eleventh to Thirteenth avenue.....	512.60	158.00
Thirty-fourth street.....	First avenue to East river (trap).....	1,910.00	429.70
Thirteenth avenue.....	Seventeenth to Eighteenth street.....	1,804.00	270.00
Tompkins street.....	Grand to Stanton street.....	4,400.00	1,584.00
Goerck street.....	Grand to Third street.....	5,050.00	2,142.00
One Hundred and Fifty-first street.....	Tenth to St. Nicholas avenue.....	2,213.00	663.90
Sixty-fourth street.....	Tenth to Eleventh avenue.....	2,714.00	813.20
Eightieth street.....	Amsterdam avenue to Boulevard.....	1,380.00	414.00
Twelfth avenue.....	{ One Hundred and Twenty-ninth to One Hundred and Thirtieth street.....	4,196.70	212.00
Sixty-seventh street.....	Eighth to Ninth avenue.....	2,749.00	824.70
Eighty-seventh street.....	Madison to Fifth avenue.....	1,494.00	448.20
One Hundred and Fourth street.....	First avenue to East river.....	2,862.00	840.60
		175,776.93	48,320.30

*Pavements by Assessment—Asphalt, 1890.*

One Hundred and Sixth street.....	Eighth avenue to Boulevard.....	14,813.30	2,215.80
One Hundred and Seventeenth street.....	St. Nicholas to Eighth avenue.....	2,003.00	600.50
One Hundred and Nineteenth street.....	Seventh to St. Nicholas avenue.....	1,462.80	438.80
One Hundred and Twentieth street.....	Seventh to Eighth avenue (no record).....	2,487.00	761.10
One Hundred and Twenty-eighth street.....	St. Nicholas to Eighth avenue.....	972.20	288.00
One Hundred and Thirty-third street.....	".....	985.60	295.50
One Hundred and Thirty-fourth street.....	".....	1,128.57	340.00
Seventy-third street.....	West End avenue to Riverside Drive.....	1,235.33	371.20
Eighty-fifth street.....	Boulevard to Riverside Drive.....	3,423.00	1,033.00
Eighty-seventh street.....	West End avenue to Riverside Drive.....	2,396.00	718.20
Eighty-eighth street.....	Boulevard to West End avenue.....	1,185.00	357.00
Seventy-fifth street.....	Eighth to Ninth avenue.....	2,740.00	821.50
Eighty-seventh street.....	{ Eighth to Ninth avenue and Tenth avenue to Boulevard (asphalt block).....	3,896.60	1,171.00
One Hundred and Third street.....	Amsterdam avenue to Boulevard.....	1,185.10	348.00
One Hundred and Thirty-eighth street.....	Eighth to Edgecombe avenue.....	1,225.70	367.50
		41,138.43	10,112.70

*Repavement, Chapter 346, Laws of 1889—Asphalt, 1890.*

Thirty-eighth street.....	Fourth to Madison avenue.....	1,453.40	436.30
Broad street.....	Wall street to Exchange place.....	1,554.70	303.50
Thirty-third street.....	Madison avenue to Broadway.....	4,376.53	1,321.50
Thirty-sixth street.....	Fourth to Sixth avenue.....	6,108.10	1,822.00
Thirty-seventh street.....	Fourth to Sixth avenue.....	6,081.30	1,827.80
Thirty-eighth street.....	Fifth to Sixth avenue.....	3,139.60	946.20
Forty-ninth street.....	Madison to Sixth avenue.....	4,604.90	1,402.70
Fiftieth street.....	Fourth to Fifth avenue.....	2,902.50	874.10
Fifty-first street.....	Madison to Sixth avenue.....	4,656.10	1,309.00
Fifty-third street.....	Madison to Sixth avenue.....	4,672.30	1,336.60
Sixty-eighth street.....	Third to Fourth avenue.....	3,412.10	992.20
Fifty-fourth street.....	Madison to Sixth avenue.....	4,656.10	1,398.20



STREET.	FROM	SQUARE YARDS.	LINEAL FEET.
Sixty-ninth street.....	Lexington to Fifth avenue.....	4,833.90	1,401.70
Fifty-eighth street.....	Fifth to Sixth avenue.....	3,130.15	941.20
Sixtieth street.....	Lexington to Fourth avenue.....	1,404.50	423.30
Hanover street.....	Pearl street to Exchange place.....	837.90	323.60
Exchange place.....	Hanover to William street.....		
William street.....	Beaver to Wall street.....	982.60	427.50
Eighth avenue.....	Thirty-fourth to Fifty-ninth street.....	31,702.50	6,193.00
Eighth avenue.....	Thirteenth to Thirty-fourth street.....	27,220.90	5,421.00
Fifteenth street.....	Fifth to Sixth avenue.....	3,138.20	946.30
Seventeenth street.....	Fifth to Sixth avenue.....	3,140.20	946.00
Fifty-third street.....	Madison to Fourth avenue.....	1,403.40	421.00
Forty-fifth street.....	Madison to Fifth avenue.....	1,498.50	453.30
Madison avenue.....	Fifty-eighth to Sixtieth street.....	2,470.40	526.10
Sixty-sixth street.....	Lexington to Third avenue.....	2,950.00	885.00
Sixty-seventh street.....	Lexington to Third avenue.....		
		132,399.08	33,432.7

Repavement, Chapter 346, Laws of 1889—Granite, 1890.

Greenwich street.....	Chambers to Canal street.....	11,825.10	3,083.10
Canal street.....	Hudson street to Bowery.....	26,400.00	4,218.00
Broadway.....	Bowling Green to Thirty-second street.....	60,200.00	18,040.00
Duane street.....	Washington to Centre street.....	9,391.00	2,573.90
		107,816.10	27,915.00

Repaving, Chapter 321, Laws of 1875—Granite, 1890.

Seventy-second street.....	Second to Third avenue.....	2,792.00	626.10
Cherry street.....	Clinton to Jefferson street.....	1,235.30	370.60
South William street.....	William to Broad street.....	5,496.00	2,473.20
William street.....	Wall to Frankfort street.....		
Harrison street.....	Hudson to Washington street.....	2,275.30	550.50
Desbrosses street.....	Hudson to Greenwich street.....	1,462.50	369.60
Catharine street.....	Division to Cherry street.....	3,681.95	1,406.50
Pearl street.....	Fulton to Oak street.....	6,436.20	1,559.30
New Bowery.....	Oak street to Chatham Square.....	5,153.40	1,040.30
East Broadway.....	Chatham Square to Grand street.....	19,129.80	4,160.90
Elizabeth street.....	Bleecker to Bayard street.....	10,708.00	3,823.40
Park row.....	Frankfort street to Chatham Square.....	13,750.00	1,805.00
Washington street.....	Houston to Clarkson and King to Charleton streets.....	916.35	303.00
Little West Twelfth street.....	Washington street to Tenth avenue.....	644.40	337.00
Leroy street.....	Washington to West street.....	395.10	112.90
Fifty-second street.....	Tenth to Twelfth avenue.....	2,750.00	825.00
Lewis street.....	Delancey to Houston street.....	601.20	227.40
Chambers street.....	Chambers to Canal street.....	5,000.00	2,330.00
Twenty-sixth street.....	Tenth to Eleventh avenue.....	620.00	186.00
Mangin street.....	Grand to Houston street.....	1,590.00	572.00
		84,637.50	23,078.70

Repaving, Chapter 321, Laws of 1875—Asphalt, 1890.

Wall street.....	Nassau to Hanover street.....	2,253.70	695.60
------------------	-------------------------------	----------	--------

Recapitulation, 1890.

APPROPRIATION.	KIND OF PAVEMENT.	SQUARE YARDS.	LINEAL FEET.
Assessment.....	Stone.....	175,776.93	48,326.30
".....	Asphalt.....	41,138.43	10,112.70
Chap. 321, Laws of 1875.....	Stone.....	84,637.50	23,078.70
".....	Asphalt.....	2,253.70	695.60
Chap. 346, Laws of 1889.....	Stone.....	107,816.10	27,915.00
".....	Asphalt.....	132,399.80	23,432.70
		544,021.74	143,561.00

27.190 miles.

Total of pavements contracted for during the year 1889 and 1890—	
1889—Miles of pavement.....	22.86
1890—.....	27.19
There was completed in 1889—Miles of stone and asphalt pavement.....	
	10.87
Completed in 1890—	
Miles of stone pavement.....	20.06
" asphalt pavement.....	13.62
Total.....	
	33.68

The following pavements were laid during the past five years, all kinds :

Miles in 1886.....	8.53
" 1887 (11.67 miles by assessment).....	19.10
" 1888.....	16.54
" 1889.....	10.87
" 1890.....	33.68

Making a total length of pavements in the city, south of Harlem river—	
Miles of stone.....	324.59
" asphalt.....	16.35
" macadam.....	24.24
" other pavements.....	0.03
Total.....	
	365.21

The comparative small amount of work finished in 1889 was due to not obtaining the necessary authority from the Legislature and Common Council in time to complete only a portion of the work contracted for before the close of the paving season.

Surveys have been made of the large number of streets that requires to be repaved. A list of the most important will be submitted to the Common Council and the Board of Estimate and Apportionment for their approval and authorization required by chapter 321, Consolidation Laws, and chapter 346, Laws of 1889.

This list will comprise only pavements that are worn out and unfit for use. The repaving of many of the most important thoroughfares it is advisable to defer until the electric and other subways are first laid, and the street railroads substitute a grooved rail for the objectionable centre-bearing one now used by them.

An examination of the old pavement of the city, shows many to be worn out and unfit for use. Originally intended for the light loads, they are no longer strong enough to bear the heavy loads that now pass over them.

The increase of the weight of loaded vehicles has been rapid and enormous ; a brief review of the efforts of the City to provide suitable pavements to meet the requirements of this increase of traffic may not be out of place.

Until within thirty years most all the streets of the city were paved with cobble-stone, which was the cheapest and answered fairly well for light traffic ; but as business and commerce increased heavier loads had to be carted, which this kind of pavement was not strong enough to bear. But probably the principal causes that hastened their destruction was the laying of pipes for the introduction of Croton water, which was begun in 1842, and shortly afterward for sewers.

So general was this tearing up that no amount of repairs was possible to restore them to a passable condition, and New York, as a consequence, became noted for its poor pavements, which must continue so long as private corporations, receiving their authority from the State and independent of the full supervision of the city authorities, can tear up at will, pavements (even new ones) as soon as laid.

The constantly increasing commerce requiring the transportation of heavy loads made it necessary to replace the cobble by a more substantial and smoother pavement, and one that would allow the increased loads to be handled without much additional labor. Various kinds of pavements were tried, notably the Russ patent pavement, laid on Broadway, south of Fourteenth street, in 1849.

This pavement was the most substantial and durable pavement that could be devised ; formed of blocks of syenite or trap-rock, from eight to twelve inches wide, laid in diagonal courses on a substantial concrete foundation.

Notwithstanding its great cost and durability it was not satisfactory ; it wore extremely smooth, and at last became so slippery from the size of the blocks and close-fitting joints that it had to be removed (about 1869), even after cross channel or grooves had been cut to increase footholds of the horses.

The " Belgian pavement " was first introduced here about the same time as the Russ (first laid in the Bowery, 1852), and immediately became popular, and, for the time being, answered every purpose of a good pavement. It was cheap, durable and easily repaired and cleaned ; it soon entirely replaced the cobble to the great satisfaction of the public. This satisfaction it enjoyed for a short period only, for soon a new engine of destruction was brought to bear, and the street railroad proved to be more destructive than the laying of water-pipes, sewer and gas-pipes, and the fine pavements that cost so much money were almost destroyed in laying the many railroads. By reducing the available traveling surface to the extent of the space occupied by the tracks, the whole vehicle traffic was thrown on the remaining pavement, which added greatly to its wear and hastened its destruction.

As traffic increased even this good pavement was no longer of sufficient durability ; a stronger pavement had to be provided capable of bearing the heaviest loads.

The commercial cities of Europe, London especially, were also experiencing the necessity of providing stronger pavements to meet the increasing needs of heavy traffic.

Large sums of money were being spent in experimenting to obtain the best ; careful observations were made of the different kinds of pavement. London authorities found that the pavement that suited for business streets of heavy traffic was one of granite or syenite (trap) laid on a substantial hydraulic concrete foundation, and that the best form of blocks was three inches in width, from ten to twelve inches in length and a uniform depth of from seven to nine inches. This uniformity in depth was considered as essential to the stability and uniformity of surface ; other cities followed the experience of London excepting slightly varying of the size of blocks.

This pavement was afterwards introduced in this country and laid on Broadway, south of Fourteenth street, by Charles Guidet in 1869, replacing the Russ pavement. It was all that could be desired, and remained good with but few repairs for many years, notwithstanding that it was, almost as soon as laid, extensively torn up, first for the Western Union Telegraph Company's pneumatic subway, new gas, steam and water-pipes, and last for the surface railroad which completed its destruction. This satisfactory trial and the experience of European cities were evidences of the advantages of this pavement, and it would have continued to be laid had not parties claimed the exclusive patent right to lay it in this country. Another reason was its great cost, which was due to the want of skill in quarrymen, who were unused to preparing blocks so near dimension sizes ; but as soon as quarries were worked scientifically and men became skilled in cutting and handling the blocks, this pavement, by omitting the concrete foundation, could be laid as cheaply as any other. Most of the old Belgian pavement on business thoroughfares was replaced by it.

It was soon evident that even this pavement was not strong enough for the still increasing weight of loaded vehicles ; loads of ten tons are common and even forty not uncommon.

Extraordinary repairs were inadequate to keep them passable, notwithstanding cost and the special appropriation for the renewal of pavements authorized by chapter 321, Consolidation Laws, was sufficient to renew only a very small portion of that that was necessary. Better pavements had to be provided, not only for business, but health and comfort of the residents and public. All interests were suffering ; merchants found it difficult to transact business without great loss ; many had moved to neighboring cities, and residents were leaving the city and seeking homes elsewhere.

The necessity for better pavements became so evident that the Legislature, at the earnest appeal of Mayor Grant, authorized the expenditure of three millions of dollars for the laying of new pavements, chapter 346, Laws of 1889.

Immediately on its passage you directed me to investigate the improvements that had been made by other cities, and submit plans and specifications for the new pavements.

A recent personal examination of the pavement of the principal European cities enabled me to submit to you promptly the results of those investigations. London, Paris and Berlin are giving great attention to the improvement of their pavements ; vast sums of money are being spent, sums that would seem to our people wasteful and unnecessary. But the importance of good pavements to their prosperity is recognized by all and are had at any cost, no matter how great.

In selecting a pavement the wants of the public are carefully considered, and pavements best suited for the business, for the comfort and health of the public, is selected.

To within a few years, stone and Macadam pavements were general in cities, but now the health and the comfort of the people must be considered, as well as economy and durability. As a result, wood and asphalt are being extensively laid, especially in London, Paris and Berlin, with the most satisfactory results. But few stone pavements are now laid, but when they are, they are constructed in the most substantial manner. Granite is preferred on account of its wearing less smooth than the syenite and other hard rocks ; great attention is given to the preparation of the foundation, which is either concrete or broken stone or both combined. The blocks are made narrow and give the best foothold for horses, and of uniform depth to give evenness in surface wearing. The best stone pavements in Europe are found in England. London, Liverpool and Manchester have spent vast sums in new pavements, and have to-day the finest stone pavements in Europe.

In each city the pavements are laid on about the same general plan, and all on a substantial hydraulic concrete foundation. The stone blocks are carefully cut to size, and only one-quarter of an inch variation is allowed from the specified dimensions.

The width of the block is generally three inches, but vary in length and depth in the different cities. Granite is preferred to the harder stones ; while it is less durable, it does not wear so slippery.

In Liverpool the stone used is syenite or trap ; the blocks are quite small and so afford a firm foothold for horses, and are comparatively noiseless.

In 1872 Liverpool commenced to pave the whole city on an extensive and comprehensive plan. In order to accomplish the best results, the city found it absolutely necessary to purchase the street railroad tracks, and reconstruct them in connection with the new pavements.

Accordingly, the city purchased some fifty miles of street railroad tracks and reconstructed them in a most substantial manner, and then rented them to the several original car companies at a fixed percentage of ten per cent. of the cost of construction. I will explain briefly the manner of laying this pavement in Liverpool, which can be taken as a fair example of the practice in other European cities for new first-class pavements.

The streets are divided into classes according to the traffic and importance. The greatest care is taken to secure a firm foundation of hydraulic concrete from six to twelve inches thick ; the blocks are small, of the following dimensions—three inches wide, five to seven inches long, and



six or seven inches deep, laid with close joints filled with paving cement (coal tar) and gravel. The blocks are very carefully dressed, and do not vary in width and depth more than one quarter of an inch from the specified size. This uniformity in depth insures a durable, even and comparatively noiseless pavement and capable of sustaining the heaviest loads. The work is done by day labor and is costly to lay, but the cost of maintenance is very small.

## WOOD PAVEMENTS.

The failure of wood pavement in this country has not prevented its use in many European cities. It is extensively laid in London and Paris, and replaced fine stone pavements in many of the principal main thoroughfares that are subject to the heaviest traffic. Its success is due to proper and substantial construction and constant care and maintenance. The wood pavements that were laid in this country were constructed in the cheapest manner and allowed to decay. Public opinion in this country is so averse to the use of this pavement that it will be unnecessary for me to give here a detailed description of the manner of laying it abroad.

## ASPHALT.

Asphalt pavements have met with even greater favor than wood. They were first introduced in Paris in 1854 and in London in 1869, and have constantly grown in favor on account of their economy, comfort and for sanitary reasons. A better knowledge of its properties and skill in laying has made it a most desirable pavement. Until recently it was thought that this pavement could not stand severe frost, but it has met with great success in Berlin where it was first laid in 1880, and has withstood the extreme frost of that climate. It is now about the only pavement being laid in Berlin.

The natural bituminous limestone rocks are had so cheaply in Europe that there is no inducement to produce the artificial asphalt pavements, and these are not laid. I examined critically all particulars of the construction of the asphalt pavements laid down in London, Paris and Berlin.

Only a very few of the bituminous rocks are suited for compressed pavements, and the greatest care has to be used in the selection. The rock must contain the bitumen in the proper proportion or the pavement will fail. The best pavements are those laid with the limestone rock from the Sicilian mines at Ragusa; from the Swiss mines at Val-de-Travers, from the French mines at Seyssel. The pavement is always laid on a foundation of concrete from six to twelve inches in thickness. The thickness of the asphalt is from two to three inches. In all kinds of foreign pavements, whether stone, wood or asphalt, the foundation is considered the pavement proper and is laid in the most thorough manner, and allowed to dry completely before the pavement is laid.

The pavement is prepared in the following manner: The rocks are first broken with stone crushers, afterwards crushed between rollers to a fine powder; it is then heated to the required temperature and then carted to the works in carts constructed for the purpose, where it is evenly spread on the concrete foundation in quantity to give the required thickness, then compressed, which is done by heated iron rammers. To insure success every part of the process and preparation of laying must be most skillfully performed. It is found that this success is best secured by a guarantee of maintenance for a period of years.

The first cost of laying pavements in London, Paris and Berlin on a six-inch concrete foundation averages per square yard: For wood, \$4; for asphalt, \$3.25; for stone, \$3.50; exclusive of the cost of maintenance.

Col. Haywood, Engineer of London, in his report January, 1882, gives the following valuable information as to the maintenance of pavements:

"The contracts for asphalt are for a term of seventeen years. For the first two years the pavements are maintained at cost of contractor, and for the remaining fifteen at the cost of the city at contract prices per square yard, per annum, measured over the whole surface of the pavements for which the contractors are bound to keep the pavements in a good state of repair. At the termination of the contracts the pavements to be left in a good condition to the satisfaction of the Engineer. "The maintenance of wood pavements are on the same condition."

As almost every main thoroughfare in the city has now for years been paved with asphalt or wood, to estimate a comparison of cost of maintenance of granite, wood and asphalt, Mr. Haywood estimates the cost of repairs of certain main thoroughfares which were made when they were paved with granite and just before wood and asphalt were introduced.

The following tables show the cost of maintenance of pavements on the principal thoroughfares:

## Asphalt Pavements.

NAME OF STREETS.	DESCRIPTION OF PAVEMENT.	ANNUAL COST OF MAINTENANCE PER YARD, SUPERFICIAL.
		S. D.
Bishopsgate street, within .....	Val de Travers asphalt .....	1 3
Cheapside and Poultry.....	" .....	1 6
Fenchurch street, between Grace Church and Railway place..	" .....	1 6
Finsbury Pavement and Moorgate .....	" .....	0 9
Grace Church street.....	" .....	1 0
Gresham street .....	" .....	1 3
King William street, narrow portion .....	" .....	1 3
London Wall .....	" .....	0 9
Moorgate street, between Coleman street buildings and London Wall.....	" .....	0 9
Moorgate street, between Lothbury and Telegraph streets....	" .....	1 0
New Broad and Old Broad streets .....	" .....	0 9
Paternoster Row.....	" .....	1 0
Queen street, between Cheapside and Pancras lane .....	" .....	0 9
Queen street, between Pancras lane and Queen Victoria lane..	" .....	1 3
Threadneedle street.....	" .....	1 3
Queen Victoria street, from Mansion House to Cannon street.	" .....	0 6
Aldgate .....	Limmer .....	0 9
Cornhill .....	" .....	0 9
Lombard street .....	" .....	0 9
Mark lane .....	" .....	1 0
Moorgate street, from Telegraph street to Coleman street } buildings.....	" .....	0 9
Newgate street .....	" .....	0 9
Fenchurch street (eastern end).....	Societe francaise des asphaltes	0 9
King street, Cheapside.....	" .....	0 9
Prince street (part of) .....	" .....	1 3
Philpot lane.....	" .....	0 6
Milton street .....	" .....	0 6

## Wood Pavements.

		S. D.
Aldgate High street.....	Improved wood.....	1 0
Bishopsgate street, without.....	" .....	1 0
Barbican.....	" .....	1 0
Holborn .....	" .....	1 0
Jewin street.....	" .....	0 10
King William street and Adelaide place.....	" .....	1 6
New Bridge street.....	" .....	1 0
St. Paul Churchyard, western end.....	" .....	1 3
St. Mary Axe.....	" .....	0 9
Walbrook.....	Mowlem's wood.....	1 9
Wormwood street.....	" .....	1 0

NAME OF STREETS.	DESCRIPTION OF PAVEMENT.	ANNUAL COST OF MAINTENANCE PER YARD, SUPERFICIAL.
		S. D.
Fleet street, west end.....	Henson's wood.....	1 0
Leadenhall street, west end.....	" .....	1 6
Minories.....	" .....	1 6
Fleet street, eastern half .....	Asphaltic wood.....	1 0
Queen street, between Cannon and Upper Thames street.....	" .....	0 10
Cannon street.....	Carey's wood.....	1 6
St. Paul's Churchyard, south and east sides.....	Gabriel's wood.....	0 8

## Granite Pavements.

Cheapside .....	Aberdeen granite, 3 inches } by 9 inches.....	S. D. 0 6 1/4
Poultry .....	Aberdeen granite, 3 inches } by 9 inches.....	0 9 1/2
Old Broad street.....	Aberdeen granite, 3 inches } by 9 inches.....	0 3
Moorgate street.....	Aberdeen granite, 3 inches } by 9 inches.....	0 3 1/4
Lombard street.....	Aberdeen granite, 3 inches } by 9 inches.....	0 3 1/4

It will be seen from this report that the average annual cost of maintaining 16 Val de Travers compressed asphalt was 24 cents per yard; of 7 Limmer asphalt compressed, 19 cents per yard; of 5 syenite Français des asphaltes compressed asphalt (Seyssel Rock), 22 cents; 27 wood pavements, 26 cents per square yard; and of 5 granite blocks, 11 cents per square yard.

The experience of Paris as to the comparative cost of maintenance is about the same as London, but the cost is almost double, 50 cents for wood and 40 cents for asphalt, while in Berlin, for some reason, the cost of maintenance is much less, probably from the pavements being new and of the most approved manufacture.

Ten cents is about the average cost for maintenance per yard per year in Berlin.

The cost of maintenance of Macadam pavements laid in these cities is much greater than any other pavements, being from 25 to 50 cents per yard per annum. This pavement in city streets is generally being taken up and replaced with asphalt or wood. These prices do not include the cost of restoring the pavements when opened for the purpose of laying pipes, subways or other purposes, which expense is borne by the companies or individuals, the work in every case being done by the city's workmen and the expense charged against the companies or individuals. This is the practice even when extensive subways and like works are done by private companies.

To avoid the tearing up of pavements, tunnels or subways are being built in many of the principal streets of London, and the great main sewers (subways) of Paris utilized for the accommodation of water, gas, electric and all other conduits; these subways prove a great help in preserving the pavements, and their cost is soon repaid by the saving in cost of maintenance, besides the advantage of always having good pavements.

This proper restoring of the pavements when opened for any purpose is deemed a vital necessity, and the most rigid laws and rules must be everywhere observed. Good pavements cannot be had without such rules. The excellent pavements of Europe are due to the manner this work is performed; the result is, that pavements are seldom taken up, and when it is necessary to do so they are properly restored. The same stringent rules apply to the street railroads, the manner of laying which is vastly superior to the practice in American cities. The grooved rail is universally adopted, laid on substantial metal stringers and sleepers, resting on a concrete foundation; wood is not allowed in the construction.

Liverpool has some fifty miles of such railroad tracks, which are owned by the city and rented to the several companies. With tracks constructed in this way few repairs are required either to track structure or the pavements adjoining.

In all cities street car tracks are considered part of the pavement of the street, and as they are constructed offer no obstruction to travel; vehicles pass over them without hindrance or danger.

A good pavement is the first consideration, and street railroads are constructed with this always in view.

The grooved rail is always used, even in Berlin and the more northern cities of Europe, where frosts and snows are as severe as in New York.

Every means is taken to preserve the pavements, even to the shoeing of the horses. It is the common practice and law that shoes shall be smooth; toe and cork are nowhere allowed. This is a very ancient custom, and originated in the necessity of preventing injury to roads and pavements that follows the use of sharp toes and corks. The difficulty and cost of maintaining pavements in this country is due, in a measure, to our way of shoeing, and the uneven wear of pavements is due as much from the striking of the horse shoe as from the wheels, and where the horse is shod with toes and corks the stone blocks are worn round and uneven and the Macadam picked to pieces.

Careful observations have been made during a long period to determine the relative slipperiness of the different pavements.

In London it is found that a horse will travel before falling; on granite, 132 miles; on asphalt, 191 miles; on wood, 330 miles.

The experience of Paris I was not able to ascertain by figures, but the French engineers give a decided preference to asphalt, claiming that when clean it is the least slippery and falls are less frequent. The Berlin engineers also favor the asphalt. All engineers agree that the wood is the slipperiest in frosty weather.

It is found that accidents are becoming less frequent, as horses grow more used to this pavement; drivers, too, are more careful.

The practice everywhere is to sand the asphalt and wood in certain conditions of weather, but very sparingly.

As to the comparative merits of pavements, European authorities agree that for economy, cleanliness, comfort and sanitary reasons the asphalt surpasses all others, wood comes next; while noiseless, it is expensive to maintain and more difficult to clean.

Stone is always preferred when a substantial pavement is needed for extra heavy traffic and when comfort is not sought. Very few stone pavements are now laid, even in the business thoroughfares, of London and Paris.

The use of asphalt is daily extending, especially in Berlin. The fact that the German engineers have adopted it, who are critical and able, is proof of its superiority. I would also refer to Colonel Haywood's late report (1888) on the advisability of continuing its use in London after the expiration of the seventeen years' guarantees which are about to expire (1888), in which he says:

"In 1869 an experimental piece of compressed asphalt pavement, having an area of about 400 yards, was laid by and at the expense of the Val de Travers Company in the carriageway of Threadneedle street near to Finch lane. That pavement, which has of course had many repairs done to it since it was first laid, still remains and is in good condition. Soon afterwards the cleanliness, the absence of noise, and the comfort felt by the community generally from the asphalt pavement enlisted the favorable opinion of the public; but certainly also has the strong objections of the drivers of vehicles on account of its slipperiness. The qualities of the pavement were then carefully watched by myself, for very largely the responsibility of its having been laid rested on me.

"Having made a careful study of the asphalt pavements at Paris and elsewhere, and thinking that the value of the material as a pavement could not be too soon tested and tested in the fullest possible manner, I advised that Cheapside and the Poultry should be paved with the Val de Travers compressed asphalt, which was accordingly done at the latter end of the year 1870. In 1879, the Poultry having been widened, it involved relaying the carriageway anew with asphalt, but on the entire length of Cheapside the existing pavement is that which was laid in 1870, or seventeen years ago. It has of course since then been extensively repaired, but nevertheless the carriageway has never once been stopped for a general relay of the surface for seventeen years. It is this year entirely to be repaved with asphalt.

"After Cheapside, many other streets in the city were paved with compressed asphalt, but the objections raised to it on account of the alleged slipperiness were very great. Nevertheless, noiseless pavements began to be largely demanded in the principal streets of the city, and wood pavements, which were not so much open to the objection of slipperiness, again began to be laid. For some years it was a struggle between wood and asphalt, as to which should become the permanent substitute for granite pavement, with which material nearly the whole of the public ways of the city were laid up to the year 1871, when the Commission gradually began to extend the asphalt pavements.

"Experimental pieces of asphalt were laid afterwards in other parts of the metropolis, and the pavement became the subject of many reports by myself, one of which dealt generally with the question of the relative advantages of asphalt and granite, and was reported to the Commission on the 24th July, 1871.

"Great complaints being still made of the slipperiness of asphalt, and doubts having arisen as to whether the complaints were fully justified, the Commissioners, in 1873, referred it to me to have observations taken of the accidents upon asphalt, wood and granite pavements, respectively. It was a matter which occupied me for many months and resulted in my report upon the accidents



to horses on carriageway pavements, which was presented to the Commission of 16th December, 1873.

"Since that time the granite in nearly the whole of the main thoroughfares of the city has been replaced by either asphalt or wood, but mainly by asphalt, which has also replaced the granite in a large number of the minor streets."

In selecting the kind of pavement suited to the different streets I have been governed by the expensive practice in European cities and in this country. In Washington the United States Government has given the subject of asphalt pavement careful study. Expensive experiments have been made of the different kinds of asphalt pavement and accurate records of their relative durability kept. The pavement that has given the best satisfaction is one made of a mixture of Trinidad asphalt, sand and lime-stone, laid on a hydraulic concrete base, known as the standard asphalt pavement.

After a thorough examination of the asphalt pavements in Washington and Buffalo and other cities, and its favorable comparison with the foreign pavement that has been laid in this country, I recommended its use in this city in competition with the foreign natural rock asphalt pavements. It is, in my judgment, less slippery than the rock asphalt. The experience with the patent coal-tar pavements has not been satisfactory and have not warranted their use. For residential streets and streets in the vicinity of hospitals and public buildings and pleasure drives asphalt was selected on account of its economy and the comfort of a noiseless pavement.

For business thoroughfares and streets subject to heavy traffic granite was selected, laid on a concrete foundation and having the joints filled with coal-tar and gravel.

The best practice is to lay asphalt pavements on a hydraulic concrete foundation, but in many streets proposed to be paved with asphalt, the old pavement, although much worn and sunken, was found to be solid and firm, and with proper preparation would make a suitable foundation for the pavement; and as contractors were willing to guarantee the pavement for the same long period as on concrete, it was decided to omit the expensive concrete and use the old pavement for the foundation, a saving of one-quarter the cost.

Accordingly where the old pavement was firm most of the cross-town residential streets have been paved in this manner, and have worn equally as satisfactory as streets with the concrete foundation.

Asphalt pavement requires the greatest skill and care in preparation, not only in the laying, but in the selection of the best materials.

Contractors, when they are required to give a long guarantee for maintenance, find it to their advantage to use only suitable materials and skilled labor, and do the best possible work.

On account of our contract laws, the manner of securing this guarantee differs from the practice in Europe, which is to require of the contractor, guarantee for seventeen years, the contractor being paid a fixed price per yard, per year (except the first two years, which are without charge), measured over the whole surface of the street.

The plan adopted by you meets all legal questions, and practically accomplishes all that the European plan does; the contractor guaranteeing the maintenance for fifteen years, thirty per cent. of the contract price is retained on the completion of the work for this purpose, payments being made as follows: the first five years without charge and three per cent. each of the following ten years. The new specifications for the different pavements have been made full and comprehensive with the view of securing the best possible work.

The asphalt pavements may be any one of the foreign rock asphalts or standard asphalt; the specifications are made to provide for the use of either kind, and in every way permit a liberal and full competition.

The competition is now so close that the price of laying the pavements has been lessened very considerably and without detriment to the quality of the work. With granite pavements the competition has been even closer than with the asphalt, and has compelled quarry owners to introduce improved machinery and skill; by this means the cost of granite pavements has been reduced, notwithstanding that freights have been very high, and the prospects for the coming years are that the paving blocks will be furnished at lower prices and the cost of the pavement lessened.

The following shows the comparison of the contract prices for granite and asphalt pavement on concrete foundations for 1888 and 1890 (asphalt for five years' guarantee): granite, 1888, \$4.50; 1890, \$3.65; asphalt, 1888, \$3.75; 1890, \$3.10.

These prices compare favorably with the cost of European pavements, without taking into consideration the increased cost of labor and materials in this city.

A great number of patent pavements and new combination of materials (asphalt) are offered for use and the City urged to make trials and experiments with them. Most of these had been tried elsewhere and proved of doubtful utility and were again offered under new names, and some were as yet untried, and your decision to allow none of them to be laid or tried at public expense must prove of great advantage in securing the pavements of known value.

The trial of a new pavement, to be of practical use, must be made on a large scale and on streets of heavy traffic; as such are in constant use, the laying down of a pavement for trial seriously interferes with private business, and if the patentee is required to remove it, misunderstandings have always followed and the City finally put to the expense of restoring the old pavement.

Samples of compressed asphalt block pavement has been laid in this city at owner's expense, and had not proved in every way satisfactory.

It was decided not advisable to lay any of this pavement under the repavement laws, notwithstanding it has recently been laid in Washington and Baltimore in large quantities and given good satisfaction, and also the willingness of contractors to guarantee its maintenance or equal wearing with sheet asphalt pavements for five years.

Subsequently, on a petition of the owners of property, the Common Council authorized Eighty-seventh street to be paved with it; the work has been finished and was done in the best possible manner; the blocks were of improved manufacture. A guarantee for maintenance for a period of five years was required of the contractors.

The pavements of streets adjoining the water-front have been for many years in very bad order owing to the failure of owners of water or land grants to keep their obligations to pave and maintain the same. To remedy this a law was passed, chapter 449, Laws 1889, authorizing the City to lay new pavements and assess the cost on the property granted. Most of the grants are very ancient and indefinite, and much difficulty has been experienced in locating them and fixing the obligations; it is more than probable that the City will be required to pay a very large share of the cost of repaving these streets—much larger than has been estimated. In view of the importance of this work and the uncertainty as to the proportion of expense to be borne by the City, it would be advisable to determine the extent of new pavement and the obligation of each grantee, that the necessary funds may be provided by the City for doing its share of the work.

The information that Assistant Engineer Webster has obtained from the official records in the past several years would be of great assistance in determining these obligations.

I would suggest that a map be made showing the location of each grant and the conditions.

The subways in London are in the centre of the carriageways, constructed of brick, 12 to 15 feet wide, and 7.6 high; through the subway is a footpath, sometimes with rail tracks for hand cars for the carrying of pipes and materials; brackets and other fixtures are placed to accommodate water and gas pipes, electric wires for light, telegraph, telephone and other conduits; beneath the subway is located the sewer and house drains extending to the houses. Access is had by manholes located at the side of the carriageway, some of which are sufficiently large for the taking in of pipes and other materials. The ventilation is had through these manholes.

The Paris subways are much larger and differ in having an uncovered channel for storm water at the bottom; these sewers are not for use in carrying off sewage, but only storm water and street washings, and consequently are not foul. House drainage is still almost generally into vaults and privies which are emptied by scavengers in the old-fashioned way.

The proposition to lay subway tunnels on both sides of the carriageway of Broadway would be both difficult and expensive on account of the intricate network of pipes, conduits and vaults that will be met with. The expense would be almost prohibitory, which the advantages would not warrant.

The use of wood in underground structures of street railroads, subways, manhole frames and stop-cocks of gas, water and steam should be prohibited by law. The wood rapidly decays or is crushed and destroyed under the heavy loaded vehicles, requiring frequent renewing, which necessitates the taking up of the pavements. In Fifth avenue the new pavement has been already taken up in several places for that purpose.

The wood stringers of the rail tracks in street, recently paved were found unfit for further use, being very much decayed and crushed; this was especially so in the older roads. The companies, in their own interest, renewed some of the worst, but retaining the greater portion, which soon will have to be renewed, which is sure to injure the pavements adjoining. The City has no authority over the companies in this matter.

Metal should be substituted for wood in all structures underlying pavements, which would be an economy to both city and company, and would insure good pavements.

The gas companies who have been required by you to replace all wooden stop-cock boxes with iron ones, and the few railroads who could be required to lay the metal stringer and improved rail, already appreciate the advantages of the change and will continue such improvements over all their works and tracks.

STEVENSON TOWLE, Consulting Engineer.

## Document "G."

### REPORT OF ENGINEER IN CHARGE OF SEWERS.

DEPARTMENT OF PUBLIC WORKS,  
OFFICE OF ENGINEER IN CHARGE OF SEWERS,  
No. 31 CHAMBERS STREET, ROOM 9,  
NEW YORK, January 5, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

DEAR SIR—In compliance with your instructions, I hand you herewith my report of the transactions of this office for the quarter ending December 31, 1890:

6,927 linear feet of new sewers and 7 receiving-basins connected therewith have been built, making the present total length of the sewerage of the city 2,312,078 linear feet (437<sup>59</sup>/<sub>100</sub> miles), with 5,248 receiving-basins, which number includes 9 receiving-basins built under special contract, as hereafter stated.

21 sewer and 9 basin contracts have been completed, viz.:

Sewer in One Hundred and Forty-fifth street, east side, between Eighth and Bradhurst avenues.

Sewer in Madison avenue, between One Hundred and Thirty-first and One Hundred and Thirty-second streets.

Sewer in Madison avenue, between One Hundred and Twenty-ninth and One Hundred and Thirtieth streets.

Sewer, etc., One Hundred and Twenty-eighth and One Hundred and Twenty-ninth streets.

Sewer in Madison avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-seventh streets.

Sewer in Madison avenue, between One Hundred and Sixteenth and One Hundred and Seventeenth streets.

Sewer in Madison avenue, between One Hundred and Seventh and One Hundred and Ninth streets.

Sewer in Madison avenue, between One Hundred and Fifth and One Hundred and Seventh streets.

Sewer in Second avenue, between First and Houston streets.

Sewer in Seventh avenue, west side, between One Hundred and Forty-first and One Hundred and Forty-second streets, etc.

Sewer in Thirteenth avenue, between Little West Twelfth and Thirteenth streets, etc.

Sewer in One Hundred and Fifty-third street, between Eighth and Bradhurst avenues.

Sewer in One Hundred and Twenty-sixth street, between Tenth avenue and Boulevard.

Sewer in One Hundred and Third street, between Boulevard and West End avenue.

Alteration and improvement to sewer in Boulevard, south side, at One Hundred and Twenty-ninth street.

Extension of sewer in Seventy-eighth street, between Boulevard and Amsterdam avenue.

Extension of sewer in Eighty-ninth street, between Boulevard and Tenth avenue.

Repairs to sewer in One Hundred and Fourth street, between Third and Lexington avenues.

Repairs to sewer in John street, between, South and Pearl streets.

Repairs to sewer in Avenue St. Nicholas, west side, between One Hundred and Forty-ninth and One Hundred and Fiftieth streets.

Repairs to sewer in Stanton street, between Sheriff and Suffolk streets.

Receiving-basins, southeast and southwest corners of Ninety-sixth street and Columbus avenue.

Receiving-basin, northeast corner of One Hundred and Fiftieth street and St. Nicholas avenue.

Receiving-basin, southwest corner of One Hundred and Twenty-third street and St. Nicholas avenue.

Receiving-basin, southwest corner of One Hundred and Third street and Park avenue.

Receiving-basin, southwest corner of Ninety-sixth street and Eighth avenue.

Receiving-basin, northwest corner of One Hundred and Twenty-fourth street and Fifth avenue.

Receiving-basin, northwest corner of One Hundred and Thirty-second street and Amsterdam avenue.

Receiving-basin, south side of One Hundred and Twenty-fourth street, opposite Fifth avenue.

There are now in progress 33 contracts for new sewers and 4 contracts for repairs to sewers.

1,129 receiving-basins and 45,356 linear feet of sewer have been cleaned.

Yours, respectfully,

HORACE LOOMIS, Engineer in Charge of Sewers.

### REPORT OF THE TRANSACTIONS OF THE OFFICE OF THE ENGINEER IN CHARGE OF SEWERS FOR THE QUARTER ENDING DECEMBER 31, 1890.

Credit to General Fund—	
Amount received for 250 permits for sewer connections.....	\$6,235 28
Engineers' Fees—	
Amount of Engineers' fees assessed on property benefited, and charged to Street Improvement Fund.....	\$3,366 43
Sewers—Repairing and Cleaning—	
Balance on hand, September 30, 1890.....	\$62,037 37
Vouchers transmitted to the Commissioner of Public Works—	
Pay-roll of Laborers, etc.....	\$21,465 62
Repairing and Cleaning (under \$1,000).....	6,319 63
Materials and sundries.....	3,070 59
On contracts.....	8,567 90
Balance on hand, December 31, 1890.....	22,613 63
	62,037 37
Sewers—Repairing and Cleaning for 1889—	
Balance on hand, September 30, 1890.....	\$2,402 23
Vouchers transmitted to the Commissioner of Public Works—	
On contracts.....	\$284 84
Balance on hand, December 31, 1890.....	2,117 39
	2,402 23
Sewers—Repairing and Cleaning—Salaries—	
Balance on hand September 30, 1890.....	\$2,550 06
Vouchers transmitted to the Commissioner of Public Works—	
Pay-roll of Inspectors, etc.....	\$2,529 98
Balance on hand, December 31, 1890.....	20 08
	2,550 06
Sewerage System—Salaries—	
Balance on hand, September 30, 1890.....	\$2,667 15
Vouchers transmitted to the Commissioner of Public Works—	
Pay-roll of Engineers, etc.....	\$2,137 50
Balance on hand, December 31, 1890.....	529 65
	2,667 15
Boring Examinations for Grading and Sewer Contracts—	
Balance on hand, September 30, 1890.....	\$399 95
Vouchers transmitted to the Commissioner of Public Works—	
Pay-roll of Axeman, etc.....	\$396 00
Balance on hand, December 31, 1890.....	3 95
	399 95
Restoring and Repaving—Special Fund—	
Amount received for permits for street openings.....	\$5,006 50
Street Improvement Fund—	
Vouchers transmitted to the Commissioner of Public Works—	
Pay-roll of Engineers, etc.....	\$18,217 04
On contracts for sewers, etc.....	98,837 75
	\$117,054 79
Work done by Mechanics and Laborers—	
193 receiving-basins relieved.	
1,129 receiving-basins and culverts cleaned.	
11,935 lineal feet of sewer cleaned.	
162,619 lineal feet of sewer examined.	
1,275 lineal feet of sewer relieved.	
97 lineal feet of brick sewer rebuilt.	
6 lineal feet of brick culvert rebuilt.	
18 lineal feet of new pipe sewer built.	
15 lineal feet of new culvert pipe built.	
33 lineal feet of spur pipe laid.	
14 lineal feet of curb reset.	



## Work done by Mechanics and Laborers—

- 17 lineal feet of new curb set.
- 441 manhole heads reset.
- 19 basin heads reset.
- 1 new manhole built.
- 2 manholes repaired.
- 14 basins repaired.
- 48 new manhole heads and covers put on.
- 3 new basin heads and covers put on.
- 31 new manhole covers put on.
- 12 new basin covers put on.
- 1,746 cubic feet of brick work built.
- 186 square feet of flagging relaid.
- 334 square yards of pavement relaid.
- 37,951 cubic feet of earth excavated and refilled.
- 3,765 cart-loads of dirt removed.
- 94 cart-loads of earth filling.

DEPARTMENT OF PUBLIC WORKS,  
OFFICE OF ENGINEER IN CHARGE OF SEWERS,  
NEW YORK, January 7, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works :

DEAR SIR—In accordance with your instructions I present the following report of the operations of this office during the year 1890, giving a detailed statement of the work accomplished in extending the sewerage system by the addition thereto of new sewers, together with alteration and improvements to the existing system, and the maintenance thereof.

These data have been tabulated and appear properly classified in various schedules attached to this report.

There have been completed during the year 21,970 feet of new sewers, of which 13,920 feet are brick and 8,050 feet pipe, and 39 receiving-basins (costing, exclusive of work done under permit, about \$237,065.75), making 2,312,078 feet, equal to 437.89 miles as the present length of sewers in the city south of Harlem river, together with 5,248 receiving-basins.

There are about 1 $\frac{1}{10}$  miles of sewers very near completion which ought to be credited to the work of this year, but various unavoidable delays have put off that event for a few weeks. This would make the mileage fully equal to that of last year.

Aside from the water-front improvement, which at your suggestion will be described fully in another part of this report, the majority of the new work has been constructed on the west side so-called, that is, west of Eighth avenue and north of Fifty-ninth street. This region being largely occupied by residences continues to increase in population with great rapidity, and therefore it is necessary that the drainage system should be in advance of other improvements.

North of One Hundred and Fifty-fifth street several very important works have been prosecuted during the year, and among them I might mention Eleventh avenue, between One Hundred and Sixty-first and One Hundred and Sixty-fifth streets, and in One Hundred and Sixty-fifth street and Kingsbridge road, and sewer in Tenth avenue, between One Hundred and Seventy-eighth and One Hundred and Ninetieth streets (nearly completed).

These are trunk sewers, and will ultimately receive the drainage of a very large area, opening up for other improvements as much of that portion of the island as is now favored with means of rapid communication with the business portion of the city.

I regret to say that the outlet sewer at One Hundred and Sixty-seventh street has not yet been commenced owing to a failure to obtain title to the land required therefor. At one time it appeared that the legal proceedings in this case were very near completion, but unforeseen difficulties seem to have arisen, and the matter is still about in the same position as it was last year, except that all maps and plans needed in the proceedings have been finished for a long time.

The cause for delay at present appears to be some imperfection in the law which may require legislation to remedy. This improvement cannot be delayed beyond the coming season without great danger to the public health, and I trust that all obstacles to commencing this most important work will be speedily removed.

Other important works completed during the season are the following :

Sewer in One Hundred and Forty-second street, between Eighth and Edgecombe avenues.

Sewer in Seventy-third street, between East river and avenue A.

Outlet sewer through Pier 4, North river, etc.

Sewer in Sixty-fifth street, between Avenue A and First avenue.

Extension of sewer outlet at Eleventh street, East river.

The sewerage of Madison avenue has been completed, with the exception of the block between One Hundred and Thirty-fourth and One Hundred and Thirty-fifth streets, work on which is now in progress.

Contracts have also been let which will substantially complete the sewerage of Tenth avenue, as far as One Hundred and Ninetieth street.

The work of altering and improving the existing sewers has progressed during the season as far as the appropriation would permit.

Two important works have been postponed until next year on that account, viz. :

Sewers in Gansevoort street, between Hudson river and West street, and in Thirteenth avenue, between Gansevoort and Bloomfield streets, and in Bloomfield street, between Thirteenth avenue and West street ; and

Sewer in Horatio street, between Hudson river and West street.

I hope to be able to complete these next season.

There have been 2,301 feet of sewer repaired with tile bottom, and 2,608 feet of sewer rebuilt, which includes several important repairs to outlet sewers.

Among these, as most useful, I might mention the following : Forty-eighth street, at Hudson river, Fifty-seventh street at East river, and Corlears street at East river.

A considerable amount of work of repair has been commenced during the year and is still in progress, which will be finished within a few weeks and will materially add to the above.

It appears from an examination of Schedule "B" there are now 6 $\frac{8}{10}$  miles of sewers under construction. Several of these are very near completion, and, as before stated, except for the proper classification of data, might have been credited to the present year in order to show the amount of work actually performed during that period.

The most important of these are :

Sewer in Tenth avenue, between One Hundred and Seventy-eighth and One Hundred and Ninetieth streets, etc.

Sewer in West street, between Jay and Desbrosses streets, etc.

Sewer in West street, between Carlisle and Dey streets, etc.

Sewer in West street, between Dey and Murray streets, etc.

Sewer in South street, between Roosevelt street and Pike Slip, etc.

Sewer in South street, between Broad and Whitehall streets, etc.

Alteration and improvement to sewer in Fourth (Park) avenue, west side, between Seventy-first and Seventy-third streets, etc.

Eighth avenue, west side, between One Hundred and Twenty-fourth and One Hundred and Thirty-seventh streets, etc., and Fifty-fifth street, between Eighth and Ninth avenues.

But those of the greatest benefit to the sanitary condition of the city are the marginal and outfall sewers constructed or in progress along West and South streets in the lower part of the city.

For many years past all the buildings on these streets have discharged their drainage at the bulkhead-line, and most of the sewers from streets leading to the Hudson and East rivers have emptied their contents at the same point.

The nuisance thereby created was made the subject of an examination and report by the Board of Health. The facts as set forth in this report have been known to this Department for a long time, but the condition of the piers and bulkheads have been such as to prevent substantial improvement until the past two years.

During that period great activity has prevailed in the matter of building a bulkhead-wall on new lines, and in extending, rebuilding and increasing the number of piers. This condition of affairs has enabled this Department to build and contract for intercepting and outfall sewers covering the whole of West street, from the Battery to Canal street, and a good portion of South street, from South Ferry to Market Slip.

The history and present condition of these water-front improvements, given in some detail, appears below.

On West street, between Battery place and West Eleventh street, the greater portion of the distance is sewer, and outlets provided, and the remaining portion is now under contract. The portion completed is as follows :

First—Between Battery place and Rector street with outlet through Pier 4 at Morris street ; there were originally two outlets, one at Battery place, and one at Morris street. The one at Battery place was abandoned, and a new outlet built and carried out to the end of pier as above.

The area drained is about 15 acres.

Second—Between Rector and Carlisle streets, with outlet through Pier 8 at Rector street. The outlet originally emptied at the bulkhead near Rector street ; it was abandoned and carried out under and to the end of the pier.

The area drained is about 20 acres.

Third—Between Murray and Jay streets, with outlet through Pier 21 at Duane street. A sewer has been built, on the line of which there were originally five separate outlets emptying at the bulkhead line, which were all abandoned and one outlet provided as above.

The area drained is about 73 acres.

Fourth—Between Canal and West Eleventh streets, with outlet through Pier 40 at Clarkson street. A sewer was built some years ago, on the line of which there were originally thirteen separate outlets emptying at the bulkhead line, which were all abandoned, and the outlet provided as above.

The area drained is about 450 acres.

The portion under contract on West street, but not completed, is as follows :

First—Between Carlisle and Dey streets, etc., the outlet for which will be through Pier 13, between Cedar and Albany streets. The work has progressed as follows :

The estimated quantity of sewer to be built is 2,306 linear feet, out of which 1,200 linear feet of brick sewer, and 500 linear feet of wooden barrel sewer is completed, making a total of 1,700 feet or about three quarters of the whole. This work should be completed in the early spring.

There are four outlets at the present time which are to be abandoned and taken into the new outlet.

The area drained is about 26 acres.

Second—Between Dey and Murray streets, etc., with outlet connecting with sewer to be built by the Department of Docks under Pier, new 14, near Vesey street. The work has progressed as follows :

The estimated quantity of sewer to be built is 2,237 linear feet ; 1,100 linear feet or about one-half of the sewer, is completed ; this work should be entirely completed next season. There are five outlets which will be abandoned and taken through the new outlet.

The area drained is about 54 acres.

Third—Between Jay and Desbrosses streets, with outlet through Pier 39 at Vestry street, and between Canal and Desbrosses streets, with outlet in Canal street sewer.

The work has progressed as follows :

The estimated quantity of sewer to be built under this contract is about 3,037 linear feet ; the sewer is all completed except about 200 feet at the outlet which is being proceeded with as the tides and weather will permit.

This sewer does away with eight separate outlets.

The area drained is about 45 acres.

With reference to the water-front on South street, between Whitehall and Montgomery streets, I will state that a sewer has been built and completed, between Roosevelt and Fulton streets, with outlet through Pier, old 29, at Roosevelt street.

There were originally three outlets on the line of this sewer which have been abandoned, and the outlet carried to the end of the pier as above.

The area drained is about 148 acres.

The portion for which sewers are now under contract but not completed is as follows :

First—Between Roosevelt street and Pike Slip, etc., with outlet through Pier, new 23, at Market Slip.

About one half of this sewer is completed ; the balance should be finished in the early spring.

There were originally five outlets which emptied directly at the bulkhead line ; these will be abandoned and all carried to the outlet which is built through to the end of the pier.

The area drained is about 56 acres.

Second—Between Broad and Whitehall streets, etc., connecting for the present with the Broad street sewer.

Under this contract the old sewer now emptying under the South Ferry building is done away with, and carried to the Broad street sewer. A sewer is also built under this contract in Moore street (which had no public sewer). About two-thirds of these sewers are completed.

The area drained is about 19 acres.

Surveys are now being made and plans will be prepared during the winter months, so that the work can be put under contract in the Spring for sewerage the remaining portion of South street.

The sewage of the city is discharged at present into the adjacent waters of the North and East rivers through 161 outlets, of which 93 are on the East river and 68 on the North river.

South of Fourteenth street, where the complaint of foul water along the water-front has been the greatest, there were 61 outlets. These have been reduced by the works carried on during the past few years, and will be reduced by works to be put under contract next season from 61 to 23, all of which will reach deep water.

North of Fourteenth street the outfall sewers are located under more favorable conditions, and never have been considered a nuisance to the extent that the others have, but the work of extending to deep water will go on as fast as piers are built to receive them.

Below will be found a statement of the work in preparation for the coming season :

Sewer in South street, between Broad and Fulton streets.

Sewer in South street, between Pike Slip and Montgomery street.

Alteration and improvement to sewer in Mercer street, between Canal and Grand streets.

Alteration and improvement to sewers in Sullivan street, between Canal and Broome streets ; in Broome street, between Sullivan and Thompson streets, and in Thompson street, between Broome and Spring streets.

Alteration and improvement to sewer in South Fifth avenue, between Canal and Broome streets, with overflow at junction with sewer in Broome street, and connecting with existing sewer in Grand street.

Extension of sewer in Sixty-third street, between Ninth and Tenth avenues.

Sewer in St. Nicholas avenue, west side, between One Hundred and Forty-eighth and One Hundred and Forty-ninth streets, etc.

Sewer in First avenue, between Ninetieth and Ninety-first streets.

Sewer in Seventy-second street, extending about 615 east of Avenue A.

Sewer in One Hundred and First street, between Park and Madison avenues.

Sewer in One Hundred and Second street, between Park and Madison avenues.

Sewer in One Hundred and Forty-eighth street, between St. Nicholas and Amsterdam avenues. Outfall sewer for Sewerage District No. 25 through One Hundred and Sixty-seventh street and acquired lands to Harlem river.

#### Brick Rebuilt.

Horatio street, between North river and West street.

Gansevoort street, between North river and West street, and in Thirteenth avenue, between Gansevoort and Bloomfield streets, and in Bloomfield street, between Thirteenth avenue and West street.

Ninety-fifth street, between First and Third avenues.

#### Brick Repair.

Water-street, from Fletcher street to Burling slip.

Walker street, from Church to West Broadway.

Duane street, between Broadway and Hudson river.

Fourteenth street, between Avenue B and Avenue C.

Sixteenth street, at Avenue C.

Thirteenth street, between Third and Fourth avenues.

Fifteenth street, between First and Second avenues.

Sixth street, between Avenue B and Avenue D.

Avenue C, between Eighth and Ninth streets.

Mulberry street, between Hester and Grand streets.

Second avenue, between Twentieth and Twenty-first streets.

Twentieth street, between First avenue and Avenue A.

Seventy-first street, between Third and Fourth avenues.

Fifth avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-sixth street.

One Hundred and Twenty-second street, between Third avenue and East river.

Thirty-sixth street, between Eighth and Ninth avenues.

Seventeenth street, between Eleventh avenue and outlet.

Lispenard street, between West Broadway and Broadway.

#### Repair with Tile Bottom.

Tenth street, between Avenues A and C.

Ninety-seventh street, between Second and Third avenues.

Second street, between First avenue and Avenue A.

Lispenard street, between West Broadway and Broadway.

Twentieth street, between First avenue and Avenue A.

Seventy-first street, between Third and Fourth avenues.

Fifth avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-sixth streets.

#### Repairs to Pipe Sewers.

Eighty-first street, between Eighth and Ninth avenues.

Eighth avenue, between Sixty-second and Sixty-sixth streets.

Sixty-fifth street, between Eighth and Ninth avenues.

In this connection I will remark that there are about fifty miles of streets in which sewers have not yet been built, seven of which are below Fifty-ninth street.

It is only a question of a year or two when these will be required to accommodate the growth of population and business.

In view of the fact that of all underground works the sewers require the deepest excavation, and take up the most space while under construction, they should properly be built in advance of other improvements.



I would therefore recommend that, beginning with localities where they are likely to be called for first, all streets opened according to law be sewered.

The sewer system is now clean and has operated with marked success during the entire year.

There have been no cases of stoppage by reason of accumulation of dirt in brick sewers.

The practice of examination heretofore adopted has been kept up, and in all cases where deposits to any considerable amount were found, orders were at once given to the contractors to remove the same.

These examinations have covered the entire city, and were conducted systematically, beginning with each outfall sewer and tracing it up to the end of all its branches.

As the work of cleaning followed the same plan, no obstruction is left in the lower portion of any system to prevent the free discharge from the upper part. In this way there have been cleaned by the contractors 240,850 feet of brick sewer, at a cost of \$36,729.62. By the forces of this Department there have been cleaned 64,652 feet of pipe sewer, costing about five cents per foot. The average cost of all cleaning is thirteen cents per foot. With the sewers in their present condition of cleanliness, and with a proper attention to the large outfall sewers, the cost of this kind of work for the coming year should be small. If the outlets are kept clean the rest will care for itself to a great extent. The work of small repairs such as resetting manhole-heads and basin-heads, relaying portions of pipe sewers and cleaning the same, and cleaning the corner catch-basins has been performed by a force of 51 Laborers, 6 Mechanics, 14 Foremen, 24 Horses and Carts, and 5 Inspectors. The amount appropriated for this purpose was \$160,000, and was expended as follows:

Pay-roll of Laborers, etc.	\$78,979 73
Materials, etc.	9,457 35
Work done under contract	8,567 90
Work done under orders	40,381 39
Liabilities outstanding, estimated	22,583 52
Leaving a balance of	30 11

Of this force two mason gangs have been employed constantly during the season in resetting to proper grades the manhole-heads required by the large amount of new pavement that has been laid. This work has been done as needed by the contractors for paving, and the time lost in going from one part of the city to the other to set a few heads here and there has caused the expense to be out of proportion to the value of the work.

As a measure of economy, both in time and money, I should recommend that in future the paving contractors be required to do this work, the same to be inspected by a foreman detailed from this office. The cost in each case would not be large enough to raise the price of paving, and it would be a great convenience to all concerned.

If the sewer system were only put to legitimate use the difficulties in keeping it in perfect order could be met with comparative ease, but the great variety of materials and articles found in sewers by the persons engaged in examinations and cleaning, and which have caused the Department trouble and expense in removing, is astonishing, and would hardly be believed if it could not be verified by positive evidence.

It is a common occurrence to find rags, sticks, old boots and shoes, paving stones and bricks, and a few days since a plank 12 feet x 10 inches x 2 inches was found in a 12-inch pipe sewer which must have been there a long time.

But the greatest nuisance, fraught with the greatest danger to the public health and safety, is the presence in sewers of steam, and water hot enough to vaporize, discharged from boilers and from leaks in the mains of the New York Steam Company.

There are in use in this city over 6,000 steam boilers located in the basements or sub-cellars of buildings. Being of the high pressure, non-condensing pattern, the exhaust steam must be provided for in some way. Properly cared for, it should be condensed by passing through cooling tanks and then allowed to flow into the sewer, but it seems to be a much easier way to blow off direct into the sewer.

The effect of this is to raise the temperature in the sewer to a very high degree and to fill it with hot and noxious vapors; this causes rapid fermentation and decomposition of the sewage matter, and this fetid gaseous compound is borne into the open air through the perforations in the man-hole covers. Should these gases be confined in the sewer by tight covers the pressure would be sufficient to force traps in neighboring buildings, thus endangering the health of the inmates. With a temperature of over 200 degrees Fahrenheit, to enter these sewers for the purpose of cleaning or repairs without endangering the lives of the men is impossible.

Although the practice of thus disposing of waste steam is prohibited by ordinance under a penalty of \$50 for each violation, the difficulty of obtaining evidence sufficient to convict is so great that the penalty has heretofore been collected in very few cases. At present a determined effort is being made to suppress this nuisance. Most of the lower portion of the city has been examined and over 60 violations have been found.

Notices have been served upon the offending parties, and many of them have promptly complied with the same, while others have been sent to the Corporation Attorney to begin suit for the collection of the fine.

In my opinion, the ordinance in this case should be amended so as to provide a summary remedy by giving the Department power to plug the discharge pipe, instead of waiting for the slow and uncertain operation of the law.

It should also provide against leaking valves, stop-cocks, joints or other openings in steam pipes which send forth volumes of steam direct into the public streets.

I enclose a copy of the ordinance amended as above.

Not less dangerous to public health and equally disadvantageous to the proper operation of the sewer system is the close proximity to the sewers of the mains of the New York Steam Company.

This company has been in operation for the past eight years, and has laid mains in the principal down-town streets, as well as a considerable mileage in the upper part of the city, placed wherever it could find room among the almost variety of pipes and mains belonging to the city and other corporations. Along its 15 miles of mains and service pipes it has probably 1,000 consumers.

The crowded condition of the substructures necessarily brings these mains charged with steam at a high pressure and temperature close to the sewers and water-pipes.

The heat from these pipes is sufficient to cause the brick work of sewers to get so hot that laborers cannot bear their hands upon it, and the sewage matter to approach the boiling point.

Hot water has frequently been drawn from hydrants in the public streets.

The condition of these pipes alone is enough to account for the great heat and dangerous gases found in adjacent sewers, as heretofore described.

Up to the present time this company has been unable to secure tight joints for its pipes, or any covering for the same, which will prevent the radiation of heat, although it claims in some cases to have done so. Being covered in the earth, and beyond the possibility of daily inspection as other steam apparatus is, the pipe connections are continually out of repair, and sending great volumes of live steam into any convenient opening to sewers or other conduits, and even bursting up through the pavement into the open air.

From the investigation made during the past season, it is plain that no steam main can be located with safety within ten feet of any sewer or water-pipe; to remedy this evil under existing laws seems impossible.

This company enjoys one of the most liberal franchises ever granted to any private corporation. It can occupy any street or avenue in the city, and move other works out of its way at will, and it keeps the streets in a chronic state of eruption while repairing its leaky pipes.

It is probable that the only solution of this vexed problem is one which was mooted years ago, viz., a tunnel containing all sewers, pipes and mains of every description, where they can be easily inspected and repaired.

The following are the number of permits issued to connect buildings with the public sewers, and the number of permits to repair or relay old house connections, also the amount of money received for connecting with sewers, and for repaving over sewer openings for the year of 1890:

Permits for new sewer connections	1,129
Permits for repairing old sewer connections	1,145
Number of buildings in the above	3,309

Amount received for sewer connections	\$28,852 88
Amount received for repaving over sewer connections	22,223 00

Total \$51,075 88

The four Draughtsmen engaged in this office have prepared during the year 36 filed plans, 129 contract plans, 100 Inspectors' books, 72 assessment lists, involving 324 sheet maps, covering 12,483 lots. In addition, the usual office records have been kept, and a large amount of work has been done on the new general plan of the sewerage system of the whole city, which has been in progress for the past two years. This, when finished, will be in eight large sheets; five of these are done, the rest I hope to have completed during the coming season.

This work will be of great value, being the first authentic record ever made of certain portions of the sewer system.

It is the practice of this office to test for tensile strength all cement used on the work under its charge. During the past year there have been 2,286 specimens of cement tested; of these 382 were on sewers, and the rest for pavements and other purposes; 162 specimens or about 10% of the whole were rejected as below the standard.

During the year examinations have been made to ascertain the quantity of rock to be estimated for 18,637 linear feet of sewer, and the quantity of rock thus determined was 36,520 cubic yards.

This work has been carried on under the supervision of the Assistant Engineers who was to have charge of the work, with a force of one Axeman and four Laborers.

The appropriation was exhausted about the middle of November, and the men discharged.

These examinations should be resumed as soon as possible, as there are now on hand a number of contracts upon which estimates must be made.

In conclusion I desire to express my appreciation of the faithful services rendered by the Assistant Engineers and other employees of this office throughout the year.

Respectfully submitted,

HORACE LOOMIS, Engineer in Charge of Sewers.

#### SCHEDULE "A."

LOCATION OF WORK.	SIZE.	SEWER, LINEAR FEET.	CULVERT, LINEAR FEET.	BASINS.	TOTAL COST.
Sewer in Seventy-third street, between East river and Avenue A.....	3' 6" x 2'	675	....	..	\$11,529 91
Sewer in Ninety-sixth street, between Eighth avenue and summit west of Eighth avenue, with alteration and improvement to curve at Ninety-sixth street and Eighth avenue.....	3' 6" x 2'	550	....	..	5,210 00
Sewer in Tenth avenue, west side, between One Hundred and Forty-sixth and One Hundred and Forty-eighth streets.....	3' x 2'	260	....	..	1,551 94
Sewer in One Hundred and Third street, between Boulevard and Tenth avenue.....	3' x 2'	31	} ....	..	1,326 99
Sewer in One Hundred and Fortieth street, between Boulevard and Hamilton place.....	15"	196			
Sewer in One Hundred and Forty-fourth street, between Tenth avenue and summit east.....	12"	278	....	..	3,653 12
Sewer in One Hundred and Twenty-fifth street, between Manhattan street and Tenth avenue.....	12"	341	....	..	4,068 62
Sewer in One Hundred and Thirty-second street, between Broadway and Tenth avenue.....	3' 6" x 2'	359	....	..	2,226 11
Sewer in Grove street, between Bleecker and West Fourth streets, extension.....	3' 6" x 2'	43	} ....	..	2,320 52
Sewer in Second avenue, between Ninth and Tenth streets.....	15"	413			
Sewer in One Hundred and Forty-second street, between Eighth and Edgecombe avenues, with alteration and improvement to curve at One Hundred and Forty-second street and Eighth avenue, and sewers in Edgecombe avenue, between One Hundred and Forty-first and One Hundred and Forty-fifth streets.....	3' 6" x 2'	78	....	..	687 63
Sewer in Eleventh Avenue Boulevard, east side, between One Hundred and Sixty-first and One Hundred Sixty-fifth streets; in One Hundred and Sixty-fifth street, between Eleventh Avenue Boulevard and Kingsbridge road, etc.....	3' 6" x 2'	182	....	..	1,621 45
Sewer in One Hundred and Twenty-third street, between Ninth and Tenth avenues.....	3' 6" x 2'	1,135	} 73	2	7,864 77
Sewer in Tenth avenue, east side, between One Hundred and Thirtieth and One Hundred and Thirty-first streets.....	15"	139½			
Sewer in One Hundred and Forty-fourth street, between Seventh and Eighth avenues, etc.....	3' 6" x 2'	1,556	} 95¼	4	28,438 37
Outlet sewer through Pier 4, North river, with sewers in West street, between Rector street and Battery place, etc.....	15"	918½			
Sewer in Sixty-fifth street, between Avenue A and First avenue, etc.....	3' x 2'	680	33	1	4,068 62
Sewer in Park avenue, west side, between Ninety-third and Ninety-fourth streets, etc.....	3' x 2'	263	3	..	1,744 08
Sewer in One Hundred and Twenty-fourth street, between Ninth and Tenth avenues.....	3' 6" x 2'	758½	....	..	6,277 29
Sewer in One Hundred and Fifty-sixth street, between Tenth avenue and Avenue St. Nicholas.....	3' Cir. W. Barrel.	1,523	} 81	..	30,728 76
Sewer in Washington street, between Beach and North Moore streets.....	3' 6" x 2'	587			
Sewer in One Hundredth street, between Fourth and Madison avenues.....	3' 6" x 2'	696¼	....	..	8,689 27
Sewer in One Hundred and Forty-third street, between Eighth and Bradhurst avenues.....	15"	311½	....	..	4,099 05
Outlet sewer in Sixty-second street, at East river extension.....	3' 6" x 2'	730	} 8	1	4,010 58
Outlet sewer in Eleventh street, at East river extension.....	3' x 2'	55			
Sewer in Seventy-eighth street, between Boulevard and West End avenues, etc.....	15"	230	....	..	1,437 77
Sewer in Twelfth avenue, between Thirty-ninth and Fortieth streets, etc.....	3' x 2'	147¼	....	..	1,226 60
Sewer in One Hundred and Forty-fifth street, south side, between Eighth and Bradhurst avenues.....	15"	326½	....	..	2,625 64
Sewer in Madison avenue, between One Hundred and Thirty-first and One Hundred and Thirty-second streets.....	3' x 2'	293	....	..	1,985 06
Sewer in Madison avenue, between One Hundred and Twenty-ninth and One Hundred and Thirtieth streets.....	3' 6" Cir. W. Box.	43	} ....	..	886 58
Sewer in Seventy-eighth street, between Boulevard and West End avenues, etc.....	3' 6" x 2'	10			
Sewer in Twelfth avenue, between Thirty-ninth and Fortieth streets, etc.....	3' 6" x 2'	383	....	..	5,087 28
Sewer in One Hundred and Forty-fifth street, south side, between Eighth and Bradhurst avenues.....	3' x 2'	173	} 27	1	2,181 91
Sewer in Madison avenue, between One Hundred and Thirty-first and One Hundred and Thirty-second streets.....	3' x 2'	84			
Sewer in Madison avenue, between One Hundred and Twenty-ninth and One Hundred and Twenty-seventh streets.....	15"	279	....	..	6,705 99
Sewer in Madison avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-seventh streets.....	15"	192	....	..	1,624 46
Sewer in Madison avenue, between One Hundred and Twenty-ninth and One Hundred and Thirtieth streets.....	15"	194	....	..	1,294 45
Sewer in Seventy-eighth street, between Boulevard and Amsterdam (Tenth) avenue, extension.....	15"	205½	....	..	1,314 93
Sewer in Second avenue, between First and Houston streets.....	3' x 2'	32	....	..	687 07
Sewer in Seventh avenue, west side, between One Hundred and Forty-first and One Hundred and Forty-second streets, etc.....	3' 6" x 2'	184	....	..	1,330 31
Sewer in Madison avenue, between One Hundred and Twenty-eighth and One Hundred and Twenty-ninth streets.....	3' 6" x 2'	304½	....	..	5,697 58
Sewer in Madison avenue, between One Hundred and Twenty-fifth and One Hundred and Twenty-seventh streets.....	15"	212½	....	..	1,349 20
Sewer in Madison avenue, between One Hundred and Seventh and One Hundred and Ninth streets.....	12"	419½	....	..	2,265 67
Sewer in One Hundred and Twenty-sixth street, between Tenth avenue and Boulevard.....	3' x 2'	390½	25	1	3,819 21
Sewer in One Hundred and Third street, between Boulevard and West End avenue.....	3' 6" x 2'	26	} ....	..	2,735 97
Sewer in Madison avenue, between One Hundred and Sixteenth and One Hundred and Seventeenth streets.....	15"	672			
Sewer in Madison avenue, between One Hundred and Fifth and One Hundred and Seventh streets.....	3' 6" x 2'	26	} ....	..	3,285 44
Sewer in One Hundred and Fifty-third street, between Eighth and Bradhurst avenues, etc.....	15"	229			
Sewer in Thirtieth avenue, east side, between Little West Twelfth and Thirtieth streets, and in Thirtieth street, between Tenth and Thirteenth avenues.....	3' x 2'	227	....	..	4,635 48
Sewer in Eighty-ninth street, between Boulevard and Tenth avenue, etc., extension.....	3' x 2'	432½	55¾	2	5,146 77
	4' x 2' 8"	65	} 18	1	2,500 03
	3' 6" x 2'	194½			
	3' 6" x 2'	852	50	3	11,500 00
	3' 6" x 2'	252	....	..	4,156 20
<i>Alterations and Improvements.</i>					
Sewer in Tenth avenue, between Fiftieth and Fifty-first streets, etc.....	3' x 2'	285	....	..	3,022 76
Sewers in Twentieth street, between Tenth avenue and North river.....	4' 6" x 3' 8" x 5' 6" Overflow	860 378 25	....	..	20,444 93
Sewers in Boulevard, east side, at One Hundred and Twenty-ninth street.....	3' 6" x 2'	40	....	..	451 09
<i>Receiving Basins.</i>					
Receiving-basins, southeast and southwest corners of One Hundred and Forty-sixth street and Eighth avenue.....	....	70	2	551 60	
Receiving-basin, northwest corner of One Hundred and Twenty-sixth street and Lexington avenue.....	....	24	1	248 74	
Receiving-basin, northeast corner of One Hundred and Sixth street and Madison avenue.....	....	36	1	352 44	
Receiving-basin, southeast corner of Fourteenth street and Sixth avenue.....	....	15	1	261 08	
Receiving-basin, southeast corner of Sixty-sixth street and Boulevard.....	....	33	1	261 19	
Receiving-basin, southeast corner of Sixty-fifth street and Ninth avenue.....	....	21	1	463 87	
Receiving-basin, southwest corner of Seventy-fourth street and Boulevard.....	....	12	1	253 76	
Receiving-basin, southeast corner of Seventy-fourth street and Boulevard.....	....	12	1	270 96	
Receiving-basin, southeast corner of Sixty-fourth street and Boulevard.....	....	27	1	400 48	
Receiving-basins, southeast and southwest corners of Ninety-sixth street and Columbus avenue.....	....	48	2	540 57	
Receiving-basin, northeast corner of One Hundred and Fiftieth street and St. Nicholas place.....	....	21	1	342 25	



LOCATION OF WORK.	SIZE.	SEWER, LINEAR FEET.	CULVERT, LINEAR FEET.	BASINS.	TOTAL COST.
Receiving-basin, southwest corner of One Hundred and Twenty-third street and Avenue St. Nicholas.....	.....	.....	22	1	\$306 32
Receiving-basin, southwest corner of One Hundred and Third street and Park avenue.....	.....	.....	3	1	222 31
Receiving-basin, southwest corner of Ninety-sixth street and Eighth avenue.....	.....	.....	20	1	297 29
Receiving-basin, south side of One Hundred and Twenty-fourth street, opposite Fifth avenue.....	.....	.....	33½	1	347 40
Receiving-basin, northwest corner of One Hundred and Twenty-fourth street and Fifth avenue.....	.....	.....	20	1	266 60
Receiving-basin, northeast corner of One Hundred and Fifth street and Park avenue.....	.....	.....	9	1	263 87
Receiving-basins, northeast and northwest corners of One Hundred and Fifty-eighth street and Eleventh avenue.....	.....	.....	72	2	873 03
Receiving-basin, north side of One Hundred and Twentieth street, opposite Fifth avenue.....	.....	.....	45	1	777 36
Receiving-basin, northwest corner of One Hundred and Thirty-second street and Amsterdam avenue.....	.....	.....	9	1	249 20
Total.....	.....	21,496¾	1,031½	39	\$237,065 75

SCHEDULE "B."

LOCATION OF WORK.	SIZE.	SEWER, LINEAR FEET.	CULVERT, LINEAR FEET.	BASINS.	ESTIMATED COST.
Sewer in Tenth avenue, west side, between One Hundred and Seventy-eighth and One Hundred and Ninetieth streets, etc.....	4' x 2' 8"	1,435	50	5	\$29,560 30
Sewers in West street, between Jay and Canal streets, etc.....	3' 6" x 2'	1,407	250	8	44,787 50
Sewers in South street, between Roosevelt street and Pike Slip, etc.....	4' x 2' 8"	1,404	200	1	44,669 00
Sewers in West street, between Carlisle and Dey street, etc.....	4' Cir.	1,536	200	..	33,505 00
Sewer in Boulevard, east side, between One Hundred and Twelfth and One Hundred and Thirteenth streets, etc.....	15"	1,170	30	2	10,926 00
Alteration and improvements to sewers in Eighth avenue, west side, between One Hundred and Twenty-fourth and One Hundred and Thirty-seventh streets, etc.....	4' x 2' 8"	570	100	..	30,326 25
Sewer in Fifth avenue, between One Hundred and Thirty-fifth and One Hundred and Thirty-seventh streets, etc.....	3' 6" x 2' 4"	1,880	50	2	9,730 00
Sewer in One Hundred and Seventieth street, between Tenth avenue and Kingsbridge road, etc.....	3' x 2'	860	80	4	17,686 50
Sewer in West street, between Dey and Murray streets, etc.....	4' Cir.	958	200	1	37,401 00
Sewer in Ninetieth street, between Avenue A and Second avenue.....	4' x 2' 8"	1,000	45	2	12,339 75
Sewers in South street, between Broad and Whitehall streets, etc.....	3' 6" x 2'	1,237	60	..	19,345 00
Sewer in First avenue, between Forty-sixth and Forty-fifth streets.....	4' Cir.	580	..	..	4,480 00
Alteration and improvement to sewers in Fourth (Park) avenue, west side, between Seventy-first and Seventy-third streets, etc.....	3' x 2'	415	20	1	3,910 00
Sewer in Ninety-first street, between Tenth avenue and Summit east.....	15"	635	..	..	10,672 75
Sewer in Madison avenue, between One Hundred and Thirty-fourth and One Hundred and Thirty-fifth streets.....	3' x 2'	220	..	..	2,800 00
Alteration and improvement to sewer in Fifty-fifth street, between Eighth and Ninth avenues.....	3' 6" x 2'	875	..	..	5,970 00
Sewer in Seventy-seventh street, between Boulevard and Amsterdam (Tenth) avenue.....	15"	273	..	..	3,002 00
Sewer in Eighty-second street, between Boulevard and Amsterdam (Tenth) avenue.....	3' 6" x 2'	25	..	..	3,736 50
Sewer in Ninety-ninth street, between Madison and Fifth avenues.....	15"	268	21	1	1,447 00
Sewer in Ninety-ninth street, between Boulevard and West End avenue.....	3' 6" x 2'	27	15	1	1,305 00
Sewer in One Hundred and Second street, between Boulevard and West End avenue.....	15"	199	..	..	3,551 75
Sewer in One Hundred and Fourth street, between Harlem river and First avenue.....	3' 6" x 2'	243	..	..	6,903 00
Sewer in Amsterdam (Tenth) avenue, east side, between One Hundred and Thirty-first and 185 feet north of One Hundred and Thirty-third street, etc.....	3' x 2'	767	30	2	10,250 00
Sewer in Amsterdam (Tenth) avenue, west side, between One Hundred and Thirty-third street and 50 feet south of One Hundred and Thirty-sixth street, etc.....	3' 6" x 2'	730	10	2	14,534 65
Sewer in Twelfth avenue, east side, between Thirty-fifth and Thirty-seventh streets, etc.....	4' Cir.	185	150	6	18,539 00
Sewer in Park avenue, west side, between Ninety-second and Ninety-third streets, etc.....	4' x 2' 8"	365	..	..	3,751 25
Sewer in Ninety-fifth street, between Harlem river and First avenue.....	3' 6" x 2' 4"	332	12	..	9,434 75
Sewer in Boulevard, west side, and West End avenue, between One Hundred and Fifth and One Hundred and Eighth streets.....	4' Cir.	530	75	5	16,087 00
Sewer in Convent avenue, between manhole south of One Hundred and Thirty-fifth street and One Hundred and Thirty-fifth street; in One Hundred and Thirty-fifth street, between Convent and Amsterdam avenues, etc.....	3' 6" x 2'	993	75	2	16,335 00
Sewer in Amsterdam (Tenth) avenue, east side, between One Hundred and Thirty-eighth and One Hundred and Forty-first streets, etc.....	15"	635	..	..	9,368 00
Sewer in One Hundred and Fortieth street, between Hamilton place and Amsterdam avenue, etc.....	3' 6" x 2'	470	20	1	11,170 00
Sewer in Bridge street, between Broad and Whitehall streets.....	15"	440	..	..	2,602 50
Sewer in Livingston street, at East river, "extension of outlet".....	3' x 2'	323	25	..	8,049 00
.....	4' W. Barrel	295	..	..	..
.....	.....	220	..	..	..
.....	.....	36,422	1,733	46	\$458,178 45

Contracts Executed, but Work not Commenced.

Alteration and improvement to sewer in Ludlow street, between Delancey and Broome streets.....	3' 6" x 2'	229	25	1	.....
Sewer in Twenty-eighth street, between East river and First avenue, extension.....	4' Cir.	150	.....	.....	.....
Sewer in First avenue, between Forty-fourth and Forty-fifth streets.....	15"	220	.....	.....	.....
Sewer in Seventy-ninth street, between Boulevard and Amsterdam avenue.....	3' 6" x 2'	318	.....	.....	.....
Sewer in One Hundred and Sixteenth street, between Amsterdam avenue and Morningside, West, etc.....	3' 6" x 2'	221	20	..	.....
Sewer in One Hundred and Sixty-ninth street, between Amsterdam and Eleventh avenues.....	15"	758	..	..	.....
.....	3' 6" x 2'	726	.....	.....	.....
.....	.....	2,622	45	1	.....

SEWERS AND RECEIVING-BASINS CONSTRUCTED, UNDER PERMITS, DURING THE YEAR.

Sewer in One Hundred and Thirty-sixth street, between Seventh and Eighth avenues.  
Sewer in One Hundred and Thirty-seventh street, between Seventh and Eighth avenues.  
Sewer in One Hundred and Thirty-ninth street, between Seventh and Eighth avenues.  
Sewer in Sixty-ninth street, between West End avenue and lands of the New York Central and Hudson River Railroad Company.

Alteration and Improvements.

Sewer and receiving-basin in Park Row and Frankfort street.  
Sewer in Sixty-eighth street, between Fifth and Madison avenues.  
Private drain in One Hundred and Sixteenth street, between Pleasant avenue and Harlem river.

Receiving-Basins Rebuilt.

Receiving-basin, northeast corner of East Fourth street and Broadway.  
Receiving-basin, northwest corner of Seventy-ninth street and Columbus avenue.  
Receiving-basin, southeast corner of Seventy-ninth street and Amsterdam avenue.  
Receiving-basin, northeast corner of Seventy-ninth street and Amsterdam avenue.  
Receiving-basin, northeast corner of Sixty-sixth street and Fifth avenue.

During the year the following repairs have been made:

Sewer in Stanton street, between Sheriff and Suffolk street.  
Sewer in John street, between South and Pearl streets.  
Sewer in Thirty-first street, between Sixth and Eighth avenues.  
Sewer in One Hundred and Fourth street, between Third and Lexington avenues.  
Sewer in Twenty-fifth street, between Sixth and Seventh avenues.  
Sewer in Boulevard, west side, between Eighty-fourth and Eighty-fifth streets.  
Outlet sewer in Forty-eighth street at North river.  
Sewer in Second street, between First avenue and Avenue A.  
Sewer in One Hundred and Third street, between First and Second avenues.  
Sewer in Fifth avenue, west side, at one Hundred and Eighteenth street.  
Sewer in Tenth avenue, between Seventy-third and Seventy-fourth streets.  
Sewer in Thirty-seventh street, east of Eleventh avenue.  
Sewer in Second avenue, between Twenty-first and Twenty-second streets.  
Sewer in Tenth avenue, north of Ninety-third street.  
Sewer in One Hundredth street, between Second and Third avenues.  
Sewer in Third avenue, east side, between Seventy-fourth and Seventy-fifth streets.  
Sewer in First avenue, between One Hundredth and One Hundred and First streets.  
Sewer in One Hundred and Forty-fifth street, north side, at Bradhurst avenue and east of same.  
Outlet sewer in Fifty-seventh street, at East river.  
Sewer in One Hundred and Twenty-second street, between Pleasant avenue and East river.  
Sewer in Park avenue, west side, between One Hundred and Sixth and One Hundred and Third streets, etc.  
Sewer in One Hundred and Forty-seventh street, between Sixth and Seventh avenues.  
Sewer in Seventy-first street, between Eighth and Ninth avenues.  
Outlet sewer in Ninety-sixth street, at North river.  
Sewer in Avenue St. Nicholas, between One Hundred and Forty-ninth and One Hundred and Fiftieth streets.  
Sewer in Fourth avenue, east side, between Seventy-fifth and Seventy-sixth streets.

WORK DONE BY LABORERS, MECHANICS, ETC., FOR YEAR ENDING DECEMBER 31, 1890

702 receiving-basins relieved.  
4,376 receiving-basins and culverts cleaned.  
64,652 linear feet of sewer cleaned.  
2,295 linear feet of sewer relieved.  
255,528 linear feet of sewer examined.  
8 linear feet of new brick sewer built.  
44 linear feet of new pipe sewer built.  
333 linear feet of brick sewer rebuilt.  
250 linear feet of brick sewer repaired.  
80 linear feet of box sewer repaired.  
15 linear feet of new brick culvert built.  
14 linear feet of brick culvert rebuilt.  
297 linear feet of new pipe culvert laid.  
46 linear feet of pipe culvert relaid.  
159 linear feet of spur pipe laid.  
101 linear feet of new curb set.  
14 linear feet of curb reset.  
1,368 manhole heads reset.  
35 basin heads reset.  
174 new manhole heads and covers put on.  
32 new basin heads and covers put on.  
61 new basin covers put on.  
91 new manhole covers put on.  
4 new manholes built.  
4 new basins built.  
1 new bulkhead built.  
62 basins repaired.  
6 manholes repaired.  
6,072 cubic feet of brickwork built.  
663 square feet of flagging relaid.  
1,394 square yards of pavement relaid.  
96,179 cubic feet of earth excavated and refilled.  
145 cart-loads of earth filling.  
13,426 cart-loads of dirt removed.

DEPARTMENT OF PUBLIC WORKS, No. 31 CHAMBERS STREET, }  
NEW YORK,.....1890 }

To the owners and occupants of premises.....  
Please to take notice that the use of sewer connecting pipes, for the discharge of steam or hot water into the public sewers, is prohibited under the penalty of fifty dollars, by the Corporation ordinance hereto appended, and that unless the use for such purposes of the pipes connecting this building with the sewer be immediately discontinued, this Department will, on the expiration of twenty-four hours from the date hereof, cancel the permit for connecting said building with the public sewer and close up the outlet and take proceedings to enforce the penalty.  
Commissioner of Public Works.

Chapter 6, Article 9, Section 174, Revised Ordinances of 1880.

No connection with, or opening into, any sewer or drain shall be used for the conveyance or discharge, into said sewer or drain, of steam or hot water, above 100° F. from any steam boiler or engine, or from any manufactory or building in which steam is either used or generated, or to discharge or permit to escape into any sewer or drain or into any public street, steam from any stop-cock, valve or other opening in any steam pipes or mains, under the penalty of fifty dollars for each and every day during any part of which such connection or opening may have been used for that purpose. This penalty shall be imposed upon and recovered from the owner and occupants severally and respectively, of such manufactory or building, or from any corporation having mains for the conveyance of steam or hot water in the streets, avenues or public places.

Document "H."

REPORT OF THE SUPERINTENDENT OF STREET IMPROVEMENTS.

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF STREET IMPROVEMENTS, ROOM 5, No. 31 CHAMBERS STREET,  
NEW YORK, January 8, 1891.

Hon. THOS. F. GILROY, Commissioner of Public Works:

SIR—In accordance with your instructions, I have the honor to submit herewith my report of the operations of the Bureau of Street Improvements for the quarter ending December 31, 1890, and also my yearly report showing all the expenditures of this Bureau for the year ending December 31, 1890, together with a statement of the work done and also balances of the appropriations.

On the commencement of the year 29 contracts were in existence; 137 contracts were entered into during the year 1890 and 126 contracts were completed at a cost of \$309,502.21, for which assessment lists have been transmitted to the Board of Assessors.

The following are the most important unfinished contracts, viz.:  
Kingsbridge road, from One Hundred and Ninetieth street to the Harlem river—  
This contract has been progressing satisfactorily. There has been done on this contract up to date 11,000 yards earth excavation, 27,600 yards rock excavation and 160,000 yards filling. It will take about six months time to finish this work.  
Edgecombe avenue, from One Hundred and Forty-fifth street to St. Nicholas place—  
This is a large contract and a vast amount of work has been done thereon. This work will be finished in a very short time.  
Claremont avenue, from One Hundred and Twenty-second to One Hundred and Twenty-seventh street—  
This contract is a heavy rock cut, and will be completed in about six months.  
Fifth avenue, from One Hundred and Thirty-eighth street to the Harlem river—  
This contract has been returned by the Inspector as completed. We are now waiting for the Surveyor to file his assessment list.



One Hundred and Sixth street, from Boulevard to Riverside Drive—  
There is considerable rock to be removed from this street, which will take until the fall of this year.

Ninety-ninth street, from Third to Park avenue—  
This work has just commenced; it will be finished during the year.

One Hundred and Forty-ninth street, from Tenth avenue to Western Boulevard—  
This contract will be finished in the summer.

One Hundred and Forty-seventh street, from Boulevard to 500 feet west—  
The work will be completed as soon as the weather will permit.

One Hundred and Eleventh street, from Fifth to Sixth avenue—  
This is a contract which requires considerable filling; the work will be completed this year.

One Hundred and Forty-third, One Hundred and Forty-eighth and One Hundred and Forty-second streets, from Seventh avenue to Harlem river—  
These contracts consist of filling and excavation and will require some time to complete.

Jumel Terrace, from One Hundred and Sixtieth to One Hundred and Sixty-second street—  
This work was commenced the latter part of last year and will be completed the end of this year.

One Hundred and Eleventh street, from Eighth to Manhattan avenue—  
This work is suspended on account of the winter weather only; the curb and flagging remains to be laid and set.

## APPROPRIATIONS.

## Street Improvements—For Surveying, Monumenting and Numbering of Streets.

The amount appropriated for this purpose was \$3,000, of which sum \$2,509.50 has been expended, and an outstanding liability of \$20, which leaves a balance of \$470.50.

## Flagging Sidewalks and Fencing Vacant Lots in Front of City Property

The appropriation for this purpose was \$3,000; the amount expended is \$1,553.84; the balance is \$1,446.16.

In regard to defective sidewalks in accordance with the provisions of section 321 of chapter 410, Laws of 1882, as amended by chapter 509, Laws of 1887, I beg to state that according to instructions the complaint book and notice book, which were formerly under the direction of the Bureau of Incumbrances, have been placed in charge of this Bureau. The complaints received will be promptly examined, and the certificate and ordinances will be transmitted to the Common Council when found necessary.

There were about twenty-five of these ordinances before the Board of Aldermen at the close of the year. No action having been taken by that body, this Department could not do the work. I will cause the same to be re-examined and, if necessary, I will cause the usual certificates and ordinances to be sent to the Common Council so that this Department may do the work.

Respectfully,

W. M. DEAN, Superintendent Street Improvements.

## STATEMENT OF AMOUNT OF WORK DONE DURING THE QUARTER ENDING DECEMBER 31, 1890.

Earth excavated .....	cubic yards.	7,013
Rock excavated .....	"	24,512.00
Filling furnished .....	"	69,339.00
Curb-stones set .....	lineal feet.	27,126.00
reset .....	"	14,120.00
Flagging laid .....	square feet.	174,732.00
relaid .....	"	37,551.00
Picket fence built .....	lineal feet.	3,638
Rubble range masonry .....	cubic yards.	220
Drain-pipes .....	lineal feet.	180
Inlet frames .....	"	22

## AMOUNT OF VOUCHERS DRAWN.

On account of—		
Street Improvement Fund .....	\$94,947 89	
Street Improvements—For Surveying, Monumenting and Numbering of Streets ..	720 50	
Flagging Sidewalks and Fencing Vacant Lots in front of City Property .....	1,306 01	
Contingencies—Department of Public Works .....	298 60	
Retaining-walls in East Fifty-first and East Forty-second Streets .....	2,189 35	
Total .....	\$99,462 35	

## APPROPRIATIONS.

Street Improvements—For Surveying, Monumenting and Numbering of Streets .....	\$3,000 00
Amount of vouchers drawn during first quarter .....	\$566 00
Amount of vouchers drawn during second quarter .....	653 00
Amount of vouchers drawn during third quarter .....	570 00
Amount of vouchers drawn during fourth quarter .....	720 50
Outstanding liability .....	20 00
	2,529 50

Balance .....

Contingencies—Department of Public Works—  
Amount of vouchers drawn .....

Flagging Sidewalks and Fencing Vacant Lots in front of City Property .....

Retaining-walls in East Fifty-first and East Forty-second Streets—  
Amount of vouchers drawn .....

## Works Completed During the Quarter.

Regulating, Grading, etc.—		
Ninety-first street, from Ninth to Tenth avenue .....	\$20,176 15	
One Hundred and Forty-fifth street, from Sixth avenue to Harlem river .....	4,298 52	
Edgecombe avenue, from One Hundred and Forty-first to One Hundred and Forty-fifth street .....	2,679 34	
One Hundred and Forty-seventh street, from Tenth avenue to Boulevard .....	15,812 69	
One Hundred and Thirty-ninth street, from Eighth avenue to first new avenue west .....	991 87	
One Hundred and Forty-eighth street, from St. Nicholas avenue to Boulevard .....	10,460 08	
One Hundred and Thirtieth street, from Boulevard to Twelfth avenue .....	4,341 93	
One Hundred and Forty-sixth street, from Eighth avenue to Harlem river .....	15,246 04	
	\$74,006 62	
Curbing, etc.—		
Ninety-sixth street, from Eighth avenue to the Boulevard .....	1,634 46	
Flagging, Reflagging, Curbing and Recurbing—		
One Hundred and Thirty-third street, from Seventh to Eighth avenue .....	\$1,132 89	
Eighty-fourth street, from Eighth to Ninth avenue .....	473 35	
South side Twentieth street, from Avenue A to Avenue B .....	1,332 73	
North side Forty-fourth street, from Second to Third avenue .....	761 65	
West side Boulevard, from Seventy-third to Seventy-fourth street, etc. ..	893 66	
North side One Hundred and Eleventh street, from Madison to Fifth avenue .....	269 54	
Boulevard, from Eighty-third to Eighty-fourth street, etc. ....	1,895 82	
South side One Hundred and Fifth street, from Columbus to Amsterdam avenue .....	433 58	
West side Lenox avenue, from One Hundred and Twenty-first to One Hundred and Twenty-second street .....	42 94	
Seventy-fourth street, from Fifth to Lenox avenue .....	931 85	
Ninety-sixth street, from Eighth avenue to Boulevard .....	3,126 40	
One Hundred and Twentieth street, from St. Nicholas avenue to Boulevard .....	1,399 56	
Sixty-ninth and Seventieth streets, from Boulevard to West End avenue .....	2,261 57	
South side Ninety-fifth street, west of Columbus avenue .....	245 59	

## Flagging, Reflagging, Curbing and Recurbing—

North side One Hundred and Sixteenth street, from Park to Madison avenue .....	\$324 00
Eighty-seventh and Eighty-eighth streets, from Madison to Fifth avenue .....	1,344 39
South side Ninetieth street, from Park to Madison avenue .....	267 46
Seventy-eighth street, from Tenth avenue to Boulevard .....	392 74
	\$17,529 72

## Fencing Vacant Lots—

Ninety-fifth and Ninety-sixth streets, from Madison to Fifth avenue ..	\$876 72
Southwest corner Central Park, West, and One Hundred and First street .....	117 56
North side Sixty-ninth street, east of Boulevard .....	46 75
North side Seventy-sixth street, from Columbus avenue to Central Park, West .....	220 09
	1,261 12

Total .....

## RECAPITULATION.

8 contracts for regulating, grading, etc. ....	\$74,006 62
1 contract for curbing .....	1,634 46
18 contracts for flagging, curbing, etc. ....	17,529 72
4 contracts for fencing vacant lots .....	1,261 12
Total .....	\$94,431 92

## ANNUAL STATEMENT.

## Amount of Work Done during Year 1890.

NATURE OF WORK.	JANUARY 1 TO MARCH 31.	APRIL 1 TO JUNE 30.	JULY 1 TO SEPTEMBER 30.	OCTOBER 1 TO DECEMBER 31.	TOTAL.
Earth excavation, cubic yards .....	12,365	10,141	5,498	7,013	35,018
Rock excavation, cubic yards .....	7,623.00	17,308	16,884	24,512.00	66,333.00
Filling furnished, cubic yards .....	83,663	61,764	63,429.00	69,339.00	278,195.00
Curb-stones set, lineal feet .....	9,717.00	10,355.00	19,571.00	27,126.00	66,772.00
Curb-stones reset, lineal feet .....	2,090.00	8,905.00	10,835.00	14,120.00	35,951.00
Flagging laid, square feet .....	59,758.00	102,124.00	210,183.00	174,732.00	546,799.00
Flagging relaid, square feet .....	18,074.00	37,601.00	58,081.00	37,551.00	153,309.00
Culvert, feet .....	100	100	10		210
Retaining-wall, cubic yards .....	231.00	50			281.00
Paving removed, square yards .....	467				467
Fencing vacant lots, lineal feet .....	75	2,525	1,241.00	3,638	7,479.00
Aque duct excavation, yards .....			153		153
Rubble range masonry, yards .....				220	220
Drain-pipe, feet .....				180	180
Inlet frames .....				22	22

## Amount of Vouchers Drawn during Year 1890.

ON ACCOUNT OF.	JANUARY 1 TO MARCH 31.	APRIL 1 TO JUNE 30.	JULY 1 TO SEPTEMBER 30.	OCTOBER 1 TO DECEMBER 31.	TOTAL.
Fund for Local Improvements .....	\$961 83	\$353 45			\$1,315 28
Street Improvement Fund .....	52,421 06	82,449 78	\$97,998 25	\$94,947 89	327,816 98
Street Improvements—For Surveying, Monumenting, etc. ....	566 00	653 00	570 00	720 50	2,509 50
Flagging Sidewalks and Fencing Vacant Lots, etc. ....		226 83	21 00	1,306 01	1,553 84
Contingencies—Department of Public Works .....	270 03	278 15	285 10	298 60	1,131 88
Boring Examination for Grading and Sewer Contracts .....		773 55			773 55
Retaining-walls in East Fifty-first and East Forty-second streets .....		244 00	1,357 50	2,189 35	3,790 85

## Works Completed during the Year 1890.

Regulating, Grading, etc.—		
One Hundred and Ninth street, from Eighth to Manhattan avenue ..	\$4,097 04	
One Hundred and Forty-third street, from Eighth avenue to first new avenue .....	2,101 52	
One Hundred and Sixty-sixth street, from Tenth to Eleventh avenue ..	9,913 65	
One Hundred and Thirty-eighth street, from Eighth to Edgecombe avenue ..	1,495 29	
First new avenue, from One Hundred and Forty-fifth to One Hundred and Fifty-fifth street .....	67,252 95	
One Hundred and First street, from First to Second avenue .....	2,638 46	
One Hundred and Forty-seventh street, from Eighth avenue to Harlem river .....	15,437 45	
One Hundred and Eighty-first street, from Tenth to Eleventh avenue ..	16,008 53	
One Hundred and Seventh street, from Ninth to Tenth avenue .....	3,735 28	
One Hundred and Forty-second street, from Eighth avenue to new avenue .....	2,338 69	
One Hundred and Ninth street, from Ninth avenue to Riverside Drive .....	18,642 52	
Ninety-first street, from Ninth to Tenth avenue .....	20,176 15	
One Hundred and Forty-fifth street, from Sixth avenue to Harlem river ..	4,298 52	
One Hundred and Forty-seventh street, from Tenth avenue to Boulevard .....	15,812 69	
One Hundred and Thirty-ninth street, from Eighth avenue to new avenue ..	991 87	
One Hundred and Forty-eighth street, from St. Nicholas avenue to Boulevard ..	10,460 08	
One Hundred and Thirtieth street, from Boulevard to Twelfth avenue ..	4,341 93	
One Hundred and Forty-sixth street, from Eighth avenue to Harlem river ..	15,246 04	
	\$217,668 00	
Curbing and Flagging—		
North side Eighty-first street, from Eighth to Ninth avenue .....	\$892 46	
Sixty-fourth street, from Tenth to Eleventh avenue .....	3,955 88	
East side Second avenue, from One Hundredth to One Hundred and First street, etc. ....	2,390 20	
Ninety-sixth street, from Eighth avenue to Boulevard .....	1,634 46	
	8,873 00	
Flagging, Curbing, Reflagging and Recurbing—		
Seventy-seventh street, from First to Second avenue .....	\$488 67	
Eighty-ninth and Ninetieth street, from Madison to Fifth avenue, etc. ....	3,714 17	
Ninety-seventh street, from Madison to Fifth avenue .....	446 72	
East side Third avenue, from Ninety-eighth to Ninety-ninth street ..	165 70	
East side Second avenue, from Ninety-third to Ninety-fourth street ..	365 01	
South side Canal street, from Mott to Mulberry street .....	533 64	



## Flagging, Curbing, Reflagging and Recurbing—

Ninety-eighth street, from Boulevard to West End avenue.....	\$1,055 09
South side Eighty-eighth street, from Madison to Park avenue.....	799 38
Ninety-fourth street, from Park to Fifth avenue.....	1,113 66
North side One Hundred and Fifth street, etc., from Ninth to Tenth avenue.....	1,801 63
West side Eighth avenue, from One Hundred and Forty-third to One Hundred and Forty-fourth street.....	78 00
West side Fifth avenue, from One Hundred and Seventeenth to One Hundred and Eighteenth street.....	1,450 77
Sixty-fifth street, from Eighth to Ninth avenue.....	1,689 91
Eightieth street, from Avenue A to East river.....	1,892 71
North side Ninety-sixth street, from Lexington to Third avenue.....	231 53
One Hundredth street, from Manhattan to Ninth avenue.....	170 49
Madison and Park avenues, from One Hundred and Nineteenth to One Hundred and Twentieth street.....	1,448 18
North side Seventieth street, from Tenth to West End avenue.....	1,295 41
South side One Hundred and Third street, from Lexington to Park avenue, etc.....	365 60
West side Eighth avenue, from One Hundred and Forty-ninth to One Hundred and Fifty-first street.....	377 13
East side Manhattan avenue, from One Hundred and Fourteenth to One Hundred and Fifteenth street.....	43 21
South side Thirty-ninth street, from Sixth avenue to Broadway.....	130 11
Morris street, from Broadway to West street.....	1,683 32
Eightieth street, from West End avenue to Riverside Drive.....	512 02
East side Park avenue, from One Hundred and First to One Hundred and Second street.....	225 10
One Hundred and Nineteenth street, from Pleasant avenue to East river.....	1,630 12
One Hundredth street, from Ninth to Tenth avenue.....	382 66
Eighty-fourth street, from West End avenue to Riverside Drive.....	1,235 71
East side Seventh avenue, from One Hundred and Twenty-first to One Hundred and Twenty-fifth street.....	352 63
West side Fifth avenue, from One Hundred and Sixteenth to One Hundred and Eighteenth street, etc.....	377 09
East side Tenth avenue, from One Hundred and Forty-fourth to One Hundred and Forty-fifth street.....	265 92
West side Park avenue, from One Hundred and Fifteenth to One Hundred and Eighteenth street.....	568 21
West side Tenth avenue, from One Hundred and Forty-ninth to One Hundred and Fiftieth street.....	279 53
West side Ninth avenue, from Eighty-fourth to Eighty-fifth street.....	622 91
One Hundred and Twelfth street, from Fifth to Lenox avenue.....	338 85
West side Boulevard, from Sixty-fifth to Sixty-sixth street.....	297 38
Southwest corner Canal and Mott streets.....	195 93
Ninetieth street, from Madison to Park avenue.....	405 29
West side Tenth avenue, from Eighty-seventh to Eighty-eighth street.....	132 69
West side Pleasant avenue, from One Hundred and Nineteenth to One Hundred and Twentieth street.....	545 90
South side Seventieth street, from Tenth to West End avenue.....	1,366 03
Madison avenue, from One Hundred and Thirty-fifth to One Hundred and Thirty-seventh street.....	1,670 48
Eighty-first street, from Tenth avenue to Boulevard.....	1,200 68
East side Madison avenue, from One Hundred and Thirtieth to One Hundred and Thirty-first street, etc.....	265 60
One Hundred and Forty-first street, from St. Nicholas to Convent avenue.....	434 94
Seventieth street, from First avenue to East river.....	5,270 82
North side Ninety-seventh street, from Third to Park avenue.....	808 97
East side Beekman place, from Forty-ninth to Fiftieth street.....	175 01
West side Madison avenue, from Ninety-sixth to Ninety-seventh street.....	483 37
West side Madison avenue, from One Hundred and Second to One Hundred and Third street.....	107 33
South side Seventy-second street, from First avenue to Avenue A.....	407 70
One Hundred and Thirty-fourth street, from Park to Madison avenue.....	984 29
South side One Hundred and Twenty-fifth street, from Eighth to St. Nicholas avenue.....	404 85
South side Eighty-first street, from Ninth to Tenth avenue.....	234 27
North side Sixty-ninth street, from Ninth avenue to Boulevard.....	596 75
Seventy-sixth street, from Tenth avenue to Boulevard.....	1,168 89
Northwest corner West Broadway and Walker street.....	541 49
Eighty-sixth street, from Eighth avenue to Riverside Drive.....	5,870 99

## Flagging, Curbing, Reflagging and Recurbing—

North side One Hundred and Thirteenth street, from Seventh to Eighth avenue.....	\$993 49
West side Eighth avenue, from Ninety-fourth to Ninety-eighth street, etc.....	1,921 22
Fifteenth street, from Avenue A to Avenue B.....	1,882 89
East side Fifth avenue, from Seventy-second to Seventy-ninth street.....	1,564 98
One Hundred and Thirtieth street, from Broadway to Tenth avenue.....	888 39
North side One Hundred and Thirty-eighth street, from Tenth avenue to Hamilton place.....	686 69
Eightieth street, from Ninth to Tenth avenue.....	1,455 16
South side North Moore street, from West Broadway to Varick street.....	306 46
North side One Hundred and Seventeenth street, from Park to Madison avenue.....	351 07
South side Sixtieth street, from First avenue to Avenue A.....	407 60
One Hundred and Thirty-third street, from Seventh to Eighth avenue.....	1,132 89
Eighty-fourth street, from Eighth to Ninth avenue.....	473 35
South side Twentieth street, from Avenue A to Avenue B.....	1,332 73
North side Forty-fourth street, from Second to Third avenue.....	761 65
West side Boulevard, from Seventy-third to Seventy-fourth street.....	893 66
North side One Hundred and Eleventh street, from Madison to Fifth avenue.....	269 54
Boulevard, from Eighty-third to Eighty-fourth street.....	1,895 82
South side One Hundred and Fifth street, from Columbus to Amsterdam avenue.....	433 58
West side Lenox avenue, from One Hundred and Twenty-first to One Hundred and Twenty-second street.....	42 94
Seventy-fourth street, from Fifth to Lenox avenue.....	931 85
Ninety-sixth street, from Eighth avenue to Boulevard.....	3,126 40
One Hundred and Twentieth street, from St. Nicholas avenue to Boulevard.....	1,399 56
Sixty-ninth and Seventieth street, from Boulevard to West End avenue.....	2,261 57
Ninety-fifth street, west of Columbus avenue.....	245 59
One Hundred and Sixteenth street, from Park to Madison avenue.....	324 00
Eighty-seventh and Eighty-eighth streets, from Madison to Fifth avenue.....	1,344 39
South side Ninetieth street, from Park to Madison avenue.....	267 40
Seventy-eighth street, from Tenth avenue to Boulevard.....	392 74
	\$79,688 10
Fencing vacant lots—	
Eighty-eighth and Eighty-ninth streets, from First to Second avenue.....	535 50
North side Fortieth street, from First to Second avenue.....	101 50
Eighty-fourth and Eighty-fifth streets, from Boulevard to Tenth avenue.....	504 97
South side One Hundred and Thirty-fourth street, from Fifth to Lenox avenue.....	46 00
Southeast corner Tenth avenue and Sixty-eighth street.....	122 95
North side Sixty-fifth street, 100 feet west of Boulevard.....	16 01
West side Boulevard, from Seventy-third to Seventy-fourth street.....	296 56
Northwest corner Lexington avenue and Seventy-second street.....	159 58
South side One Hundred and Tenth street, from Madison to Fourth avenue.....	47 76
No. 1078 Madison avenue.....	13 26
North side Eighty-fourth street, 230 feet east of Riverside Drive.....	111 89
Boulevard, from Eighty-sixth to Eighty-eighth street.....	209 44
North side One Hundred and Tenth street, from Fifth to Lenox avenue.....	346 57
Ninety-fifth and Ninety-sixth street, from Madison to Fifth avenue.....	870 72
Southwest corner Central Park, West, and One Hundred and First street.....	117 56
North side Sixty-ninth street, east of Boulevard.....	46 75
North side Seventy-sixth street, from Columbus avenue to Central Park, West.....	220 09
	3,273 11
	\$309,502 21
RECAPITULATION.	
19 Contracts for regulating, grading, etc.....	\$217,668 00
4 Contracts for curb and flagging.....	7,873 00
86 Contracts for flagging, reflagging, etc.....	79,688 10
17 Contracts for fencing vacant lots.....	3,273 11
	\$309,502 21

## Statement showing Works under Contract in Bureau of Street Improvements on the 31st day of December, 1890.

LOCATION OF WORK.	CONTRACTOR.	SURVEYOR.	INSPECTOR.	CONTRACT TIME.	ESTIMATED COST.	AMOUNT EARNED.	AMOUNT RETAINED.	AMOUNT PAID.	REMARKS.
<i>Regulating and Grading, Curbing and Flagging.</i>									
Kingsbridge road, One Hundred and Ninetieth street to Harlem river.....	B. F. Coleman.....	J. McI. Smith.....	Frederick G. Fay..	300 days.	\$204,990 00	\$180,250 00	\$54,075 00	\$126,175 00	
Edgecombe avenue, One Hundred and Forty-fifth street to St. Nicholas place.....	John F. Dawson.....	J. McI. Smith.....	Leander Buck.....	300 "	86,826 06	166,709 15	50,012 74	116,696 41	
Claremont avenue, One Hundred and Twenty-second to One Hundred and Twenty-seventh street.....	Benjamin J. Carr, Jr.	Thomas Slator.....	David Simmons.....	200 "	17,368 88	7,965 00	2,389 50	5,575 50	Work completed, but not accepted.
East side Third avenue, Ninety-second to Ninety-third street.....	A. E. Moran.....	B. R. Guion.....	P. H. Kidney.....	4 "	970 67				Work completed, but not accepted.
Park avenue, east side, One Hundred and Fifteenth to One Hundred and Sixteenth street.....	A. E. Moran.....	B. R. Guion.....	Thomas B. Shandley	4 "	1,085 34				Work completed, but not accepted.
Park avenue, northeast corner and One Hundred and Twentieth street.....	Thomas J. Dunn.....	M. Cox.....	George Hornum.....	2 "	380 37				Work completed, but not accepted.
Fifth avenue, One Hundred and Thirty-eighth street to Harlem river.....	Jerome Finn.....	J. R. Wardlaw.....	B. V. Frazer.....	500 "	18,817 24	18,723 90	5,617 17	13,106 73	Work completed, but not accepted.
West End avenue, east side, between Seventy-sixth and Seventy-seventh streets.....	Thomas Callanan.....	C. J. L. Lynch.....		3 "	371 26				Work not yet commenced.
Jumel Terrace, One Hundred and Sixtieth to One Hundred and Sixty-second street.....	R. McLaughlin.....	L. A. Risse.....	John McGuire.....	100 "	4,069 87				Work not yet commenced.
Fifty-first street, south side, Eleventh to Twelfth avenue.....	A. E. Moran.....	F. E. Towle.....	John E. Wilson.....	5 "	1,238 44				Completed, but not accepted.
Fifty-ninth street, south side, Seventh avenue to Broadway.....	Thomas J. Dunn.....	L. A. Risse.....	M. T. Griffin.....	5 "	461 81				
Sixty-ninth street, south side, Second to Third avenue.....	A. E. Moran.....	C. J. L. Lynch.....		4 "	599 33				Work not yet commenced.
Seventy-seventh street, Boulevard to West End avenue.....	A. E. Moran.....	C. J. L. Lynch.....		3 "	507 94				
Ninety-ninth street, Third to Park avenue.....	P. McInerney.....	M. A. Lacy.....	John Lawrence.....	100 "	7,333 51				
One Hundred and Sixth street, Boulevard to Riverside Drive.....	John Cahill.....	R. L. Waters.....	P. H. Sullivan.....	150 "	22,360 35	12,226 00	3,667 80	8,558 20	
One Hundred and Eleventh street, Fifth to Sixth avenue.....	John J. Farley.....	M. A. Lacy.....	C. J. McGuire.....	150 "	1,807 70				Work not yet commenced.
One Hundred and Nineteenth street, Morningside to Amsterdam avenue.....	M. J. Slodon.....	M. Cox.....		100 "	5,060 83				
One Hundred and Twenty-third street, Tenth avenue to Boulevard.....	M. Fortunato.....	F. E. Towle.....	Bernard Martin.....	200 "	10,815 00	6,143 00	1,842 90	4,300 10	Completed, but not accepted.
One Hundred and Thirty-second street, Seventh to Eighth avenue.....	A. E. Moran.....	L. A. Risse.....	Charles Myers.....	3 "	500 26				
One Hundred and Thirty-ninth street, Tenth avenue to 425 feet west.....	R. McLaughlin.....	R. L. Waters.....	L. A. Russell, Jr.....	100 "	11,402 82	5,103 00	1,530 90	3,572 10	Completed, but not accepted.
One Hundred and Fortieth street, Seventh to Eighth avenue.....	John J. Farley.....	Richard Amerman.....	R. V. Davis.....	75 "	3,502 90				
One Hundred and Forty-second street, Seventh avenue to Harlem river.....	R. McLaughlin.....	M. A. Lacy.....	James Kearney.....	250 "	11,071 03				
One Hundred and Forty-third street, Seventh avenue to Harlem river.....	R. McLaughlin.....	George A. Wheeler.....	Charles M. Torpey.....	250 "	12,303 30	3,943 00	1,182 90	2,760 10	
One Hundred and Forty-sixth street, Boulevard to Hudson River Railroad.....	John J. Hopper.....	R. L. Waters.....		125 "	7,886 01				
One Hundred and Forty-seventh street, Boulevard to 500 feet west.....	Harry V. Zandt.....	Robert J. Dodge.....	Dennis O. Connor.....	100 "	4,595 00				
One Hundred and Forty-ninth street, Seventh avenue to Harlem river.....	Charles V. Hough.....	George A. Wheeler.....	Thomas W. Gibbons.....	150 "	2,198 22				
One Hundred and Forty-ninth street, St. Nicholas avenue to Boulevard.....	William J. Kelly.....	F. E. Towle.....	M. Neary.....	35 "	3,642 04				
One Hundred and Forty-ninth street, Tenth avenue to Western Boulevard.....	William G. Leeson.....	F. E. Towle.....	E. F. Smith.....	200 "	14,259 52	6,175 00	1,852 50	4,322 50	
One Hundred and Eighty-third street, Amsterdam avenue to Kingsbridge road.....	B. F. Coleman.....	H. H. Spindler.....		100 "	24,076 25				Work not yet commenced.
<i>Special Contracts.</i>									
One Hundred and Eleventh street, Eighth to Manhattan avenue.....	Thomas F. Murray.....	Thomas Slator.....	James McShane.....	75 "	972 90				Work suspended.
One Hundred and Forty-second street, Amsterdam avenue to Hamilton place.....	Patrick Hardiman.....	R. L. Waters.....	Charles Myers.....	5 "	453 44				
Eighty-eighth street, southeast corner and Columbus avenue.....	Patrick Larney.....	M. A. Lacy.....		2 "	119 80				Work completed, but not yet accepted.
Madison avenue, northeast and northwest corners and One Hundred and Eighth street.....	F. Thilemann, Jr.....	L. A. Risse.....		1 "	184 45				Work completed, but not yet accepted.
Ninety-fifth street, south side, 100 feet west of Columbus avenue.....	Patrick Larney.....	W. H. Bostwick.....		1 "	36 50				Work completed, but not yet accepted.
Block bounded by One Hundred and Fifth and One Hundred and Sixth streets, Madison to Park avenue.....	Patrick Larney.....	L. A. Risse.....		4 "	222 21				Work completed, but not yet accepted.
Ninety-ninth street, south side, Eighth to Ninth avenue.....	F. Thilemann, Jr.....	L. A. Risse.....		1 "	169 88				Work completed, but not yet accepted.
One Hundred and Thirty-fifth street, south side, Park to Lenox avenue.....	F. Thilemann, Jr.....	H. H. Spindler.....		5 "	478 75				Work not yet commenced.
Totals ..					\$184,867 38	\$407,238 05	\$122,171 41	\$285,066 64	



## Document "I."

## REPORT OF THE SUPERINTENDENT OF STREETS.

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF STREETS AND ROADS, ROOM 12, NO. 31 CHAMBERS STREET, }

Hon. THOMAS F. GILROY, Commissioner of Public Works :

SIR—I transmit herewith yearly report of this Bureau for 1890, and also report of the work done during the quarter ending December 31, 1890.

Respectfully,

JOHN B. SHEA, Superintendent of Streets.

The following work was done on macadamized roadways during the quarter ending December 31, 1890 :

Roadway resurfaced and repaired.....	3,827 square yards.
Flagging reset.....	1,788 square feet.
Bridge-stone reset.....	360 "

The following material was used in making the above-named repairs :

Broken trap-stone.....	625 cubic yards.
Trap-rock screenings.....	301 "
Sand.....	45 "

The following material was used in making repairs over sewer connections :

Broken trap-stone.....	84 "
Trap-block screenings.....	30 "
Telford.....	30 "
Gravel.....	25 "
Sand.....	25 "

1,000 truck loads of surplus material were removed during the quarter.

The following is a summary of the work done on macadamized roadways during the year ending December 31, 1890 :

Roadway resurfaced and repaired.....	90,006 square yards.
Gutters repaved.....	1,257 "
Stone block pavement relaid.....	200 "
Gravel roadway resurfaced.....	458 "
Flagging relaid.....	3,982 square feet.
Sidewalk repaired.....	223 "
" cleaned.....	25,000 "
Bridge-stone relaid.....	600 "
Dirt crossings made.....	960 "
Curb reset.....	707 lineal feet.
Gneiss stone broken.....	333 truck loads.
Sand and gravel respread.....	42 "
Gravel spread.....	115 "

On the above-named work the following material was used :

Broken trap-stone.....	4,211 truck loads.
Trap-rock screenings.....	1,705 "
Gravel.....	1,872 "
Telford.....	6 "
Sand.....	445 "
Gravel screenings.....	880 "
Earth.....	309 "
Paving stones.....	10 "

The following material was used in making repairs over sewer connections :

Broken trap-stone.....	286 truck loads.
Telford.....	67 "
Sand.....	67 "
Trap-rock screenings.....	70 "
Gravel.....	25 "

There were removed from macadam roadways during the year :

Dirt.....	10,636 truck loads.
Stone.....	254 "

26 miles of macadamized roadways have been cleaned and sprinkled.

The following work was done on unpaved streets during the quarter ending December 31, 1890 :

Roadway macadamized with broken gneiss stone and earth.....	1,000 square yards.
Telford pavement laid.....	1,000 "
Roadway regulated and gutters opened.....	6 miles.

The following material was used on the above-named work :

Earth.....	446 truck loads.
Stone.....	741 "
Broken stone.....	226 "
Screenings.....	35 "
Broken gneiss stone.....	275 cubic yards.

521 truck loads of surplus material were removed.

The following is a summary of the work done on unpaved streets during the year ending December 31, 1890 :

Streets regulated and graded and gutters opened.....	36 miles.
Roadway macadamized with broken gneiss stone, rubble and clay.....	8,016 square yards.
Roadway repaired.....	200 "
Telford pavement laid.....	1,000 "
Flagging removed.....	175 square feet.
Stone-drain built and drain cleaned.....	175 lineal feet.
Curb reset.....	50 "
Fence built.....	1,380 "

The material used on the above-named work was :

Earth.....	3,299 truck loads.
Broken stone.....	2,462 "
Ashes.....	28 "
Building stone.....	25 "
Broken gneiss stone and rubble.....	1,740 "
Cap stone.....	50 lineal feet.
Stone screenings.....	35 truck loads.
Gravel.....	52 "
Lumber.....	11 "

375 cubic yards of stone were broken for macadamizing.  
1,045 truck loads of earth were removed.

The following is a statement of the various appropriations under charge of the Bureau of Streets and Roads :

Boulevards, Roads and Avenues, Maintenance of, 1890.....	\$100,000 00
Add transfer from retaining-walls, etc.....	5,000 00
Total appropriation.....	\$105,000 00
Amount transmitted during the first quarter ending March 31, 1890.....	9,917 23
Balance, April 1, 1890.....	\$95,082 77
Amount transmitted during the second quarter ending June 30, 1890.....	40,961 54
Balance, July 1, 1890.....	\$54,121 23
Amount transmitted during the third quarter ending September 30, 1890.....	40,877 59
Balance, October 1, 1890.....	\$13,243 64

Amount transmitted during the fourth quarter ending December 31, 1890, is as follows :

Pay-roll, Laborers, etc., week ending October 4, 1890.....	\$1,284 67
" " " 11, " ".....	1,211 85
" " " 18, " ".....	1,322 04
" " " 25, " ".....	998 16
" " November 1, " ".....	807 25
" " " 8, " ".....	713 62
" " " 15, " ".....	424 25
" " " 22, " ".....	497 00
" " " 29, " ".....	723 11
" " December 6, " ".....	718 36
" " " 13, " ".....	807 62
" " " 20, " ".....	798 18
" " " 27, " ".....	623 42
Horse and wagon.....	90 00
Telephone service.....	33 75
Rent of yard.....	900 00

\$11,953 28

Balance.....\$1,290 36

Contingencies—Department of Public Works.....\$90 00

Roads, Streets and Avenues Unpaved—

Maintenance of and Sprinkling, 1890.....\$25,000 00

Amount transmitted during the first quarter ending March 31, 1890.....3,777 31

Balance, April 1, 1890.....\$21,222 69

Amount transmitted during the second quarter ending June 30, 1890.....5,423 85

Balance, July 1, 1890.....\$15,798 84

Amount transmitted during the third quarter ending September 30, 1890.....8,955 81

Balance, October 1, 1890.....\$6,843 03

Amount transmitted during the fourth quarter ending December 31, 1890, is as follows :

Pay-roll, Laborers, etc., week ending October 4, 1890.....	\$746 44
" " " 11, " ".....	729 18
" " " 18, " ".....	694 67
" " " 25, " ".....	660 19
" " November 1, " ".....	939 49
" " " 8, " ".....	911 50
" " " 15, " ".....	578 82
" " " 22, " ".....	473 25
Paints, etc.....	41 05
Repairing steps, etc.....	50 00
Use of horse and wagon.....	90 00

5,914 59

Balance, January 1, 1891.....\$928 44

The following is the amount received during the quarter ending December 31, 1890, for use of horse roller and deposited to the credit of the General Fund.....

\$16 00

Boulevards, Roads and Avenues, Maintenance of—Salaries, 1890.....\$2,500 00

Amount transmitted during the first quarter ending March 31, 1890.....624 99

Balance, April 1, 1890.....\$1,875 01

Amount transmitted during the second quarter ending June 30, 1890.....624 99

Balance, July 1, 1890.....\$1,250 02

Amount transmitted during the third quarter ending September 30, 1890.....624 99

Balance, October 1, 1890.....\$625 03

Amount transmitted during the fourth quarter ending December 31, 1890, is as follows :

Pay-roll ending October 31, 1890.....	\$208 33
" " November 30, " ".....	208 33
" " December 31, " ".....	208 33

624 99

Balance, December 31, 1890.....\$0 04

Amount transmitted during the quarter ending December 31, 1890, and charged to Restoring and Repaving—Special Fund.....\$1,119 87

The following amount has been transmitted during the quarter ending December 31, 1890 :

Salary, Inspector of Crosswalks.....	\$70 00
Surveyors' fees.....	237 20
Contractor's final payment.....	480 61

Total.....\$787 81

## Document "K."

## REPORT OF THE SUPERINTENDENT OF LAMPS AND GAS.

DEPARTMENT OF PUBLIC WORKS—BUREAU OF LAMPS AND GAS, }  
ROOM 11, NO. 31 CHAMBERS STREET, }  
NEW YORK, January 9, 1891. }

Hon. THOMAS F. GILROY, Commissioner of Public Works :

SIR—In compliance with the directions contained in your letter of 10th ultimo, I herein submit a report of the business of the Bureau of Lamps and Gas for the quarter ending December 31, 1890, with a summary of the same for the entire year.

In Exhibit "A" will be found a statement showing the amounts expended for a supply of illuminating gas to the various public markets, court-rooms, offices, armories, etc., and for the fitting-up, lighting and maintenance of the public lamps for each of the four quarters of the year, and the sums total for the whole year.

Exhibit "B" is a summary of the appropriation for "Lamps and Gas and Electric Lighting," and this shows an expenditure during the quarter of two hundred and twenty-six thousand six hundred and thirty-two dollars and eighty-one cents (\$226,632.81), and for the year six hundred and ninety-nine thousand five hundred and eighty-six dollars and twenty cents (\$699,586.20). There are no outstanding accounts or liabilities against the appropriation, and there is a surplus balance of four hundred and thirteen dollars and eighty cents (\$413.80).

Exhibit "C" is a summary of the appropriation for "Salaries—Lamps and Gas and Electric Lighting," and this shows an expenditure during the quarter of one thousand five hundred and seventy-three dollars and eighty-eight cents (\$1,573.88), and for the year of six thousand four hundred and five dollars and seventy-two cents (\$6,405.72), leaving a surplus balance of ninety-four dollars and twenty-eight cents (\$94.28).

Exhibit "D" is a summary of the "Public Lamp Account," showing the number of new lamps lighted, old lamps relighted and lamps discontinued by each gas and electric-light company during the quarter and year. Ninety new gas-lamps have been lighted, ninety-eight gas-lamps relighted and fifty-five gas-lamps discontinued during the quarter, and eight hundred and ten new gas-lamps and twelve new naphtha lamps have been lighted, fourteen hundred and five gas-lamps and seven hundred and fifty-six electric-lamps relighted, thirty-one hundred and thirty gas-lamps and twenty electric-lamps have been discontinued during the year. Of the gas-lamps discontinued twenty-seven hundred and ninety-three were extinguished in consequence of the relighting of electric-lamps. The total number of lamps lighted on December 31, 1890, was twenty-eight thousand one hundred and thirty-three, of which twenty-seven thousand one hundred and fourteen were gas-lamps, one hundred and thirty-eight naphtha lamps, and eight hundred and eighty-one were electric-lamps.

Exhibit "E" is a statement showing the lowest, highest and average illuminating power of the gases supplied to the city by such of the gas companies as connect with our two photometric stations.

Exhibit "F" is a copy of the time table for lighting and extinguishing the public gas-lamps.



The following statement will show the number of new gas lamp-posts fitted up, lamp-posts removed, reset, straightened, etc., during the year:

BY WHAT GAS COMPANY.	New Lamp-posts Fitted Up.	Lamp-posts Removed.	Lamp-posts Reset.	Lamp-posts Straightened.	Columns Refitted.	Columns Re-laid.	Service-pipes Refitted.	Stand-pipes Refitted.
Consolidated Gas Co., Branch 1.....	28	28	324	282	72	626	131	94
Consolidated Gas Co., Branch 2.....	9	12	133	36	22	92	7	7
Consolidated Gas Co., Branch 3.....	21	3	85	58	7	47	136	121
Consolidated Gas Co., Branch 4.....	202	57	89	33	5	42	155	100
Consolidated Gas Co., Branch 6.....	265	122	125	60	17	17	8	2
New York Mutual Gas-light Co.....	3	28	9	14	3	3	3	3
Equitable Gas-light Co.....	23	7	40	57	17	136	60	92
Standard Gas-light Co.....	14	1	2	3	2	10	102	40
Central Gas-light Co.....	28	64	86	96	2	3	8	....
Northern Gas-light Co.....	54	72	99	38	1	8	....	....
Yonkers Gas-light Co.....	2	2	....	....	....	....	....	....
N. Y. and N. J. Globe Gas-light Co.....	12	....	....	....	....	....	....	....
Totals.....	656	371	1,013	672	159	984	610	459

The following table will show the number of new lamps lighted by the several gas and electric-light companies in each of the years from 1883 to 1890, both inclusive:

BY WHAT COMPANY.	NEW LAMPS LIGHTED IN—							
	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Consolidated Gas Co., Branch 1.....	17	18	23	19	26	12	6	28
Consolidated Gas Co., Branch 2.....	53	22	50	27	20	17	8	8
Consolidated Gas Co., Branch 3.....	....	....	....	11	44	26	10	21
Consolidated Gas Co., Branch 4.....	156	67	159	62	264	181	251	197
Consolidated Gas Co., Branch 6.....	255	308	312	342	332	230	243	412
New York Mutual Gas-light Co.....	....	5	....	....	1	....	....	1
Equitable Gas-light Co.....	....	....	7	14	5	....	9	23
Standard Gas-light Co.....	....	....	....	....	....	....	....	14
Central Gas-light Co.....	75	134	74	103	89	118	149	50
Northern Gas-light Co.....	124	109	178	72	145	216	77	56
Yonkers Gas-light Co.....	36	2	10	2	91	21	108	....
N. Y. and N. J. Globe Gas-light Co.....	....	....	50	70	....	....	6	12
Brush Electric Illuminating Co.....	....	292	....	1	30	13	....	....
United States Illuminating Co.....	....	227	61	2	....	45	18	....
Harlem Lighting Co.....	....	....	....	....	95	12	....	....
North New York Lighting Co.....	....	....	....	....	26	....	....	....
Mount Morris Electric-light Co.....	....	....	....	....	....	18	....	....
East River Electric-light Co.....	....	....	....	....	....	408	1	....
Total.....	716	1,184	924	723	1,168	1,317	886	822

The following statement will show the average number of lamps lighted under the supervision of the Bureau of Lamps and Gas in each of the years from 1883 to 1890, both inclusive:

BY WHAT COMPANY.	AVERAGE NUMBER OF LAMPS LIGHTED IN—							
	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Consolidated Gas Co., Branch 1.....	3,369	3,046	3,450	3,865	3,863	3,199	2,912	3,455
Consolidated Gas Co., Branch 2.....	6,477	6,053	4,456	3,239	2,593	1,912	1,648	1,871
Consolidated Gas Co., Branch 3.....	....	....	....	1,122	3,152	2,463	2,322	2,282
Consolidated Gas Co., Branch 4.....	4,658	4,504	4,172	3,719	2,725	3,063	3,075	3,468
Consolidated Gas Co., Branch 6.....	5,157	5,422	5,767	5,787	5,640	5,535	5,785	5,799
New York Mutual Gas-light Co.....	768	591	316	216	202	158	206	326
Equitable Gas-light Co.....	....	....	1,411	1,586	1,853	1,925	2,685	3,698
Standard Gas-light Co.....	....	....	....	....	....	....	....	1,694
Central Gas-light Co.....	2,007	2,072	2,205	2,256	2,350	2,316	2,474	2,682
Northern Gas-light Co.....	1,308	1,429	1,551	1,686	1,780	1,922	2,123	2,187
Yonkers Gas-light Co.....	295	325	331	337	373	444	477	537
N. Y. & N. J. Globe Gas-light Co.....	....	....	50	90	120	120	121	134
Brush Electric Illuminating Co.....	55	246	347	347	343	366	320	210
United States Illuminating Co.....	73	243	338	361	363	395	457	246
Harlem Lighting Co.....	....	....	....	....	88	102	92	111
North New York Lighting Co.....	....	....	....	....	26	26	26	....
Mount Morris Electric-light Co.....	....	....	....	....	....	18	31	92
East River Electric-light Co.....	....	....	....	....	....	379	314	143
Total.....	24,167	23,931	24,394	24,611	25,471	24,343	25,068	28,865

New gas-mains have been laid by the several gas-light companies during the year, as follows:

	Feet.	In.
By Consolidated Gas Company.....	122,259	4
By New York Mutual Gas-light Company.....	349	....
By Equitable Gas-light Company.....	64,626	9
By Standard Gas-light Company.....	122,083	....
By Central Gas-light Company.....	2,677	....
By Northern Gas-light Company.....	1,650	....
By Yonkers Gas-light Company.....	....	....
Total laid in 1890.....	313,645	1

Or 59,118 miles.

The Consolidated Gas Company has taken up 77,587 feet.

The total miles of gas-mains in the streets of this city on December 31, 1890, was as follows:

	Miles.	Feet.	In.
Consolidated Gas Company.....	785	568	1
New York Mutual Gas-light Company.....	123	2,192	....
Equitable Gas-light Company.....	124	4,508	....
Standard Gas-light Company.....	134	4,117	5
Central Gas-light Company.....	55	2,502	....
Northern Gas-light Company.....	34	3,721	....
Yonkers Gas-light Company.....	15	4,119	....
Total.....	1,274	607	6

Of these mains 1,165,320 miles are on Manhattan Island and 108,320 miles are in the annexed territory north of Harlem river.

Of the Standard Gas-light Company's mains 14,457 feet 11 inches were laid in Third avenue, Willis avenue, Lincoln avenue, One Hundred and Thirty-fifth, One Hundred and Thirty-seventh, One Hundred and Forty-fourth, One Hundred and Forty-fifth and One Hundred and Forty-eighth streets, in the Twenty-third Ward, during the months of October, November and December, 1890.

There were in the city on December 31, 1890, as I am informed by the Board of Electrical Control, 546 miles of General Electric-light duct, and 123 miles of "Edison" special form duct.

As the Equitable Gas-light Company is compelled by its franchise, under the conditions prescribed by the Gas Commission, to pay to the City at the rate of twenty cents for each lineal foot of mains laid, it has necessarily paid into the City Treasury the sum of \$131,845.60. It is also compelled to light all the public street lamps situated on the lines of its mains at a rate not to exceed twelve dollars per year for each lamp.

The Standard Gas-light Company is required by its charter (chapter 248 of the Laws of 1886), to light the public street lamps on the lines of its mains at the rate of \$12.50 for each lamp per year of 3,833½ hours. The company, however, up to May 16 last had never submitted a bid for the public lighting, although blank forms of the specifications and proposal had regularly been sent to it.

At a meeting of the Gas Commission held on April 7 last, for the opening of proposals for gas-lighting, it was found that no bid had been received from the Standard Company, and the Mayor then directed that the company should be notified that it would be required to light the public lamps on the lines of its mains as required by its charter. An advertisement calling for proposals or estimates was then issued, and all of the streets or parts of streets in which this company had gas-mains were named therein, and a copy of the specifications and blank form of estimate were sent to the company with a notice that it would be required to submit a bid. As the gas-lighting time-table of this city, however, fixes a term of 4,000 hours per year, these figures were named in the specifications. On May 16 a bid was received from the company for lighting the public lamps on the lines of its mains at the rate of \$13.04½ per year for each lamp lighted 4,000 hours, these figures being the pro rata amount of \$12.50 per year of 3,833½ hours. This bid was accepted and a contract was executed with the company, and under its provisions the company is now lighting 2,183 lamps which were formerly lighted by the Consolidated Gas Company at \$17.50 each, thereby causing a saving of \$4.45½ per year for each lamp. This saving will be continuous and the number of lamps to be lighted by the company will be annually increased where its additional mains are laid.

The gas supplied by the Consolidated Gas Company is manufactured at seven stations, viz.: Fourteenth Street Station (formerly Manhattan Gas-light Company), located at Fourteenth street and Avenue C; manufactures coal-gas.

Eighteenth Street Station (formerly Manhattan Gas-light Company), located at Eighteenth street and Tenth avenue; manufactures coal-gas.

Twenty-first Street Station (formerly New York Gas-light Company), located at Avenue A and Twenty-first street; manufactures water-gas.

Forty-second Street Station (formerly Metropolitan Gas-light Company), located at Forty-second street, North river; manufactures coal-gas.

Forty-fourth Street Station (formerly Municipal Gas-light Company), located at Forty-fourth street, North river; manufactures water-gas.

Ninety-ninth Street Station (formerly Knickerbocker Gas-light Company), located at Ninety-ninth street and Second avenue; manufactures water-gas.

One Hundred and Eleventh Street Station (formerly Harlem Gas-light Company), located at One Hundred and Eleventh street and First avenue; manufactures coal-gas.

The general office of the company is at No. 4 Irving place, its capital is \$35,430,000, and the capacity of the several works is 30,000,000 cubic feet per day.

Branch office No. 1, at Hester and Elizabeth streets, attends the gas-supply, including the lighting of the public lamps in that part of the city lying south of the centre line of Houston street.

Branch Office No. 2, at No. 4 Irving place, attends to the gas-supply, including the lighting of the public lamps, in that part of the city lying north of the centre line of Houston street, and south of the centre line of Twenty-third street.

Branch Office No. 3, at the corner of Fourth avenue and Twenty-sixth street, attends to the gas-supply, including the lighting of the public lamps, in that part of the city lying north of the centre line of Twenty-third street, and east of the centre line of Fifth avenue to Fifty-ninth street, and all east of the Central Park, from Fifty-ninth street to the centre line of Seventy-ninth street.

Branch Office No. 4, at Broadway and Forty-sixth street, attends to the gas-supply, including the lighting of the public lamps, in that part of the city lying north of the centre line of Twenty-third street, and west of the centre line of Fifth avenue to Fifty-ninth street, and on the west side of Central Park, between Fifty-ninth and One Hundred and Tenth streets, and south of the centre line of One Hundred and Tenth street, from Eighth avenue to the North river, including Transverse Roads Nos. 1 and 2.

Branch office No. 6, at No. 2084 Third avenue, attends to the gas-supply, including the lighting of the public lamps, in that part of the city lying north of the centre line of Seventy-ninth street to One Hundred and Tenth street, east of Central Park, and all the city north of One Hundred and Tenth street to Harlem river, including Transverse Road No. 3.

The New York Mutual Gas-light Company has gas-mains in various streets or parts of streets between Battery place and Sixty-fifth street, and lights a portion of the public lamps. It manufactures water-gas at its works at Eleventh street, East river, and its office is at Fourth avenue and Sixteenth street. The capital is \$3,500,000, and the capacity of its gas works is 4,000,000 cubic feet per day.

The Equitable Gas-light Company has mains in various streets between Division and Seventy-fourth streets, and it lights the public lamps on the lines of its mains. Its works are at Forty-first street, East river. The manufacture is water-gas, and its office is at Third avenue and Twenty-fifth street. The capital is \$4,000,000, and the capacity of its works is 6,000,000 cubic feet per day.

The Standard Gas-light Company has mains in various streets between Thirteenth street and One Hundred and Thirty-eighth street, and between Avenue C and Avenue St. Nicholas; it also has mains in a few streets in the Twenty-third Ward, but these Twenty-third Ward mains are not supplied with gas, it being the intention of the company to lay a main under the Harlem river for the purpose of supplying gas to the territory comprised in the Twenty-third Ward. The works of this company are at One Hundred and Fifteenth street, East river, and its main office is at No. 2 Cortlandt street, with sub-offices at No. 19 West One Hundred and Twenty-fifth street and at corner of Lexington avenue and Forty-second street. The manufacture is water-gas. Its capital is \$10,000,000, and the capacity of its present works is 2,000,000 cubic feet per day.

The Central Gas-light Company supplies gas to the Twenty-third Ward (formerly the town of Morrisania), and lights all the public gas-lamps therein. It manufactures coal-gas at its works at One Hundred and Thirty-eighth street, East river, and its office is at No. 350 Alexander avenue. The capital is \$487,400, and the capacity of its works is 800,000 cubic feet per day.

The Northern Gas-light Company supplies gas to that part of the Twenty-fourth Ward formerly town of West Farms, and lights all the public lamps therein. It manufactures coal-gas at its works on the Bronx river, and its office is at No. 1845 Vanderbilt avenue. The capital is \$125,000, and the capacity of its works is 250,000 cubic feet per day.

The Yonkers Gas-light Company has mains in, lights the public gas-lamps and supplies gas to, that part of the Twenty-fourth Ward formerly town of Kingsbridge, except the section known as Woodlawn Heights. Its gas works and office are in the City of Yonkers, Westchester County, and its manufacture is water-gas. This company has been leased to the United Gas Improvement Company, and its business is principally confined to the City of Yonkers.

The New York and New Jersey Globe Gas-light Company lights 138 lamps at Woodlawn Heights, in the Twenty-fourth Ward, being at the extreme northeastern section of the city, and which at present is beyond the reach of gas-mains. The lamps are lighted by means of naphtha contained in a tank or reservoir on each lamp.

The following additional streets have been lighted by gas during the year:

- Thirty-fifth street, from First avenue to East river.
- Sixty-fourth street, from Tenth avenue to West End avenue.
- Sixty-eighth street, from Eighth avenue to Boulevard.
- Sixty-ninth street, from Eighth to Ninth avenue.
- Seventieth street, from Eighth to Ninth avenue.
- Seventy-second street, from West End avenue to Riverside Drive.
- Seventy-third street, from West End avenue to Riverside Drive.
- Seventy-sixth street, from Boulevard to Tenth avenue.
- Seventy-seventh street, from West End avenue to Riverside Drive.
- Eighty-seventh street, from Eighth to Ninth avenue.
- Eighty-seventh street, from Tenth avenue to Boulevard.
- Ninety-second street, from Boulevard to West End avenue.
- Ninety-fourth street, from Second to Third avenue.
- Ninety-fifth street, from First to Second avenue.



Ninety-fifth street, from Tenth avenue to Boulevard.  
Ninety-sixth street, from Lexington to Fifth avenue.  
Ninety-sixth street, from Ninth to Tenth avenue.  
Ninety-eighth street, from Boulevard to Tenth avenue.  
One Hundred and First street, from Eighth to Manhattan avenue.  
One Hundred and Second street, from First to Second avenue.  
One Hundred and Fourth street, from Boulevard to Riverside Drive.  
One Hundred and Fifth street, from Madison to Fifth avenue.  
One Hundred and Sixth street, from Tenth avenue to Boulevard.  
One Hundred and Fourteenth street, from Eighth to Manhattan avenue.  
One Hundred and Fifteenth street, west of Seventh avenue.  
One Hundred and Fifteenth street, from Eighth to Manhattan avenue.  
One Hundred and Seventeenth street, from Eighth to Manhattan avenue.  
One Hundred and Eighteenth street, from Park to Madison avenue.  
One Hundred and Nineteenth street, from Seventh to St. Nicholas avenue.  
One Hundred and Twentieth street, from Manhattan to Ninth avenue.  
One Hundred and Twenty-second street, from St. Nicholas to Manhattan avenue.  
One Hundred and Thirty-first street, from Boulevard to Twelfth avenue.  
One Hundred and Thirty-fourth street, from Lexington to Seventh avenue.  
One Hundred and Thirty-sixth street, from Fifth to Lenox avenue.  
One Hundred and Thirty-sixth street, from Seventh to Eighth avenue.  
One Hundred and Thirty-eighth street, from Eighth to Edgecombe avenue.  
One Hundred and Forty-fourth street, from Eighth to Bradhurst avenue.  
One Hundred and Forty-seventh street, from Tenth to St. Nicholas avenue.  
One Hundred and Forty-eighth street, from Eighth to Bradhurst avenue.  
One Hundred and Fifty-first street, from St. Nicholas to Tenth avenue.  
Amsterdam avenue, east side, from One Hundred and Thirtieth to One Hundred and Thirty-first street.  
Columbus avenue, from One Hundred and Twenty-third to One Hundred and Twenty-fourth street.  
Edgecombe avenue, from One Hundred and Thirty-eighth to One Hundred and Thirty-ninth street.  
Manhattan avenue, from One Hundredth to One Hundred and Fifth street.  
Manhattan avenue, from One Hundred and Eleventh to One Hundred and Thirteenth streets.  
Park avenue, east side, from Ninety-fourth to Ninety-fifth street.  
Park avenue, west side, from One Hundred and Fifth to One Hundred and Sixth street.  
Transverse Road No. 2, westerly end.  
Transverse Road No 3, westerly end.  
West End avenue, from Sixty third to Sixty-sixth street.  
First avenue, from One Hundred and Twenty-fifth to One Hundred and Twenty-sixth street.  
Twelfth avenue, from One Hundred and Thirty-second to One Hundred and Thirty-third street.

The following streets in the Twenty-third Ward :

One Hundred and Thirty-fifth street, from St. Ann's avenue to Southern Boulevard.  
One Hundred and Thirty-sixth street, from Willis avenue to Brown place.  
One Hundred and Thirty-sixth street, from St. Ann's to Cypress avenue.  
One Hundred and Forty-ninth street, from Mott avenue to Spuyten Duyvil Railroad.  
Mott avenue, from One Hundred and Sixty-fifth street to 200 feet north of One Hundred and Sixty-fifth street.  
Stebbins avenue, from One Hundred and Sixty-fifth to One Hundred and Sixty-sixth street.  
Tinton avenue, from Denman place to One Hundred and Sixty-first street.  
Ritter place.

The following streets in the Twenty-fourth Ward :

Bainbridge avenue, from Ridge street, south.  
Creston avenue, from Kingsbridge road to Donnybrook street.  
Fulton avenue, from Fairmount avenue to Tremont avenue.  
Honeywell avenue, from Samuel street to Tremont avenue.  
Isaac street, from Webster avenue to Decatur avenue.  
Jefferson street, from Kingsbridge road to Columbine avenue.  
Kirk place, from Ryer avenue to Anthony avenue.  
St. James street, from Jerome avenue to Ridge street.  
Webster avenue, from One Hundred and Seventy-ninth street to 220 feet north.  
The aggregate length of the additional streets lighted during the year was,  $7\frac{1}{2}$  miles.  
The total aggregate length of streets of the city lighted on December 31, 1890, was  $509\frac{1}{2}$  miles.  
The total length of piers lighted was  $\frac{3}{4}$  of a mile.  
The total length of bridges lighted (including Washington bridge, 2,400 feet), was  $2\frac{1}{2}$  miles.  
The total area of parks lighted was 66 acres.  
The total area of Gansevoort Market Square lighted was  $3\frac{1}{4}$  acres.

Contracts for lighting the streets by gas for the year ending on April 30 next have been made, as shown in the following statement :

CONTRACTORS.	For Gas to and Light- ing each lamp per annum.	For each Lamp-post Straightened.	For each Column Re-laid.	For each Column Re-fitted.	For each Service-pipe Re-fitted.	For each Stand-pipe Re-fitted.	For each Lamp-post Removed.	For each Lamp-post Reset.	For each new Lamp Fitted up.
Consolidated Gas Co.....	\$17.50	\$1.50	\$1.50	\$3.50	\$5.50	\$2.50	\$3.50	\$8.00	\$8.00
New York Mutual Gas-light Co..	17.50	1.50	1.50	3.50	3.50	3.50	3.50	8.00	8.00
Equitable Gas-light Co.....	12.00	1.50	1.50	3.50	4.00	4.00	3.50	10.00	10.00
Standard Gas-light Co.....	13.04½	1.50	1.50	3.50	5.50	2.50	3.50	10.00	10.00
Central Gas-light Co.....	27.00	1.50	1.50	1.50	3.50	2.00	3.50	8.00	8.00
Northern Gas-light Co.....	28.00	1.50	1.50	3.00	3.50	2.00	3.50	8.00	8.00
Yenkers Gas-light Co.....	28.00	1.00	1.00	1.00	3.50	2.00	1.50	8.00	8.00
*New York and New Jersey Globe Gas-light Co.....	22.50	....	....	....	....	....	....	....	....

\* Naphtha lamps.

The following contracts for furnishing, operating and maintaining electric "arc" lamps of not less than 1,000 candle-power have been made during the year :

With the Brush Electric Illuminating Company ("Brush System")—

Lamps.	
Fifth avenue, from Washington square to Thirteenth street.....	7 lamps, at 25 cents each lamp per night.
Washington Park.....	15 lamps, at 29 cents each lamp per night.
Fifth avenue, from Fourteenth to Twenty-third street.	11
Seventh avenue, from Fourteenth to Fifth-ninth street.	43
Fourteenth street, from Broadway to North river.....	20
Twenty-third street, from Fourth avenue to North river.	22
Thirty-fourth street, from North to East river.....	37
	133 lamps, at 35 cents each lamp per night.
Broadway, from Fourteenth to Fifty-ninth street.....	46
Madison Park.....	14
Union Park.....	9
	69 lamps, at 45 cents each lamp per night.
Total, 224 lamps.	

United States Illuminating Company ("United States System")—

Lamps.	
Broadway, from Battery place to Thirteenth street....	53
Park Row, from Ann street to Brooklyn Bridge.....	5
	58 lamps, at 25 cents each lamp per night.
Sixth avenue, from Fifteenth to Thirty-third street....	18 lamps, at 29 cents each lamp per night.
Barclay street, from Broadway to North river.....	7
Battery Park.....	20
Bleecker street, from Christopher to Thirteenth street.	13
Canal street, from Bowery to North river.....	26
Catharine street, from East Broadway to East river...	7
Chambers street, from Broadway to North river.....	8
City Hall Park.....	13
Cortlandt street, from Broadway to North river.....	6
Fulton street, from North river to East river.....	17
Liberty street, from Broadway to North river.....	5
South street, from Whitehall to Catharine street.....	32
Whitehall street, from Bowling Green to South Ferry.	6
	160 lamps, at 35 cents each lamp per night.
Total, 236 lamps.	

East River Electric-light Company ("Thomson-Houston System")—

Lamps.	
Christopher street, from West to Bleecker street.....	6
Grand street, from Bowery to Sheriff street.....	14
Houston street, from Bowery to Avenue C.....	13
	33 lamps, at 25 cents each lamp per night.
Avenue B, from Houston to Sixth street.....	5
Tompkins Park.....	16
	21 lamps, at 29 cents each lamp per night.
Avenue B, from Tenth to Fourteenth street.....	4
Avenue D, from Sixth to Fourteenth street.....	8
First avenue, from Houston to Fourteenth street.....	13
Eighth street, from Sixth to Fourth avenue.....	10
Tenth street, from Second avenue to East river.....	12
Fourteenth street, from East river to Broadway.....	21
Twenty-third street, from East river to Fourth avenue	14
Christopher street, from Sixth avenue to Bleecker street	6
East Broadway, from Chatham Square to Grand street	20
Grand street, from Broadway to Sullivan street.....	5
Houston street, from Mulberry street to Bowery.....	3
Stuyvesant Park, West.....	8
Stuyvesant Park, East.....	8
Stuyvesant street, from Eighth to Tenth street.....	3
	135 lamps, at 35 cents each lamp per night.
Total, 189 lamps.	

Mount Morris Electric-light Company ("Schuyler System")—

Lamps.	
Thirteenth avenue, from Gansevoort to Bloomfield street	3
Gansevoort Market Square.....	13
West Washington Market.....	12
	28 lamps, at 23 cents each lamp per night.
Greenwich street, from Battery place to Chambers street.....	18 lamps, at 24 cents each lamp per night.
One Hundred and Twenty-fifth street, from Lenox to Ninth avenue.....	11 lamps, at 25 cents each lamp per night.
Bloomfield street, from West street to Thirteenth avenue.....	1
Gansevoort street, from West street to Thirteenth avenue.....	1
West street, from Battery place to West Eleventh street.....	50
	52 lamps, at 35 cents each lamp per night.
Total, 109 lamps.	

Harlem Lighting Company ("Fort Wayne-Jenny System")—

Lamps.	
Third avenue, from Eighty-sixth street to Harlem Bridge.....	49
Forty-second street, from North river to East river...	37
One Hundred and Twenty-fifth street, from East river to Lenox avenue.....	16
Harlem Bridge, southerly span.....	2
	104 lamps, at 35 cents each lamp per night.
Mount Morris Park.....	19 lamps, at 50 cents each lamp per night.
Total, 123 lamps.	

Recapitulation of Electric Lamps.

28 lamps at 23 cents each per night, or \$83.95 each per year.	
18 " 24 " " " 87.60 "	
109 " 25 " " " 91.25 "	
54 " 29 " " " 105.85 "	
584 " 35 " " " 127.75 "	
69 " 45 " " " 164.25 "	
19 " 50 " " " 182.50 "	

881 electric lamps.

These electric light contracts expired on December 31, 1890. On December 4 last bids were received by the Gas Commission from the several electric-light companies for lighting electric lamps during the year 1891. On these bids being opened it was found that the prices named therein were largely in excess of the rates fixed in the contracts for 1890. On December 8 a resolution was adopted rejecting all of the bids received on the 4th on the ground that the prices appeared to be excessive, and on December 11 a re-advertisement was ordered to be prepared and issued, the new bids to be received on December 23. On this latter date the bids were opened and the prices named therein were found to be on an average of a fraction over forty cents per night for each lamp on Manhattan Island and forty-five cents for the territory north of the Harlem river, being a difference of about \$18.25 per year for each lamp. The awards of contract, however, have not yet been made by the Gas Commission. A contract has been made with the Equitable Gas-light Company for supplying illuminating gas of not less than thirty-candle power to the public buildings, markets and armories on the lines of its mains for the year 1891 at \$1.25 per 1,000 cubic feet. Also, one with the Consolidated Gas Company for furnishing gas of not less than twenty-candle power to certain buildings at \$1.25 per 1,000 cubic feet. The various buildings to which gas is furnished by this Bureau are shown on Exhibit "A."



The following statement will show the average amount of impurities found in the gases of such of the companies as have mains on the lines of our photometric stations, as determined by the analyses made by Dr. E. G. Love, Gas Examiner, in the laboratories of this Bureau:

OF WHAT COMPANY.	SULPHUR. (Grains in 100 Cubic Feet.)				AMMONIA. (Grains in 100 Cubic Feet.)				SULPHURET HYDROGEN.
	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	
Consolidated Gas Co., Twenty-first Street Station.....	7.90	4.71	4.10	4.31	0.94	5.38	6.45	0.29	None.
Consolidated Gas Co., Fourteenth and Eighteenth Streets Stations.....	16.86	9.65	7.57	19.52	2.48	9.35	9.47	4.11	"
Consolidated Gas Co., Forty-fourth Street Station.....	4.93	5.73	4.50	3.51	0.29	0.45	0.69	0.22	"
Consolidated Gas Co., Forty-second Street Station.....	24.21	19.21	20.38	15.57	6.66	11.89	7.14	1.11	"
Consolidated Gas Co., Ninety-ninth and One Hundred and Eleventh Streets Stations.....	4.62	3.50	4.31	4.35	0.50	0.85	0.73	0.06	"
New York Mutual Gas-light Co.....	7.42	4.66	6.84	11.96	0.11	0.28	0.24	0.24	Trace.
Equitable Gas-light Co.....	6.83	6.24	6.60	5.74	0.21	0.16	0.18	0.40	None.

The following table will show the specific gravity of the gases:

OF WHAT COMPANY.	FIRST QUARTER.	SECOND QUARTER.	THIRD QUARTER.	FOURTH QUARTER.
Consolidated Gas Co., Twenty-first Street Station.....	.597	.571	.582	.641
Consolidated Gas Co., Fourteenth and Eighteenth Streets Stations.....	.518	.512	.516	.540
Consolidated Gas Co., Forty-fourth Street Station.....	.648	.628	.644	.686
Consolidated Gas Co., Forty-second Street Station.....	.511	.513	.503	.495
Consolidated Gas Co., Ninety-ninth and One Hundred and Eleventh Streets Stations.....	.606	.611	.620	.645
New York Mutual Gas-light Co.....	.720	.675	.696	.753
Equitable Gas-light Co.....	.668	.699	.682	.732

The gases manufactured by the several companies are of the following kinds:

Consolidated Gas Co., Twenty-first Street Station, water-gas, "Tessie du Motay" process.  
Consolidated Gas Co., Fourteenth and Eighteenth Streets Stations, coal-gas.  
Consolidated Gas Co., Forty-fourth Street Station, water-gas, "Tessie du Motay" process.  
Consolidated Gas Co., Forty-second Street Station, coal-gas.  
Consolidated Gas Co., Ninety-ninth and One Hundred and Eleventh Streets Stations, coal-gas and water-gas, "Tessie du Motay" process.  
New York Mutual Gas-light Co., water-gas, "Wilkinson's" process.  
Equitable Gas-light Co., water-gas, "Jermonowski" process.  
Standard Gas-light Co., water-gas, "Flannery" process.  
Central Gas-light Co., coal-gas.  
Northern Gas-light Co., coal-gas.  
Yonkers Gas-light Co., water-gas, "Saulsbury" process.

The following statement will show the average maximum and minimum pressure on the mains of such of the companies as connect with our photometric stations, as recorded on the pressure registers during the year, the average being made for the time during which the public lamps are required to be kept lighted:

OF WHAT COMPANY.	AVERAGE MAXIMUM PRESSURE.				AVERAGE MINIMUM PRESSURE.			
	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.
Consolidated Gas Co., Twenty-first Street Station.....	2.20	1.68	1.91	2.32	1.85	1.64	1.88	1.98
Consolidated Gas Co., Fourteenth and Eighteenth Streets Stations.....	2.83	2.56	2.07	2.52	1.44	1.42	1.44	1.29
Consolidated Gas Co., Forty-fourth Street Station.....	2.75	2.53	2.60	2.77	1.30	1.59	1.73	1.13
Consolidated Gas Co., Forty-second Street Station.....	1.88	1.53	1.72	1.59	0.99	0.88	0.86	1.05
Consolidated Gas Co., One Hundred and Eleventh Street Station.....	2.77	2.54	2.44	2.86	1.41	1.28	1.29	1.45
New York Mutual Gas-light Co.....	2.91	2.80	2.79	3.10	1.90	1.89	2.10	1.94
Equitable Gas-light Co.....	3.25	2.98	2.99	3.02	1.52	1.58	1.76	1.45

#### WASHINGTON BRIDGE.

On May 1 last this Bureau assumed the charge of the lighting of the new Washington Bridge over the Harlem river.

This bridge, although not yet turned over to the city by the commissioners who had charge of its erection, is fully completed and is now a very prominent public thoroughfare.

During its construction it was wired in underground piping for electric lighting, and also provided with gas-mains and lamps; it was lighted by the commissioners, when first completed, by electric-lights, but these gave out after a short trial and it was found that the wires were grounded at some place in the masonry. The commissioners then resorted to gas-lighting and this is now maintained, although some of the lamps give us trouble in consequence of the pipes or elbows being trapped which cause the gas company to frequently have to resort to the use of a force pump.

#### PAVEMENTS.

In February last I furnished each of the gas companies doing business south of the Harlem river with lists showing all the streets or parts of streets which you-proposed to have paved or repaved during the year 1890. At the same time the companies were notified that if any work was necessary to be done in such streets for the laying or repairing of gas-mains or service-pipes, then all such work must be done before the new paving was commenced. This action was taken with the view of having all such underground fixtures placed in thorough condition in order that there might be no necessity for breaking up the new pavements for the future repairs or laying of gas-mains. I also caused a large number of the old street-lamp services which were found badly corroded to be taken up and new service-pipes substituted. The Consolidated Gas Company, which had much very old mains in the ground, has accordingly made a thorough investigation of its pipe system in the streets mentioned on the list, and it has opened trenches and examined and recaulked 231,632 linear feet of main, has taken up 53,487 feet, and left disused and dead 28,787 feet.

The New York Mutual, Equitable and Standard Gas Companies did not have much, if any, of this work to do, and it is to be hoped that the necessity of tearing up the new pavements will be reduced to a minimum.

#### ARMORIES.

Prior to the year 1878 the cost of the gas consumed in the armories of the National Guard was defrayed by the several military organizations out of their regimental funds.

In the year 1878 a law was enacted by the State Legislature (chapter 275), which provided that the armories should be lighted at the expense of the county in which the same may be located. Since the passage of this law the consumption of gas in the armories has been continually on the increase, and it is very evident that an extravagant consumption and unnecessary waste is permitted at the expense of the city. Our inspectors have found large numbers of gas-burners in full blaze at midday and the buildings then not in use. Balls, concerts, athletic games, etc., are held in the armories and of course the light is furnished at the expense of the city. An exception, however, is made by the commander of the Seventh Regiment, for at this armory a record is kept of the amount of gas consumed on all occasions not strictly within the military code, and at the close of the year this Bureau is furnished, by the colonel of the regiment, with a statement of the total amount of gas consumed during the year for purposes not strictly regimental, and such amount is deducted from the bill of the gas company and the check of the regiment is sent to the company in payment for the amount deducted by this Bureau.

It seems to me, therefore, that it would be well for the Armory Board to adopt some adequate rules and regulations covering the proper use and consumption of gas in the armories of the National Guard.

#### CONTRACTS FOR SUPPLIES.

In compliance with the directions contained in your circular letter of December 31, 1889, requiring that all supplies which would amount to \$1,000 during the year should be obtained by contract, specifications were prepared for the furnishing of 800 cast-iron lamp-posts, 3,000 street-lamps, 800 boulevard-lamps and 1,600 globes. On February 19 last bids for the above were received and the prices were lower than those previously paid for similar kinds of supplies and a better quality of work was obtained.

For twenty-five years it had been the practice of the Department to obtain supplies on orders given to an amount less than \$1,000, and the action inaugurated by you was a step in the right direction and strictly in accordance with the law.

#### BRIDGES OVER THE HARLEM RAILROAD.

Gas-lamps have been erected and lighted at all the bridges over the depressed tracks of the Harlem railroad, in the Twenty-third and Twenty-fourth Wards, where the approaches were sufficiently graded to permit of such work being done. At a large majority of the bridges, however, the approaches have not been completed and lamps cannot be erected until the grading is sufficiently advanced to permit the laying of gas-mains.

#### BREAKAGE OF GLASS.

When the gas-lamps were extinguished in January last in the several streets in which electric lamps were relighted, the lanterns were left on the lamp-posts in order that they might be in readiness for immediate use in case of the suspension of electric lighting. Within a few weeks, however, it was found that the lanterns were being rapidly destroyed and rendered useless by mischievous boys. In every part of the city where the gas-lamps were discontinued the glass was broken and metal work bent, and the matter became so extensive that as a work of necessity the lanterns had to be removed from the lamp-posts, and we have now on hand over six hundred lanterns with all the glass broken out and many of them with the metal frames so destroyed that they are unfit to be repaired.

The breakage of glass in the public street-lamps gives us a great deal of trouble and annoyance, as the lamps cannot be kept lighted when the glass is broken out.

During the past year 142,775 lights of glass have been used by the gas companies in the relighting of street-lamps, and we have no way to provide a preventive except by notification to the police.

Yours respectfully,

S. McCORMICK, Superintendent of Lamps and Gas.

#### EXHIBIT "A."

Statement showing the Amounts on Vouchers drawn for Gas to the various Public Markets, Offices, etc., and for Fitting up, Repairing, Lighting, etc., the Public Lamps, for the First, Second, Third and Fourth Quarters of the Year 1890, with the Totals for the whole Year.

	FIRST QUARTER ENDING MARCH 31.	SECOND QUARTER ENDING JUNE 30.	THIRD QUARTER ENDING SEPT. 30.	FOURTH QUARTER ENDING DEC. 31.	TOTAL
Washington Market.....	\$1,136 49	\$799 86	\$755 87	\$1,067 62	\$3,759 84
Catharine Country Market.....	52 13	38 00	37 13	49 50	176 76
Catharine Meat Market.....	26 63	18 88	18 62	24 75	88 88
Fulton Meat Market.....	322 49	249 25	176 75	357 87	1,106 36
Fulton Country Market.....	508 75	425 50	368 12	536 63	1,839 00
Essex Market.....	34 75	25 75	22 75	32 25	115 50
Centre Market.....	125 25	119 25	102 00	133 00	479 50
Clinton Market.....	176 63	108 63	181 88	303 12	770 26
Union Market.....	12 25	4 50	5 25	15 13	37 13
Tompkins Market.....	147 38	109 75	100 50	139 75	497 38
Jefferson Market.....	206 50	97 75	69 75	200 00	574 00
First District Police Court.....	453 38	316 50	262 62	362 75	1,395 25
Second District Police Court.....	149 00	79 50	51 88	122 13	402 51
Third District Police Court.....	79 37	45 00	32 50	48 00	204 87
Fourth District Police Court.....	119 51	96 75	83 00	151 00	450 26
Fifth District Police Court.....	47 24	17 25	4 26	30 63	99 38
First District Civil Court.....	13 13	1 62	99	7 62	20 36
Second District Civil Court.....	13 75	4 13	1 13	11 12	30 13
Fourth District Civil Court.....	13 00	10 75	8 75	17 25	49 75
Fifth District Civil Court.....	50 24	41 63	25 50	52 25	160 62
Sixth District Civil Court.....	3 51	1 75	1 25	3 00	9 51
Eighth District Civil Court.....	14 62	7 50	3 75	9 50	35 37
Ninth District Civil Court.....	9 37	4 25	4 87	14 50	32 99
Tenth District Civil Court.....	.....	.....	.....	.....	.....
Court-room, Brown-stone Building.....	252 25	202 01	148 13	241 50	843 89
New Court-house.....	1,527 37	1,278 87	1,092 38	1,530 00	5,428 62
City Hall.....	599 63	570 87	451 24	574 75	2,196 49
Corporation Counsel's Office.....	60 50	23 75	6 50	46 87	137 62
Corporation Attorney's Office.....	46 75	37 49	30 87	58 26	173 37
Public Administrator's Office.....	3 00	2 63	2 25	3 37	11 25
Board of Assessors.....	10 74	8 88	8 25	10 50	38 37
Department of Public Works.....	338 62	210 13	173 63	297 99	1,020 37
Department of Taxes.....	14 38	9 12	6 25	13 51	43 26
Court of Special Sessions.....	69 12	52 13	31 24	72 38	224 87
City Record Book Bindery.....	4 76	5 37	3 01	3 50	16 64
Register's Office.....	170 62	115 38	54 62	119 62	460 24
County Jail.....	423 38	342 75	303 25	421 50	1,495 88
Pipe Yard, Rivington street.....	7 12	3 88	2 62	4 63	18 25
Pipe Yard, East Twenty-fourth street.....	7 00	4 49	5 13	7 50	24 12
Water Purveyor's Shop, Mulberry street.....	1 76	1 12	75	1 50	5 13
Water Purveyor's Shop, West Thirtieth street.....	10 62	7 50	4 25	10 75	33 12
Water Purveyor's Shop, East Eighty-seventh street.....	5 86	4 50	4 38	8 75	23 49
Water Purveyor's Shop, East One Hundred and Twenty-fifth street.....	17 88	11 38	7 24	15 75	52 25
Water Purveyor's Shop, No. 3351 Third avenue.....	.....	.....	.....	26 88	26 88
South Gate-house.....	54 13	46 99	39 14	55 12	195 38
Engine-house, High Bridge.....	138 63	98 38	70 25	121 38	428 64
Engine-house, Ninety-eighth street.....	255 24	219 25	217 24	224 62	916 35
Clock Tower, Third District Court-house.....	343 12	289 50	325 00	319 25	1,276 87
New York City Civil Service Board.....	7 00	4 12	2 50	7 50	21 12



	FIRST QUARTER ENDING MARCH 31.	SECOND QUARTER ENDING JUNE 30.	THIRD QUARTER ENDING SEPT. 31.	FOURTH QUARTER ENDING DEC. 31.	TOTAL.
Bureau of Streets and Roads, West One Hundred and Nineteenth street.....	\$6 76	\$4 26	\$3 37	\$6 75	\$21 14
Corporation Yard, East Sixteenth street.....	8 00	5 50	4 13	10 00	27 63
Dog Pound, East One Hundred and Second street.....	6 25	5 37	5 25	5 50	22 37
Photometric Station, Grand street.....	29 38	11 25	9 49	22 25	72 37
Photometric Station, Seventy-ninth street.....	9 25	2 75	38	10 75	23 13
Office of Engineer of Croton Aqueduct, at east- erly end of High Bridge.....				4 96	4 96
Seventh Regiment Armory.....	1,360 00	6,100 00	197 00	895 95	3,103 95
Eighth Regiment Armory.....	1,209 51	966 88	448 13	889 00	3,513 52
Ninth Regiment Armory.....	262 12	238 24	42 75	262 63	805 74
Twelfth Regiment Armory.....	584 25	443 25	274 50	566 00	1,868 00
Twenty-second Regiment Armory.....	850 01	331 88	210 13	846 62	2,238 64
Sixty-ninth Regiment Armory.....	233 88	172 25	101 00	186 38	693 51
Seventy-first Regiment Armory.....	462 37	305 00	126 50	382 50	1,276 37
First Battery Armory.....	120 87	65 25	43 00	71 75	300 87
Second Battery Armory.....	158 75	103 00	40 75	87 50	390 00
Brigade Headquarters.....	93 38	39 50			132 88
Troop "A" Armory.....				66 75	66 75
Public Bath, Battery.....		4 37	25 38	6 25	36 00
Public Bath, Grand street, East river.....		1 25	32 76	4 75	36 76
Public Bath, Market street, East river.....		2 13	22 99	3 00	28 12
Public Bath, Duane street, North river.....		3 75	31 87	3 38	39 00
Public Bath, Stanton street, East river.....		5 25	30 12	4 12	39 49
Public Bath, Horatio street, North river.....		3 25	24 39	3 88	31 52
Public Bath, Nineteenth street, East river.....		3 63	20 50	3 37	27 50
Public Bath, Twenty-ninth street, North river.....		4 87	22 25	4 25	31 37
Public Bath, Thirty-seventh street, East river.....		1 75	19 75	3 00	24 50
Public Bath, Fiftieth street, North river.....			27 51	3 25	30 76
Public Bath, Fifty-first street, East river.....		3 88	20 12	2 75	25 75
Public Bath, Seventy-eighth street, East river.....		75	21 62	2 88	25 25
Public Bath, One Hundred and Twelfth street, East river.....		2 50	30 75	4 37	37 62
Public Bath, One Hundred and Thirty-first street, North river.....			27 61	3 13	30 74
Public Bath, One Hundred and Thirty-eighth street, East river.....				25 92	25 92
Traveling expenses.....				149 71	149 71
Gas examinations.....	379 50	386 50	386 50	389 00	1,541 50
Lighting public markets, etc. (pay-rolls).....	866 00	779 50	776 00	789 00	3,210 50
Cleaning photometrical stations (pay-rolls).....	15 00	15 00	15 00	15 00	60 00
New lamp-posts.....	31 50	630 47	4,136 33		4,798 30
New lamp-posts, Twenty-third and Twenty- fourth Wards.....		1,253 15	139 24		1,392 39
New street-lamps.....	67 14	2,359 50	2,484 00	1,909 00	6,819 64
New street-lamps, Twenty-third and Twenty- fourth Wards.....		207 00		23 00	230 00
New Boulevard-lamps.....	2,748 38	577 12	1,774 12	2,201 63	7,301 25
New Boulevard-lamps, Twenty-third and Twenty-fourth Wards.....		192 38		21 37	213 75
New cross-heads.....		260 00	162 50		422 50
New lamp-irons.....		220 00	176 00	84 00	480 00
New lamp-brackets.....		59 00		12 50	71 50
New street-signs.....	937 50	187 50	281 25	56 25	1,462 50
New street-signs, Twenty-third and Twenty- fourth Wards.....				75 00	75 00
Supplies for photometric stations.....				54 35	54 35
Lettering Boulevard globes.....	78 00	43 00	126 00		252 00
Glass.....		106 50	62 50		169 00
Iron-wedges.....		10 00			10 00
Paints, etc.....		11 16			11 16
Carriages.....	245 00	290 00	380 00	300 00	1,215 00
Gas governors.....		600 00			600 00
Repairing street-lamps.....			201 30	340 50	541 80
Rent of photometrical rooms, Grand street.....	150 00	150 00	150 00	150 00	600 00
Rent of photometrical rooms, Seventy-ninth street.....	90 00	90 00	90 00	90 00	360 00
Fitting-up new lamps.....	840 00	1,744 00	704 00	1,266 00	4,554 00
Fitting-up new lamps, Twenty-third and Twenty-fourth Wards.....	112 00	128 00	320 00	96 00	656 00
Resetting and repairing lamp-posts.....	4,477 50	3,147 00	4,075 00	3,040 50	14,740 00
Resetting and repairing lamp-posts, Twenty- third and Twenty-fourth Wards.....	264 00	392 00	741 50	821 00	2,218 50
Lighting public lamps.....	64,623 38	87,928 36	88,258 13	116,083 63	356,893 50
Lighting public lamps, Twenty-third and Twenty-fourth Wards.....	24,558 28	37,219 04	37,280 69	49,764 67	148,822 68
Lighting electric-lamps.....	4,788 98	17,691 15	36,085 97	35,541 17	94,107 27
Lighting naphtha-lamps.....	482 32	724 43	776 25	1,035 00	3,018 00
Lighting incandescent-lamps in City Hall.....				44 19	44 19
Totals.....	\$119,231 11	\$166,963 76	\$186,758 52	\$226,632 81	\$699,586 20

## RECAPITULATION.

Gas to public offices, etc.....	\$13,476 63	\$9,557 00	\$7,176 24	\$12,280 34	\$42,490 21
Supplies to public lamps, etc.....	5,608 02	6,780 25	11,201 50	6,540 94	30,130 71
Supplies to public lamps, etc., Twenty-third and Twenty-fourth Wards.....		1,652 53	139 24	119 37	1,911 14
Fitting-up new lamps.....	840 00	1,744 00	704 00	1,266 00	4,554 00
Fitting-up new lamps, Twenty-third and Twenty-fourth Wards.....	112 00	128 00	320 00	96 00	656 00
Resetting and repairing lamp-posts.....	4,477 50	3,147 00	4,075 00	3,040 50	14,740 00
Resetting and repairing lamp-posts, Twenty- third and Twenty-fourth Wards.....	264 00	392 00	741 50	821 00	2,218 50
Lighting public lamps.....	64,623 38	87,928 36	88,258 13	116,083 63	356,893 50
Lighting public lamps, Twenty-third and Twenty-fourth Wards.....	24,558 28	37,219 04	37,280 69	49,764 67	148,822 68

	FIRST QUARTER ENDING MARCH 31.	SECOND QUARTER ENDING JUNE 30.	THIRD QUARTER ENDING SEPT. 30.	FOURTH QUARTER ENDING DEC. 31.	TOTAL.
Lighting electric-lamps.....	\$4,788 98	\$17,691 15	\$36,085 97	\$35,541 17	\$94,107 27
Lighting naphtha-lamps.....	482 32	724 43	776 25	1,035 00	3,018 00
Lighting incandescent lamps.....				44 19	44 19
Totals.....	\$119,231 11	\$166,963 76	\$186,758 52	\$226,632 81	\$699,586 20

## EXHIBIT "B."

Summary of the Appropriation for "Lamps and Gas and Electric Lighting," for 1890, Showing the Amounts Expended during each of the Quarters of the Year, with the Balance Standing to the Credit of the Appropriation.

Amount appropriated for "Lamps and Gas and Electric Lighting," 1890.....	\$700,000 00
Vouchers drawn in first quarter ending March 31.....	\$119,231 11
Vouchers drawn in second quarter ending June 30.....	166,963 76
Vouchers drawn in third quarter ending September 30.....	186,758 52
Vouchers drawn in fourth quarter ending December 31.....	226,632 81

Total amount of vouchers drawn during the year..... 699,586 20

Surplus balance..... \$413 80

## EXHIBIT "C."

Summary of the Appropriation for "Lamps and Gas and Electric Lighting—Salaries" for 1890, Showing the Amounts Expended during each of the Quarters of the Year, with the Balance Standing to the Credit of the Appropriation.

Amount appropriated for "Lamps and Gas and Electric Lighting—Salaries," 1890.....	\$6,500 00
Vouchers drawn in first quarter ending March 31.....	\$1,581 94
Vouchers drawn in second quarter ending June 30.....	1,624 95
Vouchers drawn in third quarter ending September 30.....	1,624 95
Vouchers drawn in fourth quarter ending December 31.....	1,573 88

Total amount of vouchers drawn during the year..... 6,405 72

Surplus balance..... \$94 28

## EXHIBIT "D."

Summary of the "Lamp Account," Showing the Number of New Lamps Lighted, Old Lamps Relighted and Lamps Discontinued by each Gas and Electric-light Company during the Quarter ending December 31, 1890; also a Statement for the Year.

CONSOLIDATED GAS COMPANY, BRANCH 1.					
Number of lamps lighted September 30, 1890.....	3,374				
Number of new lamps lighted during the quarter.....	1				
Number of old lamps relighted during the quarter.....	16			3,391	
Less lamps discontinued during the quarter.....				4	
Number of lamps lighted December 31, 1890.....					3,387
CONSOLIDATED GAS COMPANY, BRANCH 2.					
Number of lamps lighted September 30, 1890.....	1,694				
Number of new lamps lighted during the quarter.....	0				
Number of old lamps relighted during the quarter.....	4			1,698	
Less lamps discontinued during the quarter.....				3	
Number of lamps lighted December 31, 1890.....					1,695
CONSOLIDATED GAS COMPANY, BRANCH 3.					
Number of lamps lighted September 30, 1890.....	2,047				
Number of new lamps lighted during the quarter.....	6				
Number of old lamps relighted during the quarter.....	3			2,056	
Less lamps discontinued during the quarter.....				2	
Number of lamps lighted December 31, 1890.....					2,054
CONSOLIDATED GAS COMPANY, BRANCH 4.					
Number of lamps lighted September 30, 1890.....	3,427				
Number of new lamps lighted during the quarter.....	16				
Number of old lamps relighted during the quarter.....	16			3,459	
Less lamps discontinued during the quarter.....				10	
Number of lamps lighted December 31, 1890.....					3,449
CONSOLIDATED GAS COMPANY, BRANCH 6.					
Number of lamps lighted September 30, 1890.....	5,273				
Number of new lamps lighted during the quarter.....	42				
Number of old lamps relighted during the quarter.....	7			5,322	
Less lamps discontinued during the quarter.....	17				
Less lamps transferred to Standard Gas-light Co.....	424			441	
Number of lamps lighted December 31, 1890.....					4,881
Total number of lamps lighted by Consolidated Gas Company, December 31, 1890.....					15,466
NEW YORK MUTUAL GAS-LIGHT COMPANY.					
Number of lamps lighted September 30, 1890.....	273				
Number of new lamps lighted during the quarter.....	0				
Number of old lamps relighted during the quarter.....	1			274	
Less lamps discontinued during the quarter.....	3				
Less lamps transferred to Standard Gas-light Co.....	7			10	
Number of lamps lighted December 31, 1890.....					264



EQUITABLE GAS-LIGHT COMPANY.			HARLEM LIGHTING COMPANY.		
Number of lamps lighted September 30, 1890	3,712		Number of lamps lighted September 30, 1890	124	
Number of new lamps lighted during the quarter	5		Number of new lamps lighted during the quarter	0	
Number of old lamps relighted during the quarter	2		Number of old lamps relighted during the quarter	0	
Less lamps discontinued during the quarter		3,719	Less lamps discontinued during the quarter		124
Number of lamps lighted December 31, 1890		3,717	Number of lamps lighted December 31, 1890		124
STANDARD GAS-LIGHT COMPANY, MADISON SQUARE BRANCH.			RECAPITULATION FOR QUARTER.		
Number of lamps lighted September 30, 1890	768		Number of gas-lamps lighted September 30, 1890	26,981	
Number of new lamps lighted during the quarter	2		Number of naphtha-lamps lighted September 30, 1890	138	
Number of old lamps relighted during the quarter	0		Number of electric-lamps lighted September 30, 1890	881	
Number of old lamps transferred from New York Mutual Gas-light Co.	7				28,000
Less lamps discontinued during the quarter		777	Number of new gas-lamps lighted during the quarter	90	
Number of lamps lighted December 31, 1890		777	Number of new naphtha-lamps lighted during the quarter	0	
STANDARD GAS-LIGHT COMPANY, HARLEM BRANCH.			Number of new electric-lamps lighted during the quarter	0	
Number of lamps lighted September 30, 1890	982		Number of gas-lamps relighted during the quarter	98	
Number of new lamps lighted during the quarter	7		Number of naphtha-lamps relighted during the quarter	0	
Number of old lamps relighted during the quarter	0		Number of electric-lamps relighted during the quarter	0	
Number of old lamps transferred from Consolidated Gas Co.	424		Less gas-lamps discontinued during the quarter		55
Less lamps discontinued during the quarter		1,413	Less naphtha-lamps discontinued during the quarter		0
Number of lamps lighted December 31, 1890		1,412	Less electric-lamps discontinued during the quarter		0
Total number of lamps lighted by Standard Gas-light Company, December 31, 1890		2,189	Total number of lamps lighted December 31, 1890		28,133
CENTRAL GAS-LIGHT COMPANY.			Summary of the "Lamp Account" for the Year 1890.		
Number of lamps lighted September 30, 1890	2,696		CONSOLIDATED GAS COMPANY, BRANCH 1.		
Number of new lamps lighted during the quarter	5		Number of lamps lighted December 31, 1889	3,730	
Number of old lamps relighted during the quarter	4		Number of new lamps lighted during the year 1890	28	
Less lamps discontinued during the quarter		2,705	Number of old lamps relighted during the year 1890	46	
Number of lamps lighted December 31, 1890		2,694	Number of old lamps relighted on account of extinguishment of electric light	583	
NORTHERN GAS-LIGHT COMPANY.			Less lamps discontinued during the year	28	4,407
Number of lamps lighted September 30, 1890	2,178		Less lamps discontinued on account of relighting electric lamps	978	
Number of new lamps lighted during the quarter	6		Less lamps transferred to Equitable Gas-light Co.	14	
Number of old lamps relighted during the quarter	45		Number of lamps lighted December 31, 1890		3,387
Less lamps discontinued during the quarter		2,229	CONSOLIDATED GAS COMPANY, BRANCH 2.		
Number of lamps lighted December 31, 1890		2,227	Number of lamps lighted December 31, 1889	2,371	
YONKERS GAS-LIGHT COMPANY.			Number of new lamps lighted during the year	8	
Number of lamps lighted September 30, 1890	557		Number of old lamps relighted during the year	14	
Number of new lamps lighted during the quarter	0		Number of old lamps relighted on account of extinguishment of electric lights	177	
Number of old lamps relighted during the quarter	0		Less lamps discontinued during the year	8	2,570
Number of lamps lighted December 31, 1890		557	Less lamps transferred to Equitable Gas-light Co.	46	
Total number of gas-lamps lighted December 31, 1890		27,114	Less lamps transferred to Standard Gas-light Co.	213	
NAPHTHA-LAMPS.			Less lamps discontinued on account of relighting electric lamps	608	875
NEW YORK AND NEW JERSEY GLOBE GAS-LIGHT COMPANY.			Number of lamps lighted December 31, 1890		1,695
Number of lamps lighted September 30, 1890	138		CONSOLIDATED GAS COMPANY, BRANCH 3.		
Number of new lamps lighted during the quarter	0		Number of lamps lighted December 31, 1889	2,520	
Number of old lamps relighted during the quarter	0		Number of new lamps lighted during the year	21	
Less lamps discontinued during the quarter		138	Number of old lamps relighted during the year	13	
Number of lamps lighted December 31, 1890		138	Number of old lamps relighted on account of extinguishment of electric lights	97	
Total number of naphtha-lamps lighted December 31, 1890		138	Less lamps discontinued during the year	15	2,651
ELECTRIC-LAMPS.			Less lamps discontinued on account of relighting electric lamps	143	
UNITED STATES ILLUMINATING COMPANY.			Less lamps transferred to Equitable Gas-light Co.	18	
Number of lamps lighted September 30, 1890	236		Less lamps transferred to Standard Gas-light Co.	421	597
Number of new lamps lighted during the quarter	0		Number of lamps lighted December 31, 1890		2,054
Number of old lamps relighted during the quarter	0		CONSOLIDATED GAS COMPANY, BRANCH 4.		
Less lamps discontinued during the quarter		236	Number of lamps lighted December 31, 1889	3,603	
Number of lamps lighted December 31, 1890		236	Number of new lamps lighted during the year	197	
BRUSH ELECTRIC ILLUMINATING COMPANY.			Number of old lamps relighted during the year	37	
Number of lamps lighted September 30, 1890	223		Number of old lamps relighted on account of extinguishment of electric lights	112	
Number of new lamps lighted during the quarter	0		Less lamps discontinued during the year	42	3,949
Number of old lamps relighted during the quarter	0		Less lamps discontinued on account of relighting electric lamps	339	
Less lamps discontinued during the quarter		223	Less lamps transferred to Equitable Gas-light Co.	58	
Number of lamps lighted December 31, 1890		223	Less lamps transferred to Standard Gas-light Co.	61	500
EAST RIVER ELECTRIC-LIGHT COMPANY.			Number of lamps lighted December 31, 1890		3,449
Number of lamps lighted September 30, 1890	189		CONSOLIDATED GAS COMPANY, BRANCH 6.		
Number of new lamps lighted during the quarter	0		Number of lamps lighted December 31, 1889	6,012	
Number of old lamps relighted during the quarter	0		Number of new lamps lighted during the year	412	
Less lamps discontinued during the quarter		189	Number of old lamps relighted during the year	75	
Number of lamps lighted December 31, 1890		189	Number of old lamps relighted on account of extinguishment of electric lights	50	
MOUNT MORRIS ELECTRIC-LIGHT COMPANY.			Less lamps discontinued during the year	91	6,549
Number of lamps lighted September 30, 1890	109		Less lamps discontinued on account of relighting electric lamps	103	
Number of new lamps lighted during the quarter	0		Less lamps transferred to Standard Gas-light Co.	1,474	1,668
Number of old lamps relighted during the quarter	0		Number of lamps lighted December 31, 1890		4,881
Less lamps discontinued during the quarter		109	Total number of lamps lighted by Consolidated Gas Co., December 31, 1890		15,466
Number of lamps lighted December 31, 1890		109	NEW YORK MUTUAL GAS-LIGHT COMPANY.		
			Number of lamps lighted December 31, 1889	703	
			Number of new lamps lighted during the year	1	
			Number of old lamps relighted during the year	3	
			Number of old lamps relighted on account of extinguishment of electric lights	30	
					737



				ELECTRIC LAMPS.			
				UNITED STATES ILLUMINATING COMPANY.			
Less lamps discontinued during the year.....	11			Number of lamps lighted December 31, 1889.....	2		
Less lamps discontinued on account of relighting electric lamps.....	453			Number of new lamps lighted during the year.....	0		
Less lamps transferred to Equitable Gas-light Co.....	2			Number of old lamps relighted during the year.....	382		384
Less lamps transferred to Standard Gas-light Co.....	7	473	264	Less lamps discontinued during the year.....	0		
Number of lamps lighted December 31, 1890.....				Less lamps transferred to Brush Electric Illuminating Co.....	22		
EQUITABLE GAS-LIGHT COMPANY.				Less lamps transferred to East River Electric Light Co.....	74		
Number of lamps lighted December 31, 1889.....	3,689			Less lamps transferred to Mount Morris Electric Light Co.....	52	148	
Number of new lamps lighted during the year.....	23			Number of lamps lighted December 31, 1890.....			236
Number of old lamps relighted during the year.....	14			BRUSH ELECTRIC ILLUMINATING COMPANY.			
Number of old lamps relighted on account of extinguishment of electric lights.....	37			Number of lamps lighted December 31, 1889.....	0		
Number of old lamps transferred from Consolidated Gas Co.....	136			Number of new lamps lighted during the year.....	0		
Number of lamps transferred from New York Mutual Gas-light Co.....	2	3,901		Number of old lamps relighted during the year.....	279		
Less lamps discontinued during the year.....	15			Number of old lamps transferred from United States Illuminating Co.....	22	301	
Less lamps discontinued on account of relighting electric lamps.....	169	184		Less lamps discontinued during the year.....	0		
Number of lamps lighted December 31, 1890.....			3,717	Less lamps transferred to East River Electric Light Co.....	40		
STANDARD GAS-LIGHT COMPANY, MADISON SQUARE BRANCH.				Less lamps transferred to Harlem Lighting Co.....	38	78	
Number of lamps lighted December 31, 1889.....	0			Number of lamps lighted December 31, 1890.....			223
Number of new lamps lighted during the year.....	5			EAST RIVER ELECTRIC LIGHT COMPANY.			
Number of old lamps relighted during the year.....	0			Number of lamps lighted December 31, 1889.....	0		
Number of old lamps transferred from Consolidated Gas Co.....	765			Number of new lamps lighted during the year.....	0		
Number of old lamps transferred from New York Mutual Gas-light Company.....	7	777		Number of old lamps relighted during the year.....	95		
Less lamps discontinued during the year.....	0			Number of old lamps transferred from United States Illuminating Co.....	74		
Number of lamps lighted December 31, 1890.....			777	Number of old lamps transferred from Brush Electric Illuminating Co.....	40	209	
STANDARD GAS-LIGHT COMPANY, HARLEM BRANCH.				Less lamps discontinued during the year.....	20		
Number of lamps lighted December 31, 1889.....	0			Number of lamps lighted December 31, 1890.....			189
Number of new lamps lighted during the year.....	9			MOUNT MORRIS ELECTRIC LIGHT COMPANY.			
Number of old lamps relighted during the year.....	0			Number of lamps lighted December 31, 1889.....	57		
Number of old lamps transferred from Consolidated Gas Co.....	1,404	1,413		Number of new lamps lighted during the year.....	0		
Less lamps discontinued during the year.....	1			Number of old lamps relighted during the year.....	0		
Total number of lamps lighted by Standard Gas-light Co....		1,412	2,189	Number of old lamps transferred from United States Illuminating Co.....	52	109	
CENTRAL GAS-LIGHT COMPANY.				Less lamps discontinued during the year.....	0		
Number of lamps lighted December 31, 1889.....	2,647			Number of lamps lighted December 31, 1890.....			109
Number of new lamps lighted during the year.....	50			HARLEM LIGHTING COMPANY.			
Number of old lamps relighted during the year.....	66			Number of lamps lighted December 31, 1889.....	86		
Number of old lamps relighted on account of electric lights.....	6	2,769		Number of new lamps lighted during the year.....	0		
Less lamps discontinued during the year.....		75		Number of old lamps relighted during the year.....	0		
Number of lamps lighted December 31, 1890.....			2,694	Number of old lamps transferred from Brush Electric Illuminating Co.....	38	124	
NORTHERN GAS-LIGHT COMPANY.				Number of lamps lighted December 31, 1890.....			124
Number of lamps lighted December 31, 1889.....	2,177			Total number of electric-lamps lighted December 31, 1890..			881
Number of new lamps lighted during the year.....	56			RECAPITULATION FOR YEAR.			
Number of old lamps relighted during the year.....	45	2,278		Number of gas-lamps lighted December 31, 1889.....	28,029		
Less lamps discontinued during the year.....		51		Number of naphtha-lamps lighted December 31, 1889.....	126		
Number of lamps lighted December 31, 1890.....			2,227	Number of electric-lamps lighted December 31, 1889.....	145	28,300	
YONKERS GAS-LIGHT COMPANY.				Number of new gas-lamps lighted during the year.....	810		
Number of lamps lighted December 31, 1889.....	557			Number of new naphtha-lamps lighted during the year.....	12		
Number of new lamps lighted during the year.....	0			Number of new electric-lamps lighted during the year.....	0	822	
Number of old lamps relighted during the year.....	0	557		Number of gas-lamps relighted during the year.....	313		
Less lamps discontinued during the year.....		0		Number of gas-lamps relighted on account of electric lights.....	1,092		
Number of lamps lighted December 31, 1890.....			557	Number of naphtha-lamps relighted during the year.....	0		
Total number of gas lamps lighted December 31, 1890.....			27,114	Number of electric-lamps relighted during the year.....	756	2,161	
NAPHTHA LAMPS.				Less gas-lamps discontinued during the year.....	337		
NEW YORK AND NEW JERSEY GLOBE GAS-LIGHT COMPANY.				Less gas-lamps discontinued on account of electric lights.....	2,793		
Number of lamps lighted December 31, 1889.....	126			Less naphtha-lamps discontinued during the year.....	0		
Number of new lamps lighted during the year.....	12			Less electric-lamps discontinued during the year.....	20	3,150	
Number of old lamps relighted during the year.....	0	138		Total number of lamps lighted December 31, 1890.....			28,133
Less lamps discontinued during the year.....		0					
Number of lamps lighted December 31, 1890.....			138				
Total number of naphtha lamps lighted December 31, 1890.....			138				

## EXHIBIT "E."

Statement Giving the Illuminating Power in Candles of the Gas supplied to the City by the several Gas-light Companies during the Quarter ending December 31, 1890, as Shown by the Daily Observations at the Photometrical Rooms of the Department of Public Works, with the Average for the Year.

FOR WHAT TIME.	CONSOLIDATED GAS CO., BRANCH 1.			CONSOLIDATED GAS CO., BRANCH 2.			CONSOLIDATED GAS CO., BRANCH 3.			CONSOLIDATED GAS CO., BRANCH 4.			CONSOLIDATED GAS CO., BRANCH 5.			N. Y. MUTUAL GAS-LIGHT CO.			EQUITABLE GAS-LIGHT CO.		
	ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.		
	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.
Oct. 4, 1890.....	21.66	23.21	22.56	20.20	21.60	21.05	28.03	29.56	28.62	22.48	25.04	23.50	26.04	27.93	26.95	28.13	29.52	28.99	28.62	29.48	29.09
" 11, ".....	21.80	24.40	23.09	21.05	22.06	21.53	27.62	29.00	28.54	23.20	24.72	24.02	25.96	27.42	26.67	28.52	30.16	29.48	27.64	30.35	28.85
" 18, ".....	18.92	22.78	21.55	19.02	21.41	20.11	27.96	28.86	28.44	22.38	22.86	22.62	26.36	27.56	27.16	27.56	30.26	28.88	27.78	30.74	28.83
" 25, ".....	22.56	24.08	23.23	19.40	22.62	20.69	27.98	29.18	28.52	21.90	24.18	22.78	24.96	27.16	26.03	26.98	28.64	27.99	26.82	29.26	28.19
Nov. 1, ".....	22.68	25.00	23.69	19.90	21.50	20.58	25.55	27.34	26.68	22.48	23.90	23.34	25.84	28.14	26.91	26.50	28.36	27.46	27.42	29.36	28.26
" 8, ".....	22.22	25.12	24.01	18.88	22.32	21.42	27.07	27.78	27.32	21.23	24.38	22.86	26.02	27.84	26.98	28.02	29.11	28.66	28.06	29.82	29.13
" 15, ".....	19.55	22.80	22.12	20.56	22.35	21.56	28.26	29.98	28.80	22.44	26.76	23.43	25.66	27.68	26.81	25.72	29.83	27.08	28.42	30.04	29.05
" 22, ".....	21.56	22.44	22.00	19.10	21.68	20.34	27.82	29.38	28.58	24.12	25.28	24.61	26.34	28.68	27.62	27.92	30.36	28.75	28.76	29.88	29.27
" 29, ".....	20.60	23.08	21.83	20.06	21.04	20.66	28.16	30.56	29.30	23.44	24.07	23.75	26.10	28.34	27.00	27.78	30.08	29.24	26.80	28.82	28.25
Dec. 6, ".....	18.93	21.25	19.75	17.52	20.44	18.89	26.62	27.91	27.24	21.92	23.34	22.60	24.18	26.08	25.28	28.22	29.12	28.71	27.80	30.60	29.39
" 13, ".....	17.77	22.46	20.82	17.46	21.30	19.50	28.14	30.00	28.90	21.84	23.44	22.64	24.94	26.74	25.86	27.28	30.06	28.61	28.76	30.36	29.49
" 20, ".....	20.42	23.55	22.28	18.25	20.78	19.77	25.50	29.76	27.73	21.33	22.80	22.05	24.05	26.73	25.07	26.54	28.35	27.39	28.20	31.24	29.85
" 27, ".....	19.51	23.91	22.33	18.86	21.38	20.27	25.86	27.76	26.85	21.94	23.66	22.87	26.18	27.23	26.70	29.15	29.78	29.47	27.38	31.01	29.56
For the Quarter.....	18.92	25.12	22.25	17.46	22.35	20.49	25.50	30.56	28.11	21.23	26.76	23.16	24.05	28.68	26.54	25.72	30.36	28.52	26.80	31.24	29.02



Average for the Year.

FOR WHAT TIME.	CONSOLIDATED GAS CO., BRANCH 1.			CONSOLIDATED GAS CO., BRANCH 2.			CONSOLIDATED GAS CO., BRANCH 3.			CONSOLIDATED GAS CO., BRANCH 4.			CONSOLIDATED GAS CO., BRANCH 5.			CONSOLIDATED GAS CO., BRANCH 6.			N. Y. MUTUAL GAS-LIGHT CO.			EQUITABLE GAS-LIGHT CO.		
	ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.			ILLUMINATING POWER IN CANDLES.		
Month of—	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.	Lowest.	Highest.	Average.
January.....	21.85	25.84	23.53	16.49	23.44	21.43	27.02	31.78	29.05	22.50	26.16	24.53	22.62	29.65	26.14	28.14	32.63	30.46	27.88	32.76	30.36			
February.....	20.63	24.66	22.54	19.24	21.84	20.35	26.06	31.54	28.97	21.44	25.22	22.95	23.14	28.90	26.04	27.44	31.35	29.68	26.82	31.64	29.24			
March.....	18.02	24.62	21.83	18.00	21.10	19.50	26.04	29.40	28.19	21.24	25.10	22.86	23.30	26.68	25.27	27.66	32.92	30.94	26.73	31.16	29.37			
April.....	20.58	24.82	23.09	20.14	22.14	21.03	27.42	29.94	28.85	21.64	23.90	22.76	23.12	27.26	26.10	27.90	32.42	30.41	25.84	31.30	29.11			
May.....	22.70	26.82	24.39	20.32	23.49	21.80	27.48	29.70	28.84	22.06	25.32	23.82	24.22	27.60	25.91	29.48	32.93	31.39	28.54	32.48	30.53			
June.....	23.48	25.94	24.54	20.81	23.18	22.10	27.80	30.38	28.92	21.70	24.38	22.83	25.50	28.04	26.83	28.06	32.93	30.57	29.16	31.48	30.44			
July.....	20.60	25.20	23.84	18.72	23.48	21.13	26.88	28.94	28.34	21.30	24.10	23.08	24.14	28.21	26.45	28.25	31.16	30.12	26.86	30.97	28.84			
August.....	21.14	25.48	23.15	18.65	22.74	20.58	26.10	29.84	28.28	22.05	24.99	23.74	24.91	30.62	27.45	26.70	30.97	29.53	27.01	30.74	28.88			
September.....	21.08	25.88	23.14	19.30	21.68	20.39	26.10	30.24	27.91	20.53	24.60	22.68	25.44	29.70	27.55	27.08	31.46	29.52	28.34	31.08	29.40			
October.....	18.92	24.40	22.61	19.02	22.06	20.84	27.62	29.56	28.53	21.90	25.04	23.23	24.95	27.93	26.70	26.98	30.26	28.83	26.82	30.74	28.74			
November.....	19.55	25.12	22.73	18.88	22.35	20.91	25.55	30.56	28.13	21.23	26.76	23.60	25.66	28.68	27.06	25.72	30.36	28.24	26.80	30.04	28.79			
December.....	17.77	23.91	21.29	17.46	21.38	19.61	25.50	30.00	27.68	21.33	23.66	22.54	24.05	27.23	25.73	26.54	30.06	28.54	27.38	31.24	29.57			
Totals for the Year.....	18.02	26.82	23.06	18.00	23.49	20.81	25.50	31.78	28.48	20.53	26.76	23.22	22.62	30.62	26.44	25.72	32.93	29.85	25.84	32.76	29.44			
Distance from gas-works.....	1.86 Miles			1.68 Miles			3.10 Miles			3.10 Miles			1.56 Miles			1.51 Miles			2.79 Miles					
Testing burner.....	Bray's Slit Union No. 7....			Bray's Slit Union No. 7....			Bray's Slit Union No. 7....			Bray's Slit Union No. 6....			Bray's Slit Union No. 6....			Bray's Slit Union No. 7....			Bray's Slit Union No. 7....					
Gas.....	Water-gas(Tessie du Motay)			Coal-gas, with water-gas...			Water-gas(Tessie du Motay)			Coal and naphtha.....			Water-gas(Tessie du Motay)			Water-gas.....			Water-gas(Jerzmonowski process).					

EXHIBIT "F."

Time Table for Lighting and Extinguishing the Public Lamps for the Year from May 1, 1890, to April 30, 1891.

MONTHS.	BEGIN TO LIGHT.	BEGIN TO EXTINGUISH.	MONTHS.	BEGIN TO LIGHT.	BEGIN TO EXTINGUISH.	MONTHS.	BEGIN TO LIGHT.	BEGIN TO EXTINGUISH.
May 1, 1890	H. M. 6.45	H. M. 4.00	Sept. 3, 1890	H. M. 6.15	H. M. 4.30	Jan. 1, 1891	H. M. 4.30	H. M. 6.30
" 7, "	6.55	3.40	" 10, "	6.05	4.40	" 8, "	4.40	6.30
" 14, "	7.00	3.30	" 17, "	5.55	4.50	" 15, "	4.50	6.25
" 21, "	7.10	3.15	" 24, "	5.40	5.00	" 22, "	5.00	6.25
" 28, "	7.15	3.15	Oct. 1, "	5.30	5.00	" 29, "	5.05	6.15
June 4, "	7.25	3.15	" 8, "	5.20	5.10	Feb. 5, "	5.10	6.10
" 11, "	7.25	3.15	" 15, "	5.10	5.20	" 12, "	5.20	5.55
" 18, "	7.30	3.15	" 22, "	5.00	5.30	" 19, "	5.30	5.55
" 25, "	7.30	3.15	" 29, "	4.45	5.35	" 26, "	5.30	5.45
July 2, "	7.30	3.15	Nov. 5, "	4.40	5.45	Mar. 5, "	5.40	5.35
" 9, "	7.30	3.15	" 12, "	4.30	6.00	" 12, "	5.50	5.20
" 16, "	7.20	3.15	" 19, "	4.25	6.00	" 19, "	6.00	5.10
" 23, "	7.20	3.15	" 26, "	4.20	6.10	" 26, "	6.10	4.55
" 30, "	7.10	3.30	Dec. 3, "	4.20	6.15	Apr. 2, "	6.15	4.40
Aug. 6, "	7.10	3.45	" 10, "	4.20	6.20	" 9, "	6.25	4.30
" 13, "	6.55	4.00	" 17, "	4.20	6.20	" 16, "	6.30	4.20
" 20, "	6.45	4.10	" 24, "	4.20	6.25	" 23, "	6.40	4.10
" 27, "	6.30	4.20				" 30, "	6.45	4.00

DEPARTMENT OF PUBLIC WORKS—BUREAU OF LAMPS AND GAS, }  
NEW YORK, April 24, 1890.

SIR—The above table will show the time for lighting and extinguishing the public lamps during the year from May 1, 1890, to April 30, 1891. All the lamps to be lighted within one hour from the time of beginning.

THOMAS F. GILROY, Commissioner of Public Works.

S. McCORMICK, Superintendent of Lamps and Gas.

INSTRUCTIONS TO LAMP-LIGHTERS.

I.—The lamps must be lighted and extinguished strictly in accordance with the time specified in this Time Table, and all the lamps must be lighted within one hour from the time of beginning.

II.—The lamps must be kept clean and in good condition; the top glass, sides and bottom glass must be thoroughly cleaned, both on the outside and inside of the lantern, three times in each week, and oftener if necessary to keep them clean, and dust and dirt must be brushed from the frames, and the glass street signs must also be cleaned. Lighters must bear in mind that with clean glass a greater brilliancy is obtained from the flame. In the winter season the snow must be brushed from the lanterns after each snow-fall. Dirty and disordered lamps will be considered as evidence of a careless and incompetent lamp-lighter.

III.—The glass street signs and house numbers must be kept in their proper positions. The sign bearing the name of any avenue or main street must face the roadway of such avenue or street. One of the signs bearing the name of a cross street must face the roadway of such street and the other sign must be placed on the opposite side of the lantern. Be careful to observe that the name does not face the inside of the lantern.

IV.—Advertising signs on the lamp-posts or lantern, or colored or ground glass in the lantern, are a violation of a corporation ordinance, and must not be permitted, except the red glass near the fire-alarm boxes, and these must be kept in place.

V.—If a lighter, on extinguishing a lamp, should find a glass broken, he must replace the same before lighting time of the same day. If he should find a glass broken while lighting, he must replace the same before lighting time of the following day, and the bottom glass must be kept in place as well as sides and tops. If he should find any portion of the tin-work broken, he must take the lantern to his superintendent for repairs. Broken glass must not be deposited upon the street.

VI.—The burners must be kept in good condition to burn with a full, clear, steady flame, and not with a single or forked jet. If a burner, when lighted, should not emit the proper flame, then the same must be immediately cleared from its obstruction; and if it will not burn properly, another burner must be substituted.

VII.—If a lighter, when lighting, finds that a lamp will not burn, he will leave such lamp and finish his route. He must then return to the unlighted lamps and endeavor to get them in burning order. If he cannot make the lamp burn, he must report the same on the following morning to the superintendent of the gas company.

VIII.—Lamp-lighters will not be permitted to climb the lamp-posts. The lamps must be lighted either by means of a torch or the use of a ladder.

IX.—In case a lamp-post should be found broken or taken down, or requiring repairs, or an excavation should be made near the same which would endanger its safety, he must report the same at once to the superintendent of the gas company, stating the correct location of the post and

what repairs are required. If the post has been taken down, he must report by whom and for what purpose, and date when done. No excuse will be accepted from any lamp-lighter who fails to report lamp-posts taken down or broken.

X.—Lighters must not break the lamp bottoms, nor the street sign slots. Lamps furnished with these slots should be placed on corner lamp-posts.

XI.—Ladders must not be left tied to the lamp-posts.

S. McCORMICK, Superintendent of Lamps and Gas.

CORPORATION ORDINANCES RELATING TO THE PUBLIC LAMPS.

Sec. 68. Any person breaking, mutilating or obstructing any of the public lamps in the City of New York, shall be liable to a penalty of five dollars for each offense.

Sec. 69. Any person who shall break, misplace or carry away any of the glass street-signs now or hereafter to be placed in any of the public lamps, shall be liable to a penalty of three dollars for each offense.

Sec. 70. No person without permission of the Commissioner of Public Works, shall take up, remove or carry away any public lamp-post in the City of New York, under the penalty of ten dollars for each offense.

Sec. 71. No person shall remove, or cause or permit to be removed, any public lamp-post now or hereafter to be placed in front of their premises for the purpose of constructing a vault or otherwise, without the permission of the Superintendent of Lamps and Gas; and the owner or owners of such vault shall cause the lamp-posts so removed to be reset at their own expense immediately upon the completion of the vault, under the penalty of twenty-five dollars for each offense.

Sec. 226. No person shall attach, place, or paste, or cause to be attached, placed or pasted, any sign or advertisement, or other matter, upon any public lamp-post, now erected in the City of New York or that may hereafter be so erected, under the penalty named in the next section.

Sec. 227. The violation of any of the provisions of the preceding section shall be punishable by a fine of not less than one dollar, or more than ten dollars.

Sec. 412. It shall not be lawful to erect any telegraph-post within a distance of ten feet of any public street-lamp. Any person offending against any of the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof before any of the police magistrates or justices of this city, shall be punished by a fine not exceeding ten dollars, or in default of the payment of such fine, by imprisonment not exceeding ten days.

Sec. 1953 of the New York City Consolidation Act of 1882. If any person shall willfully break, take down, or carry away any glass lamp hung or fixed in any of the streets of the City of New York, or extinguish the lights therein, or by aiding or abetting in the same, shall be subject to a fine of twenty-five dollars, and in default of payment of such fine the offender shall be committed to the penitentiary for the term of two months.

Document "L."

REPORT OF THE SUPERINTENDENT OF REPAIRS AND SUPPLIES.

CITY OF NEW YORK—DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF REPAIRS AND SUPPLIES,  
SUPERINTENDENT'S OFFICE, No. 31 CHAMBERS STREET, ROOM 15,  
NEW YORK, January 6, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

SIR—In compliance with your instructions I have the honor to submit the following report of the transactions of this Bureau for the quarter ending December 31, 1890, together with a list of the public buildings, courts, offices and armories in care of this Bureau, and their present condition. Among the principal items of work done by the Bureau I refer to the following:

CRIMINAL COURT.

The foundations of this building are finished, and all the walls are above the street level; portions of the basement walls are beam high, with iron beams in place for the first or principal story. On Centre street the granite ashler and moulded water table is set along the entire front, and a number of pieces of the rock-faced granite has been set in place on the White and Centre street corner of the building. Portions of the cut stone above the street level have also been set in place on the Elm, White and Franklin Street fronts. The wrought-iron columns to support the first elevator shafts are in place, and the adjoining walls are ready for the iron beams. Large quantities of the cut granite for the basement story have been recently delivered at the building and are being set in place, when the weather permits.

Your notification to the mason contractors to begin the execution of their contract was dated March 20, 1890, from which date their time allowance as stipulated in their agreement was to begin.

The excavating was begun promptly on March 20, 1890. The number of working days is 183. Since that date 4,442 piles have been driven, 1,217 yards concrete put in, 19,000 cubic feet of base course for foundations have been laid and 3,290,000 bricks have been built in the walls, and quantities of the cut granite has been delivered on the ground.

All the materials used in the work are of first quality; the piling has been carefully done, each stake is of the proper size and of sound timber and well driven home. The unusual severity of the weather at so early a season of the year has necessarily hindered the progress of the work, but it has not otherwise affected it. The walls are carefully protected, and the work is now in such a condition that it may be continued, as the weather permits, without any detriment or danger to the solidity of the building.

THE COUNTY COURT-HOUSE.

The steam boilers in use in this building having become so worn out owing to long service, that they could not with safety be used to do the work required of them, plans were prepared and specifications made for four new boilers to replace them.

This work was advertised and the contract awarded at public letting. The new boilers will be of much greater capacity than the old ones, and the specifications embrace the latest improvements in setting, fittings and appliances to make them complete in every respect, and include the alterations to the boiler vault and the flues made necessary by the increased size of the new boilers.



This work will be completed during the summer vacation of the courts, so as to give the least possible inconvenience to the public. All the windows and doors on the exterior of the building, the dome on top and the wooden steps and railings at the Chambers street entrance, have been painted and the hardwood work cleaned, rubbed and varnished.

In the County Clerk's Office—A new system of electric bells has been introduced, connecting the County Clerk with the several departments in his office. The silver-plated signs have been taken down recently and replated, and ten (10) new signs furnished. The partition formerly inclosing the private office has been removed, new carpet laid, window-shades and screens put up, a Tucker file cabinet and office table and chairs furnished.

In the Surrogate's Office—A Turkish rug has been laid and a new roll top desk furnished. Court of Common Pleas—All the safes have been overhauled and repaired, and a new Yale combination lock put on one in the Clerk's office, and some law books furnished for use of the Court. Carpets were laid in the Janitor's rooms and some linoleum in the ante-room of Supreme Court Chambers.

#### THE CITY HALL.

The dome of the clock tower has been covered with 16-oz. sheet copper, with planished hard rolled copper ribs, and the tower painted. A new copper lightning rod has been put up, extending from top of the flag-staff on the tower to the ground, and the old rods cleaned and repaired.

A new galvanized iron chimney top has been put up on the chimney of the City Record office, and some repairs made to the roof of the east wing. Fifty 16-candle power electric lights have been put up around the gallery in the dome. These are arranged with two switches, in such a way that one-half or all the lights may be turned on at one time, the lights being alternated.

Chamber of the Board of Aldermen—The carpets have been cleaned and relaid. The desks, chairs and other furniture cleaned, repaired and varnished. The glass chandeliers cleaned and repaired, and new nickel-plated cuspidors furnished.

In Room No. 9 new carpet and linoleum have been laid; new chairs, water cooler and cuspidors furnished.

City Court—Some law books have been furnished and repairs made to the glazing. The work of repairing the brown stone of the north front has been very nearly completed. It would have been finished several weeks ago but for some defect in the materials used that caused the paint to peel off in some places on the east wing.

The defects cannot be repaired until we have good dry weather. When the work is finally completed it will add materially to the beauty of the building.

#### THE BROWN-STONE BUILDING.

A new Worthington steam pump and a 5-inch automatic check valve, with all necessary fittings and connections for running the passenger elevator, was put in to replace the old Davidson pump which had become worn out.

The Grand Jury rooms have been painted and calcimined, and carpets cleaned and relaid. New carpets and linoleum have been laid in Part II., Court of General Sessions, and in the small jury room.

Rotary chairs and cane-seat oak bent chairs were furnished for Parts I., II. and III. of the same court.

A new self-feeder stove and fixtures were put up in Judge Fitzgerald's room. The stoves in the several rooms were repaired, the chimneys cleaned, and the smoke-jacks on the building put in good order.

Some law books were furnished for use of the Court.

#### HALL OF RECORDS.

The exterior of the building has been painted and repaired, all the old scale removed, wood work puttied up, and the building given three coats of the best lead and oil paint, tinted to imitate stonework. The gutters and cornice repaired, four new galvanized iron leaders put up, chimneys cleaned, and new smoke-jacks put on.

Thirteen new book racks have been put up in the mortgage room, each containing room for thirty-five books, and the old cases were removed up to the third floor and fitted up. These changes were necessary on account of the new block system that went into effect January 1.

Four new stoves were put up on the top floor and one in the bindery, with all necessary pipe and fixtures.

#### NO. 31 CHAMBERS STREET.

The walls, ceilings and wood-work of the first and second story halls have been painted and calcimined, and hardwood cleaned and varnished.

New carpets, rugs, linoleum and matting have been laid in the offices of the Deputy Commissioner, the Chief Clerk and the Water Registers.

A rotary chair has been furnished for the Bureau of Street Improvements, some armchairs for the Chief Clerk's office and a new safe for Bureau of Street Improvements.

#### THE MARKETS.

Washington Market—Repairs have been made to the flooring in front of stands Nos. 4, 21, 22, 26, 42, 89, 209, 230, 241, 265, 266, 268, 277, 302, 303, 327, 334, 357 and 359, and to the fence in front of stands Nos. 367 and 372 on Fulton street and No. 401 on Vesey street, and a transom sash put over the second entrance on West street from Vesey.

The roof has been repaired over stands Nos. 81, 82, 126, 131, 150, 187, 198, 271, 272, 332, 349, 351, 418 and 419, and two doors on Vesey street side have been repaired and covered with galvanized iron.

West Washington Market—The repairs to the building damaged by fire last August are nearly completed. The work has been done in accordance with the contract, and has been proceeded with as rapidly as it was possible, considering the state of the weather.

A contract and specifications have been prepared for the work of repairing the building damaged by fire on December 31, 1890. As soon as the contract is awarded the work will be proceeded with without further delay.

Fulton Market—The repairs to that portion of this building damaged by fire on the morning of September 8 have been completed satisfactorily.

Repairs have been made to the roof over Stands Nos. 9, 11, 13, 15, 157, 140 and 146.

Three galvanized iron chimney tops put on and the new work painted. About 500 square feet of flooring was laid in front of Ottman's stand and near Carley's restaurant. About 250 square feet laid under Stand No. 63, and 450 feet under Stands 207 and 209, and the flooring in the Beekman street gangway repaired in several places.

Tompkins Market—The exterior has been cleaned off, rust removed, iron work repaired, and the building painted three coats of lead and oil paint. The glazing repaired and the platforms and steps leading to the market repaired and some new steps and platforms built.

Essex Market—Repairs were made to the flooring in front of Stand No. 5 and the glazing repaired.

Jefferson Market—The flooring at Stands Nos. 53, 67, 4 and 6 was relaid and the roof over Stands Nos. 24, 26, 32 and 44 were repaired, gutters on Sixth avenue side relined, and three courses of slate taken out and relaid. New basket strainers put in the leaders, and the new work painted.

Centre Market—The outside stairs on Centre street have been replanked with yellow pine step plank. The doors and windows of the market repaired and sash reglazed where needed. The roof over the rooms occupied by B. G. Hughes has been repaired, gutters relined, and the roof painted with metallic paint.

Clinton Market—Repairs have been made to the roof over Stands Nos. 3, 4, 130 and 131. The gutters relined on the Spring and West street corner, and the roof on Canal and Washington streets covered with second quality tin and painted.

Catharine Market—Repairs have been made to the glazing.

#### THE ARMORIES.

The Second Battery—About 500 square feet of flooring was taken up and replaced with new material.

The Seventh Regiment Armory—The halls and corridors were cleaned off, plastering repaired, walls and ceilings painted in tints, the hardwood rubbed and varnished, and the railings painted.

The Ninth Regiment Armory—A new grate was put in the furnace of the large boiler.

The Twelfth Regiment Armory—An iron railing has been put up on the roof to keep off persons from adjoining premises, and the settees in the main drill room were repaired.

Headquarters Troop "A" and Signal Corps—The old lockers taken from the old armory and 13 lockers taken from the Second Battery were repaired and put up, and several new lockers built for use of the commands occupying this armory; about 40 old saddle-racks and hooks were put up and 250 new ones furnished. Two cases for carbines and pistols were built, one 6 feet long and the other 20 feet long. A butt for targets was put up in the rifle range. The new cases and lockers grained and varnished. Signs were painted on the front of the building. Door-bells hung and letter-boxes placed on the front doors. Wire guards placed on the windows. Gas fixtures put up and stoves put in the several rooms. A work-bench was built for armorers. Safety latches put on six doors, two coal-bins built, and iron shutters put on the windows in the rifle range.

Sixty-ninth Regiment Armory—The walls, ceilings and wood-work in the officers' board room and toilet room were repaired, painted and calcimined in tints, the hardwood work cleaned and varnished, and the radiators bronzed. Repairs have been made to the glazing, and about 50 lights of glass put in.

#### THE COURTS—POLICE AND CIVIL.

First District Civil Court—3 rotary desk chairs, 2 dozen oak bent chairs, and one large door-mat was furnished, and the court-room and hallway painted and calcimined.

Second District Civil Court—Storm-doors were put up with paneled sash partitions, and the work grained and varnished. Some law books were furnished.

Third District Court-house—The steam-pipes in the basement were repaired and covered with asbestos and canvas. A self-feeder stove was furnished for Janitor's room.

Fourth District Civil Court—New carpet was laid in Clerk's office, and about 220 feet of shelving put up and the partition altered and painted.

Fifth District Civil Court—Iron wire guards were put on 10 of the side windows and the roofs repaired and painted.

Sixth District Civil Court—New carpets and linoleum have been laid on the bench in the Judges' and Clerk's rooms and hallway. A new jury wheel furnished, the stoves repaired, a 15-day clock put up in the court-room, and some law books supplied.

Seventh District Court-house—A new tin roof has been put on this building, the chimneys rebuilt, the kitchen range repaired, the cornice portico and window frames on the front of the building, the vestibule and hallways, the Janitor's apartments and the Judges' room of the Fourth District Court have all been painted, hardwood varnished and radiators bronzed.

Eighth District Civil Court—A No. 3 Brighton self-feeder has been put up in the Clerk's office. Ninth District Civil Court—Two No. 21 scorcher stoves have been put up, and a Tucker letter and document file furnished.

Tenth District Civil Court—The carpets have been taken up, cleaned and relaid with best paper lining.

Third District Police Court—Carpets have been laid in the Judge's and Sergeant's rooms. Rugs and mats furnished and linoleum laid on the bench in the Court-room. The furnace was repaired and a new hot-air register put in the floor near the Clerk's desk. A new galvanized iron smoke-pipe was put on the furnace flue with Emerson top, and about 35 feet of 10-inch galvanized pipe put on the range flue. Four rotary chairs were furnished for use of the Court.

Fourth District Police Court—The safe has been repaired and some gas fixtures put up on Judge's bench.

Fifth District Police Court—Four desk rugs have been furnished and some law books for use of the Board of Police Justices.

#### THE COUNTY JAIL.

All the iron work, window frames and doors on the exterior of the building and the iron railings on the roof and yard walls have been thoroughly cleaned and painted. A new tin roof of Phelps triple-coated tin has been put on the entire building, with galvanized iron O. G. gutters and leaders. The roof painted, the coping pointed up with Portland cement. Two new galvanized iron chimney tops put on, and the range and furnace flues cleaned. The range repaired and relined and two new grates furnished for the same.

One dozen jail locks were supplied and a new lamp and reflector, with gas connection, put up in the yard.

#### THE STEWART BUILDING.

Finance Department—A new carpet was laid in the Comptroller's office, and a Turkish rug and door-mat furnished. One roll-top desk has been supplied to the Comptroller's office and one to the Bureau of Collection of City Revenue.

Shelves and pigeon-holes have been put up in the Auditor's Bureau.

Department of Taxes and Assessments—Linoleum was laid in the Surveyor's office and a door-mat furnished.

Some gas fixtures and pipe were put up and 8 Argand burners, with portable stands and tubing, furnished.

#### CORPORATION COUNSEL'S OFFICE.

In the Chief Clerk's office new carpet has been laid and linoleum has been laid in the Type-writers' room. New chairs have been furnished for the library, and two roll-top desks for use in the office.

A case of pigeon-holes and shelving 8 feet long and 9 feet high has been put up in the office of the Attorney for the Collection of Arrears of Personal Taxes.

#### CORPORATION YARDS.

Sixteenth Street Yard—A shed 40 feet long and 12 feet wide, with racks for the storage of lamps, has been built and covered with second quality tin roof. A new tin roof was put on the office, and the gravel roof of the shed repaired. The plumbing has been repaired.

No. 302 East One Hundred and Twenty-fifth Street—A new stove was furnished for the office and repairs made to the glazing.

No. 134 West Thirtieth Street—The stoves have been repaired and one new one furnished.

Nos. 427 and 429 East Eighty-seventh Street—New closet, 18 feet long, 6 feet high and 3 feet wide, and two shelves, 23 feet long and 3 feet wide, have been put up for use of the repair gang.

The Dog Pound—The roof has been repaired and painted, and the exterior walls painted. The plastering in the office has been repaired, ceiling calcimined and walls, woodwork and trim painted.

#### THE FREE FLOATING BATHS.

Since the baths have been laid up in their winter quarters in Gowanus Basin extensive repairs have been made to the carpenter work and framing of Baths Nos. 3, 4, 6 and 7.

The siding was removed and defective timbers taken out and replaced with good sound material, and all the new work given a priming coat of oil paint.

The old tin was removed from the roof of Bath No. 7 and replaced with Phelps triple-coated tin with flashings of galvanized iron, and the roof painted two coats of metallic paint.

The roof of Bath No. 6 was repaired, about 150 square feet of the old tin having been removed and replaced with Phelps triple-coated tin and the roof painted.

Specifications were prepared for the work of putting a latticed roof over the swimming tank Bath No. 12, so as to screen the bathers from the view of those persons who may be on the heights over the bath at Fifty-first street, East river.

This roof will be made in sections so as to be readily taken off and stored, during the winter season, when not in use.

This work will be completed shortly.

A spar about eighty feet long has been furnished as a fender for Bath No. 15.

Thirty new copper signal lamps have been furnished for use on the baths, and 9,000 feet of bolt rope for hawsers and running lines have been supplied, together with hardware and lumber for use of the carpenters employed by the Bureau in making repairs generally to the baths. Three of the older baths are almost worn out; their frames are water-logged and worm-eaten.

The attendance at the baths during the past season was largely in excess of any previous year. This increase was owing in part to the number of women with their children who now visit them.

#### MISCELLANEOUS.

In addition to the foregoing the work of keeping the plumbing, steam and gas-fitting in order, and the constant repairs called for, form a very considerable item in the operations of the Bureau. The repairs to the glazing and iron work, the furnishing of hardware, cleaners and other supplies also occupy a great portion of the time and attention of the Bureau.

During the year 1890 nearly 800 requisitions have been made by the Bureau for labor, material and supplies, required by the various courts, offices and armories and the public baths.

This involved the necessity in every case of a careful examination of the work or supplies required, the preparation of a written description of the same, and the making of an approximate estimate of its cost, before transmitting for your approval.

In addition to these requisitions, the Bureau has prepared the following contracts and specifications for work and material, the estimated amount of the same being over \$1,000. The contract had to be advertised and let at public letting:

1st.—Contract and specifications for painting rooms of the Supreme Court, New Court-house.  
2d.—Contract and specifications for repairing the stone work on the north front of the City Hall.

3d.—Contract and specifications for alterations and repairs to Hall of Records.

4th.—Contract and specifications for painting in the First District Civil Court, No. 31 Chambers street, Tompkins Market, Seventh District Court-house, No. 49 Beekman street, and the Seventh Regiment Armory.

5th.—Contract and specifications for cleaning and repairing the soldiers' monuments in Calvary and Greenwood Cemeteries.

6th.—Contract and specifications for repairing damage done by fire to West Washington Market.

7th.—Contract and specification for repairing damage done by fire to Fulton Market.

8th.—Contract and specification for putting new tin roofs on the Seventh District Court-house, and the Office of Corporation Yard, Sixteenth street and East river.

9th.—Contract and specification for repairing and painting roofs of buildings in West Washington Market.

10th.—Contract and specification for repairing the roof of the Twelfth Regiment Armory.

11th.—Contract and specifications for repairs and painting of the free floating baths.

12th.—Contract and specification for coal for the several buildings in care of the Bureau.

13th.—Contract and specifications for a supply of ice for the several courts and offices.



14th.—Contract and specification for cleaners' supplies for use of the Bureau.

15th.—Contract and specification for furnishing and setting four new steam boilers in the County Court-house.

All these specifications and contracts were carefully prepared for printing, the proofs of the same read and corrected.

Plans and drawings made where needed for a fuller understanding of the work contemplated. Further information and explanation of their intent and purpose given to bidders, when required, and the work inspected and thoroughly examined in each case as it progressed.

Nearly 1,000 bills, including the pay-rolls of the Bureau and Free Floating Baths, have been examined in detail as to the prices charged for work and materials, and the correctness of the calculations and extensions of the same, where prices were charged that were found to be unwarranted by the market rates or the nature of the work performed.

The parties have been notified of the fact, asked for an explanation, and the bills corrected.

When a bill is thus examined and approved, two vouchers are prepared, and the bill transmitted in duplicate for payment.

The following is a list of the public buildings, offices and armories in care of this Bureau, with a statement of their present condition.

Buildings marked thus \* are leased.

City Hall—The rooms of the Special Term and Part I., City Court, need painting and the marble work in the corridors needs cleaning. The brown-stone flagging in the first-floor corridor should be taken up and replaced with rubbed blue stone, and the marble tiling repaired. The area walls should be rebuilt, coping reset, and iron railings repaired and painted. The window frames and sashes on the east, west and south fronts of the building need painting.

The New Court-house—Some of the rooms of the Superior Court need painting. The brick-work of the Rotunda should be cleaned down and the walls and ceilings of the halls and corridors painted. The plumbing in the building needs a thorough overhauling. There are four vertical lines of soil and waste-pipes connecting with water-closets in each of the sections of the building; these are old and in constant need of repair. I would recommend that during the year one or more of these lines of closets and pipes be taken down and reconstructed, in accordance with the requirements of the most improved sanitary plumbing.

The Brown-stone Building—The exterior of the windows and doors and the two frame extensions need painting. A large room in the basement has been vacant since the Tax Commissioners removed to the Stewart Building. It might be fitted up and assigned for the use of some of the Bureaus.

The Hall of Records—The interior of the first and second stories needs painting. The roof is in poor condition, and is constantly in need of repairs. If the building is to be kept in use many years longer, it would be wise economy to put a new tin roof on.

The First District Civil Court—Condition good.

The Second District Civil Court—Condition good.

The Third District Civil Court—Condition good.

\*The Fourth District Civil Court—Condition good.

The Fifth District Civil Court—Condition good.

\*The Sixth District Civil Court—Condition bad. Needs painting.

The Seventh District Civil Court—Condition good.

\*The Eighth District Civil Court—Condition good.

\*The Ninth District Civil Court—Condition good.

\*The Tenth District Civil Court—Condition good.

\*The Eleventh District Civil Court—Condition good.

The Court of Special Sessions—Condition good.

The First District Police Court—Condition good.

These two Courts are in the Tombs. The steps and flagging of the portico leading to the court-rooms are in bad condition and should be repaired. But there is a question as to whether this work should be done by this Department or by the Department of Charities and Correction. There is, however, no question as to the necessity of the work being done.

The Second, Third and Fourth Police Courts—Condition good.

\*The Fifth and Sixth Police Courts—Condition good.

The County Jail—In fair condition.

\*The Comptroller's Office—Condition good.

\*The Commissioner of Jurors—Condition good.

\*The Commissioner of Accounts—Condition good.

\*The Tax Receiver's Office—Condition good.

\*The Department of Public Works—Condition good.

\*The No. 27 Chambers street Office of the Commissioners of Taxes and Assessments and Surveyor's Office—Condition good.

\*Staats Zeitung Building—Offices of Taxes and Assessments, Corporation Counsel's Office, Board of Estimate and Assessments and Clerk of Armory Commissioners. All in good condition.

#### NO. 49 BEEKMAN STREET.

Public Administrator's and Corporation Attorney's Offices. Building in good condition, but needs painting on the outside.

#### NO. 5 DUANE STREET.

Used by Public Administrator and the Fire Department. Building is old, but in fair condition.

#### ARMORIES.

\*Brigade Headquarters—Troop A and Signal Corps. Armory No. 132 West Fifty-sixth street. These premises have been leased for use of the above commands, and certain alterations and repairs have been made by the owner to fit them for armory use. The building is in fair condition.

\*The First Battery Armory—Condition good.

\*The Second Battery Armory—Condition good.

Seventh Regiment Armory—Condition good.

Eighth Regiment Armory—This is a new building, but much remains to be done to put it in condition to meet the requirements of the regiment. I respectfully refer you to my report on this armory made December, 1890, for fuller particulars as to the repairs and alterations needed.

\*Ninth Regiment Armory—Condition fair.

Twelfth Regiment Armory—Condition good.

Twenty-second Regiment Armory—This building has not yet been put in the care of this Department, although it has been occupied for some months by the regiment.

Sixty-ninth Regiment Armory—The plumbing needs a thorough overhauling; needs a gas-pump to supply water tank.

\*Seventy-first Regiment Armory—The Board of Audit of this regiment have made a requisition for new lockers in all the company rooms except Company B's and for some other repairs.

As a new armory is to be built for this command, and the preparations for the new building are at present under consideration, I think it would be unwise to incur this expense, considering the short time the regiment will occupy their present quarters.

#### CORPORATION YARDS.

Rivington Street Yard—Condition good.

Twenty-fourth Street Yard—Condition good.

Sixteenth Street Yard—Condition bad.

This is an old frame building, covered with corrugated iron, formerly used as a dog pound, and now used for storage by the Bureau of Incumbrances.

The frame work is decayed and not worth repairing; it is little better than an open shed, and must be taken down before very long.

The repair shops are located as follows:

\*No. 134 West Thirtieth street—In good condition.

\*Nos. 427 and 429 East Eighty-seventh street—In good condition.

\*No. 302 East One Hundred and Twenty-fifth street—In good condition.

#### THE MARKETS.

Washington Market—In good condition.

West Washington Market—One of the buildings in this market was damaged by fire on the morning of August 25, 1890. The repairs to this building are nearly completed.

Another building was badly damaged by fire on the 31st of December, 1890. Specifications for the repairs have been prepared, and as soon as the contract is made the work will be proceeded with as rapidly as possible.

Fulton Market—This market also was damaged by a fire that occurred on the 8th of September, 1890. The repairs have been made and the building is now in good condition.

Centre Market—Needs painting and calcimining. The upper floor is occupied by the Second District Court, and by B. G. Hughes' Paper Box Factory, and one large room that is vacant. The court room is in good order, but plastering in the rest of the rooms is in very bad condition.

Clinton Market—This is an old building, in bad condition, constantly needing repairs. It should be whitewashed and cleaned. The shed over the sidewalks on Spring and Washington streets should be taken down, as they are of no further use, and are not worth further repairing.

Essex Market—Needs painting.

Tompkins market—In good condition.

Jefferson Market—In good condition.

Union Market—In good condition.

The Dog Pound—In good condition.

Respectfully,

W. G. BERGEN, Superintendent Repairs and Supplies.

#### Document "M."

#### REPORT OF THE SUPERINTENDENT OF INCUMBRANCES.

DEPARTMENT OF PUBLIC WORKS—BUREAU OF INCUMBRANCES,  
NO. 31 CHAMBERS STREET,  
NEW YORK, January 5, 1891.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

DEAR SIR—I submit herewith the following report of the operations of this Bureau for the quarter ending December 31, 1890 (months of October, November and December), together with a condensed statement of the entire business transacted during the year 1890:

930 complaints of obstructions received and attended to.  
513 seizures and removals of obstructions made.  
1,783 building permits issued.  
203 miscellaneous permits issued.  
4 permits issued to cut down shade-trees.  
196 notices issued to repair defective sidewalks.  
9 notices issued to repair defective vault covers.

Expense of seizing and removing 513 articles, including 129 loads of dirt, stone, refuse, etc., and throwing in dirt, stone, etc., on premises at various places; removing 68 dead and dangerous trees, stumps and posts, also 168 telegraph poles, and about 470 miles of electric wire ..... \$7,332 57

Total expenses for the quarter ..... \$9,332 57

Received from owners for the redemption of seized articles ..... \$272 25

Received from public sale of unredeemed goods, November 6, 1890 ..... 475 47

Total ..... \$747 72

All of which was duly paid over to the City Chamberlain.

Salary account—Appropriation ..... \$7,800 00

Expended up to December 31, 1890 ..... 7,560 65

Balance ..... \$239 35

Appropriation for the removal of obstructions, including rents for Corporation Yards.. \$40,000 00

Expended up to December 31, 1890 ..... 39,982 90

Balance ..... \$17 10

During the year 1890 the total number of complaints of obstructions received was..... 4 685

Removals to the Corporation Yards..... 3 735

Removals of loads of dirt, stone, refuse, etc..... 1 104

Removals of dead and dangerous trees, etc..... 312

Removals of telegraph and electric-light poles..... 1 505

Removals of miles of electric wire, about..... 3 660

Number of building permits issued..... 8 203

Number of miscellaneous permits issued..... 1 196

Number of permits issued to cut down trees..... 19

Number of notices issued to repair defective sidewalks..... 955

Number of notices issued to repair defective vault covers..... 43

#### APPROPRIATION FOR THE YEAR 1890.

For removals of obstructions in streets and avenues..... \$40,000 00

For removals of obstructions in streets and avenues—Salaries..... 7,800 00

Total..... \$47,800 00

#### Total expenditures for the year, as follows:

Removals of redeemable obstructions..... \$4,374 40

Removals of dirt, stone, etc..... 1,867 70

Removals of dead and dangerous trees, etc..... 1,092 00

Removals of telegraph poles..... 6,020 00

Removals of electric wire..... 21,225 50

Transportation expenses..... 611 80

Salaries—Inspectors, Keepers of Corporation Yards, Watchmen, Skilled and Detailed Laborers..... 12,352 15

Balance..... \$256 45

Actual cost of removing obstructions and incumbrances..... \$4,374 40

Actual cost of removing poles and wires..... 27,245 50

Total..... \$31,619 90

Received from owners of seized articles..... \$3,531 95

Received from auction sales of unredeemed articles..... \$7,619 90

Less auctioneer's fees, 10 per cent..... 761 99

6,857 91

10,389 86

Difference..... \$21,230 04

The close of the present quarter terminates another year's endeavor to establish some relief for the many exigencies in street obstruction that came under our jurisdiction. The result, I regret to say, has not been as satisfactory as anticipated, although much has been accomplished, and the effect of our labors in many instances is conspicuously manifest.

The great number of obstructions caused by the erection of new buildings, the repair and alteration to others, whereby our streets and avenues are incumbered with building material, is a subject most important, and one requiring serious consideration, as the system now in vogue is sadly in need of a radical change.

Since my incumbency to office I have seriously considered the present permit system of this Bureau, and have exhausted every possible means to devise some new departure therein whereby to restrict the privileges now given to builders and others and to prevent the continual violation of the conditions of the building permit now issued by this Bureau to place building materials upon streets and avenues.

I have come to the conclusion that no change can ever be effected in this work with the limited force of inspectors now at my disposal, and in order to obtain the desired effect, I think the Police Department should be called into co-operation with us. It will be observed that between eight and nine thousand building permits are issued by this Bureau annually. The conditions of these permits are often violated and as soon as the fact is brought to our notice the permit is immediately revoked and the attention of the police is generally called to the same. I find upon investigation that each police precinct details one man whose duty is to report violations of the city ordinances. I am of the opinion that if the same power were to be given officers on post as are now vested in ordinance officers a great benefit would result.

There are a great many people holding building permits who regard the necessity of obtaining the same a matter of little or no importance. When permits are revoked the work should be stopped, which requires the detailing of an officer on the premises, and as our limited force will not admit of this, we are again obliged to call upon the police for assistance. When unable to obtain the proper aid from this source, our inspectors are defied by these persistent law-breakers, who seem aware of the absence of the proper authority to prevent and check their continued perversion of the privileges given them.

I can see no reason why every police officer should not prevent the obstructing of the streets and sidewalks, and the willful violation of the conditions of various privileges given to individuals, especially in the case of building permits. It is reasonable to suppose that until we have acquired



the assistance of this medium, our success in operating this branch of our duties can never be fully attained.

We feel the absence of their assistance in various other cases, particularly where obstructions have been removed to the Corporation yard, redeemed by the owner and immediately replaced again.

It is an absolute impossibility for us to prevent the replacing of these incumbrances; but it seems evident to me that, with proper instructions and authority, an officer on post could easily prevent it, and thereby render valuable assistance to the Inspectors of this Bureau. Another evil our city has long been subjected to, and one which seems to be increasing every year, is the driving of vehicles across the sidewalks, and the use of "skids" for the purpose of loading and unloading from various warehouses, which compels pedestrians to resort to the street or climb the stairs of high platforms in passing in front of these places. Complaints against this nuisance are received almost every day, and despite our most strenuous endeavors to alleviate the wrong, we find ourselves powerless to act. This evil has been indulged and tolerated for so many years, and has become so deep-rooted that it is looked upon in many cases as a proprietary right, and its eradication is a matter of great difficulty. The nucleus of this, the most objectionable of all street obstructions, is the presence of the "gutter bridge," and until its complete obliteration has been instituted, no change can ever be effected in this outrageous aggression upon the rights of citizens. The "gutter bridge" was originally intended to be placed in front of premises where vehicles were to be driven in by crossing the sidewalk, such as stables, yards, etc., and under this subterfuge others have been placed throughout the city in front of warehouses, over which trucks are backed and loaded. To the warehouse-keeper the use of the gutter-bridge entails a saving in labor and the extra handling of goods by reason of their not being compelled to load their trucks at the curb. Here is another instance where police vigilance is required.

I am pleased to note a recent decision of the Supreme Court against this aggression, which ought to add impetus to the fact that when the crusade against this evil is begun, it will be pursued with all possible agility until the nuisance is no longer heard of.

Telegraph poles and wires are still being removed, although the work during the past year has been retarded on account of insufficient appropriation. The force of men engaged in the work was much smaller than that of last year, and the number of poles and the quantity of wire removed has also been decreased.

We find on hand a large number of notices from the Board of Electrical Control not yet acted upon. The work accomplished, however, has been very satisfactorily performed considering the many difficulties encountered. There are still many poles and many miles of wire yet to be removed. This work, as well as the other duties of this Bureau, is annually increasing, which naturally requires a larger amount of money to successfully cope with the amount of work we are called upon to perform. Our appropriation last year was totally inadequate for the purpose, and, in view of the fact that the amount at our disposal for this year has been considerably decreased, the prospects for an increased amount of work being accomplished during the coming year are, therefore, not encouraging.

Respectfully,

MICHAEL F. CUMMINGS, Superintendent of Incumbrances.

### Document "N."

#### REPORT OF THE WATER REGISTER.

BUREAU OF WATER REGISTER, No. 31 CHAMBERS STREET,  
NEW YORK, December 31, 1890.

Hon. THOS. F. GILROY, Commissioner of Public Works:

SIR—I herewith transmit statement of moneys received for water rents, penalties and taps, for the quarter ending December 31, 1890:

	Principal.	Penalties.	Taps.
October .....	\$161,690 73	\$2,624 80	\$1,526 00
November .....	109,591 19	2,217 90	999 50
December .....	72,384 96	1,159 95	820 50
Total .....	\$373,666 88	\$6,002 65	\$3,346 00

Total .....

\$383,015 53

Deposited to the credit of "Water-meter Fund, No. 2"—

October .....	\$464 13
November .....	780 24
December .....	1,642 03
Total .....	\$2,886 40

"Special Fund—Repairing Streets"—

October .....	\$1,522 00
November .....	1,126 00
December .....	701 50
Total .....	\$3,349 50

I have the honor to also submit a statement of moneys received for the year ending December 31, 1890, and placed to the credit of their respective accounts with the City Chamberlain:

#### TOTAL RECEIPTS.

Regular water rates and penalties .....	\$1,703,095 59
Water by meter measurements .....	917,287 95
Permits for water for building purposes .....	54,737 32
Penalties for using hose .....	15 00
Water rates returned in arrears .....	\$123,016 91
Water by meter measurement returned in arrears .....	114,384 36
Pipe-tapping receipts .....	237,401 27
Restoring pavements .....	13,774 50
Total .....	\$2,926,311 63

#### Receipts for Meter and Meter-setting during the Year 1890.

Water Meter Fund No. 2 .....	\$6,717 86
Amount returned to Bureau of Arrears .....	5,997 57
Total .....	\$12,715 43

Croton water supplied to shipping for the year as follows, viz:

Receipts from meter on docks .....	\$78,224 00
803 permits for steamboats amounting to .....	20,242 02
36 permits for engines, wharves, etc., amounting to .....	610 64
Total .....	\$99,076 66

1,470 permits were issued for building purposes during the year.

3,029 permits were issued for taps during the year.

The amount received during the year for restoring pavements, \$10,518, is reserved for repairing openings in streets made for the purpose of connecting water-pipes with buildings, etc.

The special meter fund account of \$6,717.86 is reserved and set apart to reimburse the City for advances made for meters and meter settings.

The following list of charitable institutions includes all which have been declared exempt under chapter 696, Laws of 1887, and also those exempted during the present year under chapter 492, Laws of 1890.

Charitable Institutions which have Applied for Exemptions from Charges for Croton Water, under the Provisions of Chapter 696 of the Laws of 1887, and as Amended by Chapter 492, Laws of 1890, which, the Counsel to the Corporation has Advised, are Entitled to Exemption Under the Act.

YEAR.	INSTITUTIONS.	METERED.	LOCATION.	AMOUNT.
1888	Association for the Relief of Aged and Indigent Females .....	.....	Tenth avenue and One Hundred and Fourth street .....	\$45 00
1889	Asylum of St. Vincent de Paul .....	Meter .....	No. 211 West Thirty-ninth street .....	309 70
1888	Baptist Home for Aged and Infirm Persons .....	" .....	Fourth avenue and East Sixty-eighth street .....	128 30
1888	Colored Orphan Asylum .....	" .....	One Hundred and Forty-third street and Northern Boulevard .....	639 20
1888	Dispensary of German Hospital .....	" .....	Nos. 135 and 137 Second avenue .....	55 60
1888	French Benevolent Society .....	.....	No. 131 West Fourteenth street .....	27 00
1888	German Hospital and Dispensary .....	Meter .....	Park avenue and Seventy-seventh street .....	724 70
1888	Hebrew Sheltering and Guardian Society .....	" .....	Northeast corner Eighty-seventh street and Avenue A .....	190 90
1888	Hebrew Sheltering and Guardian Society .....	" .....	West side Boulevard, between One Hundred and Fiftieth and One Hundred Fifty-first streets .....	801 80
1888	Home for the Aged and Indigent Women .....	" .....	Southeast corner Tenth avenue and One Hundred and Fourth street .....	130 10
1888	Home for the Aged and Infirm Hebrews .....	" .....	Nos. 119 to 127 West One Hundred and Fifth street .....	282 30
1888	Hebrew Benevolent and Orphan Asylum Society .....	" .....	West side Tenth avenue, between One Hundred and Thirty-sixth and One Hundred and Thirty-eighth streets .....	2,441 30
1889	House of Good Shepherd, St. Ann's Home .....	.....	Southeast corner Eighty-ninth street and Avenue A .....	38 80
1888	Hahnemann Hospital .....	Meter .....	East side Fourth avenue, between Sixty-seventh and Sixty-eighth streets .....	447 60
1890	Home for Old Men and Aged Couples .....	.....	Nos. 487 to 491 Hudson street .....	32 00
1889	Home for the Aged, Little Sisters of the Poor .....	Meter .....	Nos. 201 to 215 East Seventieth street .....	175 50
1888	Home for the Aged, Little Sisters of the Poor .....	" .....	North side West One Hundred and Sixth street, Ninth and Tenth avenues .....	175 10
1888	House of the Good Shepherd .....	" .....	Foot of East Ninetieth street .....	640 00
1888	" .....	" .....	Southeast corner Avenue A and Ninth street .....	327 80
1888	Leake & Watts Orphan House .....	" .....	West One Hundred and Tenth street and Ninth avenue .....	96 30
1887	Manhattan Dispensary and Hospital .....	.....	One Hundred and Thirty-first street and Tenth avenue .....	32 00
1888	Manhattan Eye and Ear Hospital .....	Meter .....	No. 103 Park avenue .....	247 90
1888	Methodist Episcopal Church Home .....	" .....	Nos. 1584-1602 Tenth avenue .....	219 00
1889	Montefiore Home for Chronic Invalids .....	" .....	Boulevard and West One Hundred and Thirty-eighth street .....	497 60
1888	Mount Sinai Hospital .....	" .....	East side Lexington avenue, Sixty-sixth and Sixty-seventh streets .....	1,091 60
1888	New York Foundling Asylum .....	" .....	Third and Lexington avenue, Sixty-eighth and Sixty-ninth streets .....	1,200 80
1888	" .....	" .....	Spuytten Duyvil .....	128 40
1888	New York Asylum for Lying-in Women .....	.....	No. 139 Second avenue .....	12 00
1888	New York Cancer Hospital .....	Meter .....	Southeast corner One Hundred and Sixth street and Eighth avenue .....	269 10
1888	New York Hospital and Bloomingdale Asylum .....	" .....	No. 160 Chambers street, Nos. 7 to 21 West Fifteenth street .....	2,801 40
1888	New York Hospital and Bloomingdale Asylum .....	" .....	No. 8 West Sixteenth street; also Boulevard, One Hundred and Seventeenth and One Hundred and Eighteenth streets .....	1,402 20
1888	New York Homoeopathic Hospital .....	.....	West side Avenue A, Sixty-third and Sixty-fourth streets .....	50 00
1888	New York Ophthalmic Hospital .....	Meter .....	No. 201 East Twenty-third street .....	122 50
1890	New York Post Graduate .....	.....	No. 226 East Twentieth street .....	52 00
1888	New York Society for the Relief of Tured and Crippled .....	Meter .....	No. 135 East Forty-second street .....	454 50
1889	New York Infirmary for Women and Children .....	.....	No. 4 and 5 Lexington place .....	39 00
1889	New York Mothers' Home for the Sisters of Misericorde .....	.....	No. 531 East Eighty-sixth street .....	21 00
1888	Nursery and Childs' Hospital .....	Meter .....	No. 571 Lexington avenue .....	577 70
1888	Protestant Episcopal Orphan Home and Asylum .....	" .....	East Forty-ninth street, Lexington and Fourth avenue .....	241 90
1888	Presbyterian Hospital .....	" .....	Park avenue and East Seventieth street .....	756 70
1890	Peabody Home for Aged and Indigent Women .....	.....	Boston road and Clover street .....	.....
1888	Roman Catholic Orphan Asylum .....	.....	East side Fifth avenue, Fifty-first and Fifty-second streets, south side East Fifty-second street, between Fifth and Madison and Madison and Fourth avenues .....	1,709 00
1883	Roosevelt Hospital .....	Meter .....	South side West Fifty-ninth street, Ninth and Tenth avenues .....	1,040 90
1887	Sisters of the Order of St. Dominick .....	.....	Nos. 137 to 143 Second street .....	40 00
1888	Skin and Cancer Hospital .....	Meter .....	No. 243 East Thirty-fourth street, Fordham Heights .....	120 00
1888	Sloan Maternity Hospital .....	" .....	Fifty-ninth street and Tenth avenue .....	144 90
1888	St. Elizabeth's Hospital .....	" .....	No. 225 West Thirty-first street .....	32 60
1888	St. Francis Hospital .....	" .....	No. 609 Fifth street .....	450 30
1888	St. Joseph's Hospital .....	.....	No. 328 East One Hundred and Ninth street .....	75 00
1888	St. Luke's Hospital .....	Meter .....	No. 17 West Fifty-fourth street .....	760 10
1888	St. Vincent's Hospital .....	" .....	Nos. 151 to 161 West Eleventh street, and Nos. 160 to 174 West Twelfth street; also Nos. 17 and 19 Seventh avenue .....	308 20
1888	St. James' Home .....	.....	No. 26 James and No. 21 Oliver street .....	34 00
1888	St. Phillips' Parish Home .....	.....	No. 127 West Thirtieth street .....	10 00
1888	St. Joseph's Home for the Aged .....	.....	No. 211 West Fifteenth street .....	200 00
1888	St. Joseph's Orphan Asylum .....	.....	North side Eighty-ninth street, First avenue and Avenue A .....	9 00
1888	St. Mary's Free Hospital for Children .....	Meter .....	Nos. 405 and 407 West Thirty-fourth street .....	138 10
1888	Society for the Relief of Half Orphans and Destitute Children .....	.....	Nos. 59 to 67 Tenth street .....	227 50
1890	St. Mary's Lodging-house .....	.....	No. 143 West Fourteenth street .....	33 00
1885	St. Stephen's Home. Not exempt since 1887 .....	Meter .....	Nos. 145 and 147 East Twenty-eighth street .....	300 40
1888	Trinity Corporation .....	" .....	No. 50 Varick street .....	86 40
1888	The Orphan Asylum of the City of New York .....	" .....	West Seventy-third street, Eleventh avenue and Riverside Drive .....	435 60
1888	The Laura Franklin Free Hospital .....	" .....	Nos. 15 and 17 East One Hundred and Eleventh street .....	115 60
1890	The Home for the Aged of the Church of the Holy Communion .....	.....	No. 330 Sixth avenue .....	11 00
1890	The St. Mark's Hospital .....	.....	No. 66 St. Mark's place .....	15 00
1890	The Five Points House of Industry .....	Meter .....	Nos. 147 and 155 Worth street .....	10 30
1890	The Colored Home and Hospital .....	" .....	First avenue, Sixty-fourth and Sixty-fifth streets .....	1,309 50
1890	The New York Society for the Prevention of Cruelty to Children .....	.....	Nos. 100 and 102 East Twenty-third street .....	36 00
1890	The Babies' Hospital .....	.....	No. 657 Lexington avenue .....	29 00
....	Woman's Hospital .....	Meter .....	Fiftieth street and Park avenue .....	595 10
Total .....				\$26,322 80



REVENUE.

THE FOLLOWING TABLE EXHIBITS THE YEARLY REVENUE DERIVED FROM CROTON WATER, FROM ITS INTRODUCTION INTO THE CITY IN THE YEAR 1842 TO JANUARY 1, 1891:		STATEMENT OF ARREARS OF WATER RENTS RETURNED TO THE COMPTROLLER, CLERK OF ARREARS, ACCORDING TO LAW, AND COLLECTED BY CLERK OF ARREARS.	TOTAL REVENUE.
From 1842 to January 1, 1879.....	\$32,001,333 73	\$1,456,857 66	\$33,458,493 39
" Jan. 1, 1879, to Jan. 1, 1880....	1,618,722 50	76,043 09	1,694,765 59
" " 1, 1880, " 1, 1881....	1,560,598 57	69,633 70	1,630,232 27
" " 1, 1881, " 1, 1882....	1,510,791 77	93,552 56	1,604,344 33
" " 1, 1882, " 1, 1883....	1,647,183 25	100,743 81	1,747,927 06
" " 1, 1883, " 1, 1884....	1,867,518 96	163,558 61	2,039,077 57
" " 1, 1884, " 1, 1885....	1,985,329 32	164,689 55	2,150,018 87
" " 1, 1885, " 1, 1886....	2,122,411 83	117,041 07	2,239,452 90
" " 1, 1886, " 1, 1887....	2,343,792 61	165,425 18	2,509,217 79
" " 1, 1887, " 1, 1888....	2,514,343 92	154,043 50	2,668,387 22
" " 1, 1888, " 1, 1889....	2,437,962 66	149,100 25	2,587,062 91
" " 1, 1889, " 1, 1890....	2,544,650 07	237,401 27	2,782,051 34
" " 1, 1890, " 1, 1891....	2,675,135 86	.....	2,675,135 86
Total .....	\$56,831,977 05	\$2,954,100 05	\$59,786,077 10

The amount of revenue from the water service collected and paid into the City Treasury during the past year shows an increase of \$130,485.79 over the collections for 1889.

Respectfully submitted,

JOSEPH RILEY, Water Register.

Document "O."

REPORT OF ASSISTANT ENGINEER.

DEPARTMENT OF PUBLIC WORKS,  
NEW YORK, December 31, 1890.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

SIR—In accordance with your instructions I herewith present a statement in detail of the work of the Department upon surveys, maps, etc., for the legal opening of streets, roads and avenues, for that part of the City of New York south of the Harlem river, for the year ending December 31, 1890.

The streets laid down upon the Commissioners' map of the City of New York can not be entered upon for improvements, such as regulating, grading, paving, sewerage, etc., until they have been legally acquired by an order of the Supreme Court.

These maps, plans, etc., have been furnished to the Board of Street Opening and Improvements and to the Commissioners appointed by the Court for such purposes.

Plans and profiles for the change and establishment of grades of the streets for that part of the city which by law the Department of Public Works has jurisdiction.

The following is a list of streets for which maps have been prepared and forwarded to the respective departments. The work required from this office has been very extensive during the past year; many new streets have been laid out and added to the Commissioners' map, and assessment lists amounting in the aggregate to more than 17,000 city lots have been made and delivered to the Commissioners.

The exterior street on the East river, extending from Sixty-fourth street to Eighty-first street, and the alteration of the grades of the streets and avenues that intersect or are contiguous to the exterior street.—The maps, etc., for the opening of this street have been applied for and are now under way, and will be furnished at an early day. By the opening of this street the water-front of more than a mile in length and the adjacent streets can be developed.

The widening and extension of College place and Greenwich street, from Chambers street to Dey street.—This work was commenced last year and is progressing favorably; the damage maps for land to be taken have been furnished to the Commissioners appointed for that purpose. The assessment maps for benefit covering a large area have been commenced and are nearly completed. They will be furnished when required.

Maps for the extension of Bethune street.—The damage maps have been furnished and the assessment for benefit covering about 1,500 lots are nearly completed.

A new street, the continuation of One Hundred and Twenty-fifth street, from the Boulevard to Riverside avenue, by the way of Claremont avenue, etc., will afford a new entrance to the Park, near the site of the Grant monument. The maps are now being prepared for the use of the Commissioners.

Damage and benefit maps, abstracts and finals for land to be taken for drainage purposes.—Outlet sewer for the Sewerage District No. 25, as amended and filed May 25, 1890, were made and forwarded to the Counsel to the Corporation on the 25th of July, 1890. The final benefit maps for the extension of Manhattan street, from Twelfth avenue to the Hudson river, covering an area of assessment of nearly one mile square, are now under way and will be completed in time for the Commissioners.

Surveys will be commenced at an early date to remodel and lay out the section of the Twelfth Ward, west of the Kingsbridge road, and between One Hundred and Sixty-fifth and Dyckman streets. Under authority of chapter 347, Laws 1889, there has been built a covered iron bridge across West street, at the foot of Rector street, for the use of pedestrians only. A similar one is now being constructed of 100 feet span, from the southeast corner of Cortlandt and West street, across West street to the ferry house. The foundations have been commenced and the bridge will be completed early in February.

The work on the compilation of the maps of the grants of land under water to enforce the obligations of repairs to pavements within the grants, has been progressed as rapidly as required, and will be continued until all obligations are fulfilled.

The following is a list of streets, etc., for which completed maps have been prepared and forwarded to the respective Departments, viz., rule maps and technical descriptions have been delivered to the Counsel to the Corporation, as follows:

- One Hundred and Thirtieth street, from Tenth to Convent avenue.
- Exterior street, East river, from Sixty-fourth to Eighty-first street.
- Fort Washington Depot road, from the Boulevard to land of the New York, Central and Hudson River Railroad.
- One Hundred and Sixty-eighth street, from Tenth avenue to Kingsbridge road.
- Extension of One Hundred and Twenty-fifth street, from Boulevard to Riverside avenue.
- Damage and benefit maps, abstracts and finals, assessment lists for the collection of costs, etc., for street openings, have been delivered to the Commissioners appointed by the Supreme Court for the opening.
- Dyckman street, from Kingsbridge road to Harlem river.
- Land to be taken for drainage purposes One Hundred and Sixty-seventh street outlet sewer.
- Edgecombe road, from One Hundred and Fifty-fifth to One Hundred Seventy-fifth streets.
- One Hundred and Eighteenth street, from Tenth to Morningside avenue, West.
- One Hundred and Twentieth street, from Tenth avenue to Boulevard.
- One Hundred and Twenty-first street, from Tenth to Morningside avenue, West.
- One Hundred and Twenty-seventh street, from Boulevard to Manhattan street.
- One Hundred and Thirty-second street, from Boulevard to Twelfth avenue.
- One Hundred and Sixty-second street, from Eleventh avenue to Kingsbridge road.
- One Hundred and Sixty-third street, from Tenth avenue to Edgecombe road.
- One Hundred and Sixty-ninth street, from Tenth to Eleventh avenues.
- Damage and benefit maps for estimate of benefit, etc.

Work in Progress.

- Audubon avenue, from One Hundred and Sixty-fifth to One Hundred and Seventy-fifth street.
- Manhattan street, extension of, from Twelfth avenue to Hudson river.
- One Hundred and Sixteenth street, from Boulevard to Riverside avenue.
- One Hundred and Twentieth street, from Boulevard to Tenth avenue.
- One Hundred and Sixty-eighth street, from Tenth to Eleventh avenue.

Streets, avenues and roads for placing upon the Commissioners' map of the City of New York—five copies and technical description of each, including surveys, have been delivered to the Board of Street Opening and Improvement.

Exterior street, East river, from Sixty-fourth to Eighty-first street.

Extension of One Hundred and Twenty-fifth street, etc., from Boulevard to Riverside avenue.

Grades fixed and established for the following streets:

One Hundred and Thirtieth street, from Tenth to Convent avenue.

Fifty fifth street, from Avenue A to bulkhead, East river.

Kingsbridge road, from Emerson to Two Hundred and Thirteenth streets.

Exterior street, East river, and sixteen intersecting streets, from Sixty-fourth to Eighty-first streets.

Avenue B, from Seventy-ninth to Eightieth street.

Surveys, etc., for armory sites for the Sixty-ninth, Ninth and Seventy-first regiments, maps, details, etc., have been sent to the Armory Board.

Respectfully,

JOS. O. B. WEBSTER, Assistant Engineer.

ADDENDUM.

REPORT OF MR. CHARLES H. BULL, ASSISTANT ENGINEER, DEPARTMENT OF PUBLIC WORKS, ON PAVEMENTS IN LONDON, PARIS, BERLIN AND LIVERPOOL.

Hon. THOMAS F. GILROY, Commissioner of Public Works:

SIR—In a recent visit which I have made to some of the principal cities of Europe I have endeavored to obtain such information on the subject of municipal pavements as may be of use to the City of New York in its public improvements of a like character.

The cities of London, Paris, Berlin and Liverpool are justly famous for the excellence of their pavements; these pavements have been put in a superior condition by the careful expenditure of large sums of money in the past few years, and by the use of liberal annual appropriations they are kept and maintained in remarkably good order and are not allowed to deteriorate.

While there are conditions existing in New York City which seriously interfere with the successful care and maintenance of its pavements, and which are not to be found in these European cities, still there is so much similarity in the use of and traffic in their streets that the experience gained by these cities will be of great value to the City of New York, if it can be made use of in the work of repavement, and it will materially aid in avoiding unnecessary expenditure in experimental pavements.

I have spent a good deal of time in observing the effect of traffic over the various kinds of pavement, and in view of its recent use in New York I particularly observed the asphalt pavement. In 1869 an experimental piece of asphalt pavement of four hundred square yards area was laid in Threadneedle street, London; that pavement, which, of course, has had many repairs made to it since it was first laid, still remains and is now in good condition.

Soon afterwards, the cleanliness, the absence of noise and the comfort felt by the community generally from this asphalt pavement, enlisted the favorable opinion of the public and led to the paving of Cheapside and The Poultry in 1870.

These pavements remained in constant use nineteen years, and although of course they were extensively repaired, still up to 1889 the carriageway was never closed entirely for a general relaying of the pavement. In 1889 the contract for maintenance of the asphalt pavement in Cheapside having expired, a new contract was made and a new surface of asphalt was laid.

After Cheapside, many of the streets in the city were paved with asphalt, and gradually the stone pavements of the whole of the main thoroughfares were replaced with either asphalt or wood, but mainly by asphalt.

It may be mentioned that the wood pavement in several streets has since been taken up and replaced by asphalt, but in no case has asphalt been replaced by wood.

Asphalt is in general use in Paris, Berlin and other cities of Europe, in both business and residential streets, and under varying climatic conditions it is stated to wear well and gives general satisfaction. The experience of these cities with the pavement is similar to that of London; it is clean and almost noiseless, and can sustain quite a heavy traffic, and it is considered most economical, although I find that Paris and London pay much more for their pavements per square yard than New York; as an instance, I state the case of the "Minories" in London, the street most recently contracted. The cost of the work, including maintenance similar to that exacted by New York City, would be six dollars per square yard. In Paris the cost is even greater, the price averaging eight dollars per square yard; and, in connection with this statement, it should be remembered that the cost of labor in New York is much greater than in any of these European cities.

The asphalt surface is from two to two and a half inches in thickness, and laid upon a foundation of concrete six inches thick, composed of one part Portland cement, six parts sand and eight parts broken stone. The pavement is maintained for a period of from fifteen to twenty years by the company which originally constructs the work; they are paid a certain amount annually per square yard, depending upon the amount of traffic over the pavement for maintaining the same in good order, and in case of any disturbance of the pavement by a corporation or by a private citizen, this company replaces such pavement at the expense of the corporation or citizen, and is responsible for its maintenance thereafter.

A force of men is kept constantly at work making repairs to the pavement, and any defect, however slight, is remedied immediately.

It is not considered that the necessity for continual repairs is an evidence of poor workmanship in the original construction, or of defective materials used, but rather that an earnest effort is being made to keep the pavement, even under heavy traffic, at all times in perfect order. This prompt and constant repairing I consider explains the superior condition of the pavements in these cities of Europe, and as the asphalt pavement is gradually extended in New York City, if this method be pursued, the pavements here will soon compare very favorably with those of the cities of Europe.

The busiest and most constantly traveled streets in London, Paris and Berlin are paved with asphalt, and the traffic over them is continual and heavy. When these pavements were first laid there was the usual complaint of their being too slippery for general use, but it has been found that the horses readily get used to the smooth surface, and accidents are now rare. The slipperiness is least when the pavement is perfectly clean, and every effort is made to keep the pavement free from dirt or deleterious substances.

Therefore, in addition to the usual sweeping and cleansing of the street, men and boys are kept constantly employed during the day, removing instantly any debris that may be in the roadway. This foreign material is deposited in boxes on either side of the street, which are emptied as frequently as may be necessary. The results are perfectly clean streets, and an asphalt pavement in a most favorable condition for public use.

The life of an asphalt pavement, if kept in good repair, is considered to be from seventeen to twenty years. Threadneedle street, Cheapside and Poultry, in London, which were laid about twenty years ago, sustain an enormous vehicular traffic. The amount of travel over London streets may be appreciated when it is stated that 13,772 vehicles passed over the asphalt pavement in Cheapside in twenty-four hours, February 21, 1888, and in Mansion House street, 23,332 vehicles in twenty-four hours, February 22, 1888.

Cornhill, Holborn Viaduct, Newgate street and others have a daily traffic of from 8,000 to 12,000 vehicles over their asphalt pavement; it would therefore seem, in view of these figures, that asphalt pavement would, if brought into more general use in the up-town streets of New York City, sustain all the traffic it may be called upon to bear, provided such small repairs as may be caused by ordinary deterioration and wear are made promptly. It must, however, be observed that the class of vehicles heretofore mentioned are cabs, carriages and others of a like nature and not the extremely heavy trucks which make up the greater portion of the vehicular traffic in the down-town streets of New York City, and therefore it would not be advisable to repave such streets as West, South and Canal with asphalt; granite blocks on concrete foundation, as laid in Liverpool, being better calculated to meet the necessities of their traffic.

The Liverpool pavements are similar to the granite-block pavement recently laid in New York, with the exception that the stone blocks are quite small, thus making many more joints, and the blocks are cut to exactly the same width and depth. The latter seems to be an improvement on our system; and it might also be well to try paving a few streets with granite blocks laid diagonally across the roadway; this has been tried with wood pavement in Frankfort with satisfactory results.

A great deal of wood pavement is also used in Paris and Berlin, and while it is very popular in Paris it is not so favorably considered in London or Berlin as asphalt. In London it is found necessary to remove and replace the wooden blocks about every fourth year, and although noiseless and better suited for streets having steep gradients than asphalt, still, for sanitary reasons and durability it does not compare favorably, in view of the fact of its being more easily polluted, retaining moisture longer and being more difficult to keep clean.

In Berlin the wood pavements have been allowed to deteriorate, as no provision for maintenance seems to have been made with the company constructing them.

Paris keeps its wood pavements in good condition at an annual expense of fifty cents per square yard. This seems to be too great an amount for New York to expend in the maintenance of this class of work. In this connection it may be proper to state that in proportion to the areas of their respective pavements London has spent annually one and one-half times as much per mile for pavement maintenance as has been appropriated in New York for that purpose during the last five years.



Berlin spends one and two-thirds times as much, and Paris two times as much per mile as has New York been permitted to spend. It should also be considered that the cost of labor in the European cities is much less than in New York City, as may be seen from the following statement of wages paid:

	Unskilled Labor.	Pavers.	Masons.
New York.....	\$1 50 per day.	\$4 50 per day.	\$4 50 per day.
London.....	1 25 "	1 75 "	1 75 "
Berlin.....	70 "	1 50 "	1 50 "
Paris.....	80 "	1 20 "	1 60 "

Ten hours constituting a day's work in these European cities, while the legal working day in New York is eight hours.

The general condition of the roadways of the European cities is improved by the use, exclusively of grooved rails in the street or tram car tracks; in Paris but one rail is grooved, the two wheels on the right-hand side of the car only have flanges, the two wheels on the opposite side of the car having a flat tire and no flange whatever, and still the cars run easily, and there is no difficulty in keeping the car on the track. In Berlin, where there is more snow than in New York, the grooved rail is exclusively used, and the tracks at all times are kept in a solid and substantial condition, and there seems to be no difficulty in keeping the groove free from snow and ice. In Paris, in the streets which are provided with large sewers, the pipes for water, gas, etc., are put in these sewers, but in avenues not so provided the sub-structures are laid in trenches inside the curb-line, under the sidewalk. The sidewalks being of asphalt, the trench is readily cut through it, but it not infrequently results in closing entirely the sidewalk on one side of the street until the pipes are laid. Still, the fact of the pipes being inside the curb-line, under the sidewalks, prevents the constant tearing up of the roadway pavement from which the streets of New York City suffer.

In conclusion I would state, from personal observations made of the traffic over the streets of the cities I have visited, and from data obtained from the public authorities of those cities, that of the various kinds of pavement in common use, viz.: stone, macadam, wood and asphalt, I am convinced that the most satisfactory street pavement, for smoothness, cleanliness and freedom from noise is asphalt pavement, and such opinion is in accordance with the views of Col. Haywood, Engineer of the City of London; M. Huét of Paris, and Dr. Holbrecht, City Engineer of Berlin.

Its use could advantageously be extended in the residential portions of New York City, but great care must be taken that such slight repairs as may become necessary from time to time should be made without any such delay as would permit the pavement to seriously deteriorate.

Very respectfully,

CHARLES H. BULL, Assistant Engineer.

DEPARTMENT OF PUBLIC WORKS,  
NEW YORK, March 20, 1890.

## EXECUTIVE DEPARTMENT

MAYOR'S OFFICE,  
NEW YORK, March 4, 1890.

Pursuant to section 1, subdivision 3 of chapter 10, Laws of 1888, I hereby designate the "New Yorker Zeitung" and "New York Daily News," of the daily papers printed in the City of New York as the newspapers in which the advertisements of the public notice of the time and place of auction sales in the City of New York shall be published.

HUGH J. GRANT, Mayor.

MAYOR'S OFFICE,  
NEW YORK, February 1, 1889.

Pursuant to section 9 of chapter 339, Laws of 1883, I hereby designate the "Daily News" and the "New York Morning Journal," two of the daily papers printed in the City of New York, in which notice of each sale of unredeemed pawns or pledges by public auction in said city, by pawnbrokers, shall be published for at least six days previous thereto, until otherwise ordered.

HUGH J. GRANT, Mayor.

## OFFICIAL DIRECTORY.

STATEMENT OF THE HOURS DURING which all the Public Offices in the City are open for business, and at which the Courts regularly open and adjourn, as well as of the places where such offices are kept and such Courts are held; together with the heads of Departments and Courts:

### EXECUTIVE DEPARTMENT.

**Mayor's Office.**  
No. 6 City Hall, 10 A. M. to 4 P. M.; Saturdays, 10 A. M. to 12 M.  
HUGH J. GRANT, Mayor. WM. MCM. SPEER, Secretary and Chief Clerk.  
**Mayor's Marshal's Office.**  
No. 1 City Hall, 9 A. M. to 4 P. M.  
DANIEL ENGELHARD, First Marshal.  
FRANK FOX, Second Marshal.

### COMMISSIONERS OF ACCOUNTS.

Rooms 114 and 115, Stewart Building, 9 A. M. to 4 P. M.  
MAURICE F. HOLAHAN, EDWARD P. BARKER.

### AQUEDUCT COMMISSIONERS.

Room 209, Stewart Building, 5th floor, 9 A. M. to 5 P. M.  
JAMES C. DUANE, President; JOHN C. SHEEHAN, Secretary; A. FTELEY, Chief Engineer; J. C. LULLEY, Auditor.

### BOARD OF ARMORY COMMISSIONERS.

THE MAYOR, Chairman; PRESIDENT OF DEPARTMENT OF TAXES AND ASSESSMENTS, Secretary.  
Address: M. COLEMAN, Staats Zeitung Building, Tryon Row. Office hours, 9 A. M. to 4 P. M.; Saturdays, 9 A. M. to 12 M.

### COMMON COUNCIL.

**Office of Clerk of Common Council.**  
No. 8 City Hall, 9 A. M. to 4 P. M.  
JOHN H. V. ARNOLD, President Board of Aldermen.  
FRANCIS J. TWOMEY, Clerk Common Council.  
**City Library.**  
No. 12 City Hall, 10 A. M. to 4 P. M.  
MICHAEL C. PADDEN, City Librarian.

### DEPARTMENT OF PUBLIC WORKS.

**Commissioner's Office.**  
No. 31 Chambers street, 9 A. M. to 4 P. M.  
THOMAS F. GILROY, Commissioner; BERNARD F. MARTIN, Deputy Commissioner.

#### Bureau of Chief Engineer.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
GEORGE W. BIRDSALL, Chief Engineer.

#### Bureau of Water Register.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
JOSEPH RILEY, Register.

#### Bureau of Street Improvements.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
WM. M. DEAN, Superintendent.

#### Bureau of Sewers.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
HORACE LOOMIS, Engineer-in-Charge.

#### Bureau of Repairs and Supplies.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
WILLIAM G. BERGEN, Superintendent.

#### Bureau of Water Purveyor.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
WM. H. BURKE, Water Purveyor.

#### Bureau of Lamps and Gas.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
STEPHEN MCCORMICK, Superintendent.

#### Bureau of Streets and Roads.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
JOHN B. SHEA, Superintendent.

#### Bureau of Incumbrances.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
MICHAEL T. CUMMINGS, Superintendent.

#### Keeper of City Hall

MARTIN J. KRESE, City Hall.

### DEPARTMENT OF STREET IMPROVEMENTS

TWENTY-THIRD AND TWENTY-FOURTH WARDS.

No. 2056 Third Avenue.  
LOUIS J. HEINTZ, Commissioner; JOHN H. J. RONNER, Deputy Commissioner; WM. H. TEN EYCK, Secretary.

### FINANCE DEPARTMENT.

#### Comptroller's Office.

No. 15 Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.  
THEODORE W. MYERS, Comptroller; RICHARD A. STORRS, Deputy Comptroller; D. LOWDER SMITH, Assistant Deputy Comptroller.

#### Auditing Bureau.

Nos. 19, 21, 23 Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.  
WILLIAM J. LYON, First Auditor.  
DAVID E. AUSTEN, Second Auditor.

#### Bureau for the Collection of Assessments and Arrears of Taxes and Assessments and of Water Rents.

Nos. 31, 33, 35, 37, 39 Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.  
OSBORNE MACDANIEL, Collector of Assessments and Clerk of Arrears.

No money received after 2 P. M.

#### Bureau for the Collection of City Revenue and of Markets.

Nos. 1 and 3 Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.

JAMES DALY, Collector of the City Revenue and Superintendent of Markets.

No money received after 2 P. M.

#### Bureau for the Collection of Taxes.

No. 57 Chambers street and No. 35 Reade street, Stewart Building, 9 A. M. to 4 P. M.

GEORGE W. McLEAN, Receiver of Taxes; ALFRED VREDENBURGH, Deputy Receiver of Taxes.

No money received after 2 P. M.

#### Bureau of the City Chamberlain.

Nos. 25, 27 Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.

THOMAS C. T. CRAIN, City Chamberlain.

#### Office of the City Paymaster.

No. 33 Reade street, Stewart Building, 9 A. M. to 4 P. M.

JOHN H. TIMMERMAN, City Paymaster.

### LAW DEPARTMENT.

#### Office of the Counsel to the Corporation

Staats Zeitung Building, third and fourth floors, 9 A. M. to 5 P. M. Saturdays, 9 A. M. to 12 M.

WILLIAM H. CLARK, Counsel to the Corporation.

#### Office of the Public Administrator.

No. 49 Beekman street, 9 A. M. to 4 P. M.

CHARLES E. LYDECKER, Public Administrator.

#### Office of Attorney for Collection of Arrears of Personal Taxes.

Stewart Building, Broadway and Chambers street, 9 A. M. to 4 P. M.

JOHN G. H. MEYERS, Attorney.

SAMUEL BARRY, Clerk.

#### Office of the Corporation Attorney.

No. 49 Beekman street, 9 A. M. to 4 P. M.

LOUIS STECKLER, Corporation Attorney.

### POLICE DEPARTMENT.

#### Central Office.

No. 300 Mulberry street, 9 A. M. to 4 P. M.

CHARLES F. MACLEAN, President; WILLIAM H. KIPP, Chief Clerk; T. F. RODENBOUGH, Chief of Bureau of Elections.

DEPARTMENT OF CHARITIES AND CORRECTION.  
Central Office.  
No. 66 Third Avenue, corner Eleventh street, 9 A. M. to 4 P. M.  
HENRY H. PORTER, President; GEORGE F. BRITTON, Secretary.  
Purchasing Agent, FREDERICK A. CUSHMAN. Office hours, 9 A. M. to 4 P. M. Saturdays, 12 M.  
Contracts, Proposals and Estimates for Work and Materials for Building, Repairs and Supplies, Bills and Accounts, 9 A. M. to 4 P. M. Saturdays, 12 M. CHARLES BENN, General Bookkeeper.  
Out-Door Poor Department. Office hours, 8.30 A. M. to 4.30 P. M. WILLIAM BLAKE, Superintendent. Entrance on Eleventh street.

### HEALTH DEPARTMENT.

No. 301 Mott street, 9 A. M. to 4 P. M.

CHARLES G. WILSON, President; EMMONS CLARK, Secretary.

### DEPARTMENT OF PUBLIC PARKS.

Emigrant Industrial Savings Bank Building, Nos. 49 and 51 Chambers street, 9 A. M. to 4 P. M. Saturdays, 12 M.  
ALBERT GALLUP, President; CHARLES DE F. BURNS, Secretary.

#### Office of Topographical Engineer.

Arsenal, Sixty-fourth street and Fifth Avenue, 9 A. M. to 5 P. M.

### FIRE DEPARTMENT.

Office hours for all, except where otherwise noted from 9 A. M. to 4 P. M. Saturdays, to 12 M.

#### Headquarters.

Nos. 157 and 159 East Sixty-seventh street.  
HENRY D. PURROY, President; CARL JUSSEN, Secretary.

#### Bureau of Chief of Department.

HUGH BONNER, Chief of Department.

#### Bureau of Inspector of Combustibles.

PETER SERRY, Inspector of Combustibles.

#### Bureau of Fire Marshal.

JAMES MITCHELL, Fire Marshal.

#### Bureau of Inspection of Buildings.

THOMAS J. BRADY, Superintendent of Buildings.

#### Attorney to Department.

WM. L. FINDLEY.

#### Fire Alarm Telegraph.

J. ELLIOT SMITH, Superintendent.  
Central Office open at all hours.

#### Repair Shops.

Nos. 128 and 130 West Third street.  
JOHN CASTLES, Foreman-in-Charge, 8 A. M. to 5 P. M.

#### Hospital Stables.

Ninety-ninth street, between Ninth and Tenth avenues.  
JOSEPH SHEA, Foreman-in-Charge.  
Open at all hours.

### DEPARTMENT OF DOCKS.

Battery, Pier A, North river.

EDWIN A. POST, President; AUGUSTUS T. DOCHARTY, Secretary.

Office hours, from 9 A. M. to 4 P. M.

### DEPARTMENT OF TAXES AND ASSESSMENTS.

Staats Zeitung Building, Tryon Row, 9 A. M. to 4 P. M. Saturdays, 12 M.  
MICHAEL COLEMAN, President; FLOYD T. SMITH, Secretary.

### DEPARTMENT OF STREET CLEANING.

Stewart Building. Office hours, 9 A. M. to 4 P. M.  
HANS S. BEATTIE, Commissioner; WILLIAM DALTON, Deputy Commissioner; GILBERT O. F. NICOLL, Chief Clerk.

### CIVIL SERVICE SUPERVISORY AND EXAMINING BOARDS.

Cooper Union, 9 A. M. to 4 P. M.  
JAMES THOMSON, Chairman of the Supervisory Board  
LEE PHILLIPS, Secretary and Executive Officer.

### BOARD OF ESTIMATE AND APPORTIONMENT

Office of Clerk, Staats Zeitung Building, Room 5.  
The Mayor, Chairman; CHARLES V. ADEE, Clerk.

### BOARD OF ASSESSORS.

Office, 27 Chambers street, 9 A. M. to 4 P. M.  
EDWARD GILON, Chairman; WM. H. JASPER, Secretary.

### BOARD OF EXCISE.

No. 54 Bond street, 9 A. M. to 4 P. M.  
ALEXANDER MEAKIM, President; JAMES F. BISHOP, Secretary and Chief Clerk.

### SHERIFF'S OFFICE.

Nos. 6 and 7 New County Court-house, 9 A. M. to 4 P. M.  
JOHN J. GORMAN, Sheriff; JOHN B. SEXTON, Under Sheriff.

### REGISTER'S OFFICE.

East side City Hall Park, 9 A. M. to 4 P. M.  
FRANK I. FITZGERALD, Register; JAMES A. HANLEY, Deputy Register.

### COMMISSIONER OF JURORS.

Room 127, Stewart Building, Chambers street and Broadway, 9 A. M. to 4 P. M.  
CHARLES REILLY, Commissioner; EDWARD MCCUE, Deputy Commissioner.

### COUNTY CLERK'S OFFICE.

Nos. 7 and 8 New County Court-house, 9 A. M. to 4 P. M.  
LEONARD A. GIEGERICH, County Clerk; P. J. SCULLY, Deputy County Clerk.

### DISTRICT ATTORNEY'S OFFICE.

Second floor, Brown-stone Building, City Hall Park 9 A. M. to 4 P. M.  
DE LANCEY NICOLL, District Attorney; WILLIAM J. McKENNA, Chief Clerk.

### THE CITY RECORD OFFICE.

And Bureau of Printing, Stationery, and Blank Books  
No. 2 City Hall, 9 A. M. to 5 P. M., except Saturdays, on which days 9 A. M. to 12 M.  
W. J. K. KENNY, Supervisor; DAVID RYAN, Assistant Supervisor; JOHN J. McGRATH, Examiner.

### \*CORONERS' OFFICE.

No. 124 Second Avenue, 8 A. M. to 5 P. M. Sundays and holidays, 8 A. M. to 12.30 P. M.  
MICHAEL J. B. MESSEMER, FERDINAND LEVY, DANIEL HANLY, LOUIS W. SCHULTZ, Coroners; EDWARD F. REYNOLDS, Clerk of the Board of Coroners.

### SURROGATE'S COURT.

New County Court-house. Court opens at 10.30 A. M. RASTUS S. RANSOM, Surrogate; WILLIAM V. LEARY, Chief Clerk.

### COURT OF SPECIAL SESSIONS.

At Tombs, corner Franklin and Centre streets, daily at 10.30 A. M., excepting Saturday.  
JOHN F. CARROLL, Clerk. Office, Tombs.

### SUPERIOR COURT.

Third floor, New County Court-house, 11 A. M.  
General Term, Room No. 35.  
Special Term, Room No. 33.  
Equity Term, Room No. 30.  
Chambers, Room No. 33.  
Part I., Room No. 34.  
Part II., Room No. 35.  
Part III., Room No. 36.  
Judges' Private Chambers.  
Naturalization Bureau, Room No. 31.  
Clerk's Office, Room No. 31, 9 A. M. to 4 P. M.  
JOHN SEDGWICK, Chief Judge; THOMAS BOESE, Chief Clerk.

### SUPREME COURT.

Second floor, New County Court-house, opens 10.30 A. M.  
CHARLES H. VAN BRUNT, Presiding Justice; LEONARD A. GIEGERICH, Clerk.  
General Term, Room No. 9, WILLIAM LAMB, Jr., Clerk.  
Special Term, Part I., Room No. 10, HUGH DONNELLY, Clerk.  
Special Term, Part II., Room No. 18, WILLIAM J. HILL, Clerk.  
Chambers, Room No. 11, AMBROSE A. MCCALL, Clerk.  
Circuit, Part I., Room No. 12, WALTER A. BRADY, Clerk.  
Circuit, Part II., Room No. 14, JOHN B. MCGOLDRICK, Clerk.  
Circuit, Part III., Room No. 13, GEORGE F. LYON, Clerk.  
Circuit, Part IV., Room No. 15, J. LEWIS LYON, Clerk.  
Judges' Private Chambers, Rooms Nos. 19 and 20. SAMUEL GOLDBERG, Librarian.

### CITY COURT.

#### City Hall.

General Term, Room No. 20.  
Trial Term, Part I., Room No. 20.  
Part II., Room No. 21.  
Part III., Room No. 15.  
Part IV., Room No. 11.  
Special Term Chambers and will be held in Room No. 19, 10 A. M. to 4 P. M.  
Clerk's Office, Room No. 10, City Hall, 9 A. M. to 4 P. M.  
SIMON M. EHRLICH, Chief Justice; MICHAEL T. DALY, Clerk.

### OYER AND TERMINER COURT.

New County Court-house, second floor, southeast corner, Room No. 12. Court opens at 10 1/2 o'clock A. M.  
JOHN SPARKS, Clerk. Office, Brown-stone Building, City Hall Park, second floor, northwest corner, Room No. 11, 10 A. M. till 4 P. M.

### COURT OF COMMON PLEAS.

Third floor, New County Court-house, 9 A. M. to 4 P. M.  
Assignment Bureau, Room No. 23, 9 A. M. to 4 P. M.  
Clerk's Office, Room No. 21, 9 A. M. to 4 P. M.  
General Term, Room No. 24, 11 o'clock A. M. to adjournment.  
Special Term, Room No. 22, 11 o'clock A. M. to adjournment.  
Chambers, Room No. 22, 10.30 o'clock A. M. to adjournment.  
Part I., Room No. 26, 11 o'clock A. M. to adjournment.  
Part II., Room No. 24, 11 o'clock A. M. to adjournment.  
Equity Term, Room No. 25, 11 o'clock A. M. to adjournment.  
Naturalization Bureau, Room No. 23, 9 A. M. to 4 P. M.  
JOSEPH F. DALY, Chief Justice; S. JONES, Chief Clerk.

### COURT OF GENERAL SESSIONS.

No. 32 Chambers street. Court open at 11 o'clock A. M.  
FREDERICK SMYTH, Recorder; RANDOLPH B. MARTINE, JAMES FITZGERALD and RUFUS B. COWING, Judges.  
Terms open, first Monday each month.  
JOHN SPARKS, Clerk. Office, Room No. 11, 10 A. M. till 4 P. M.

### DISTRICT CIVIL COURTS.

First District—Third, Fifth and Eighth Wards, and all that part of the First Ward lying west of Broadway and Whitehall street. Court-room, southwest corner of Centre and Chambers streets.  
PETER MITCHELL, Justice. LOUIS C. BRUNS, Clerk.  
Clerk's Office open from 9 A. M. to 4 P. M.

Second District—Second, Fourth, Sixth and Fourteenth Wards, and all that portion of the First Ward lying south and east of Broadway and Whitehall street. Court-room, corner of Grand and Centre streets.

CHARLES M. CLANCY, Justice. JAMES DUNPHY, Clerk.

Clerk's Office open from 9 A. M. to 4 P. M.

Third District—Ninth and Fifteenth Wards. Court-room, southwest corner Sixth Avenue and West Tenth street. Court open daily (Sundays and legal holidays excepted) from 9 A. M. to 4 P. M.

WM. F. MOORE, Justice. WILLIAM H. CORSA, Clerk.

Fourth District—Tenth and Seventeenth Wards. Court-room, No. 30 First street, corner Second Avenue. Court opens 9 A. M. daily, and remains open to close of business.

ALFRED STECKLER, Justice. JULIUS HARBURGER, Clerk.

Fifth District—Seventh, Eleventh



DEPARTMENT OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE,  
ROOM 6, NO. 31 CHAMBERS STREET,  
NEW YORK, March 17, 1891.

TO CONTRACTORS.

BIDS OR ESTIMATES, INCLOSED IN A SEALED envelope, with the title of the work and the name of the bidder indorsed thereon, also the number of the work as in the advertisement, will be received at this office until 12 o'clock M. on Monday, March 30, 1891, at which place and hour they will be publicly opened by the head of the Department.

- No. 1. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF WASHINGTON STREET, from Reade to Spring street (so far as the same is not within the limits of grants of land under water).
- No. 2. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF WASHINGTON STREET, from the north side of Chambers street to the north side of Spring street (so far as the same is within the limits of grants of land under water).
- No. 3. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF GREENWICH STREET, from Fulton to Chambers street (so far as the same is not within the limits of grants of land under water).
- No. 4. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF GREENWICH STREET, from the south side of Vesey street to the north side of Barclay street (so far as the same is within the limits of grants of land under water).
- No. 5. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF CHAMBERS STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 6. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF CHAMBERS STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 7. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF READE STREET, from West to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 8. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF READE STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 9. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF JAY STREET, from West to Washington street (so far as the same is not within the limits of grants of land under water).
- No. 10. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF JAY STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 11. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF HARRISON STREET, from West to Washington street (so far as the same is not within the limits of grants of land under water).
- No. 12. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF HARRISON STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 13. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF FRANKLIN STREET, from West to Washington street (so far as the same is not within the limits of grants of land under water).
- No. 14. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF FRANKLIN STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 15. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF NORTH MOORE STREET, from West to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 16. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF NORTH MOORE STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 17. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF BEACH STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 18. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF BEACH STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 19. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF HUBERT STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 20. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF HUBERT STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).

- No. 21. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF LAIGHT STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 22. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF LAIGHT STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 23. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF VESTRY STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 24. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF VESTRY STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 25. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF DESBROSSES STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 26. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF DESBROSSES STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 27. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF WATTS STREET, from Washington to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 28. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF WATTS STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 29. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF CANAL STREET, from West to Washington street (so far as the same is not within the limits of grants of land under water).
- No. 30. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF CANAL STREET, from West to Washington street (so far as the same is within the limits of grants of land under water).
- No. 31. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF SPRING STREET, from West to Greenwich street (so far as the same is not within the limits of grants of land under water).
- No. 32. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF SPRING STREET, from West to Greenwich street (so far as the same is within the limits of grants of land under water).
- No. 33. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF ONE HUNDRED AND TENTH STREET, from First avenue to bulkhead line on East or Harlem river (so far as the same is within the limits of grants of land under water).
- No. 34. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT, WITH CONCRETE FOUNDATION, THE CARRIAGEWAY OF FULTON STREET, from Broadway to Greenwich street.
- No. 35. RESURFACING WITH BROKEN TRAP-ROCK AND TRAP-ROCK SCREENINGS THE ROADWAY OF SEVENTH AVENUE, between One Hundred and Tenth and One Hundred and Forty-fifth streets.

Each estimate must contain the name and place of residence of the person making the same, the names of all persons interested with him therein, and if no other person be so interested it shall distinctly state that fact. That it is made without any connection with any other person making an estimate for the same work, and is in all respects fair and without collusion or fraud. That no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested in the estimate or in the work to which it relates or in the profits thereof.

Each estimate must be verified by the oath, in writing, of the party making the same, that the several matters therein stated are true, and must be accompanied by the consent, in writing, of two householders or freeholders in the City of New York, to the effect that if the contract is awarded to the person making the estimate, they will, upon its being so awarded, become bound as his sureties for its faithful performance; and that if he shall refuse or neglect to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled upon its completion, and that which the Corporation may be obliged to pay to the person to whom the contract shall be awarded at any subsequent letting; the amount to be calculated upon the estimated amount of the work by which the bids are tested.

The consent last above mentioned must be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety, or otherwise, and that he has offered himself as surety in good faith, with the intention to execute the bond required by law.

No estimate will be considered unless accompanied by either a certified check upon one of the State or National banks of the City of New York, drawn to the order of the Comptroller, or money to the amount of five per centum of the amount of the security required for the faithful performance of the contract. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited and retained by the City of New York, as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of the deposit will be returned to him.

THE COMMISSIONER OF PUBLIC WORKS

RESERVES THE RIGHT TO REJECT ALL BIDS RECEIVED FOR ANY PARTICULAR WORK IF HE DEEMS IT FOR THE BEST INTERESTS OF THE CITY.

Blank forms of bid or estimate, the proper envelopes in which to inclose the same, the specifications and agreements, and any further information desired, can be obtained at Room 11, No. 31 Chambers street.

THOS. F. GILROY,  
Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE,  
ROOM 6, NO. 31 CHAMBERS STREET,  
NEW YORK, March 4, 1891.

TO CONTRACTORS.

BIDS OR ESTIMATES, INCLOSED IN A sealed envelope, with the title of the work and the name of the bidder indorsed thereon, also the number of the work as in the advertisement, will be received at this office until 12 o'clock M. on Wednesday, March 18, 1891, at which place and hour they will be publicly opened by the head of the Department.

- No. 1. FOR FURNISHING AND DELIVERING HYDRANTS, WOODEN HYDRANT BOXES AND CAST-IRON STOP-COCK BOXES.
- No. 2. FOR FURNISHING, DELIVERING AND LAYING WATER MAINS IN SOUTH-ERN BOULEVARD, between One Hundred and Seventy-seventh and Home streets.
- No. 3. FOR FURNISHING ONE THOUSAND CAST IRON LAMP-POSTS.
- No. 4. FOR FURNISHING TWENTY-FIVE HUNDRED STREET LAMPS.
- No. 5. FOR FURNISHING FIVE HUNDRED BOULEVARD LAMPS.

Each estimate must contain the name and place of residence of the person making the same, the names of all persons interested with him therein, and if no other person be so interested, it shall distinctly state that fact. That it is made without any connection with any other person making an estimate for the same work, and is in all respects fair and without collusion or fraud. That no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation is directly or indirectly interested in the estimate, or in the work to which it relates or in the profits thereof.

Each estimate must be verified by the oath, in writing, of the party making the same, that the several matters therein stated are true, and must be accompanied by the consent, in writing, of two householders or freeholders in the City of New York, to the effect that if the contract is awarded to the person making the estimate, they will, upon its being so awarded, become bound as his sureties for its faithful performance; and that if he shall refuse or neglect to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled upon its completion, and that which the Corporation may be obliged to pay to the person to whom the contract shall be awarded at any subsequent letting; the amount to be calculated upon the estimated amount of the work by which the bids are tested.

The consent last above mentioned must be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety, or otherwise, and that he has offered himself as surety in good faith, with the intention to execute the bond required by law.

No estimate will be considered unless accompanied by either a certified check upon one of the State or National banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of five per centum of the amount of the security required for the faithful performance of the contract. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of the deposit will be returned to him.

THE COMMISSIONER OF PUBLIC WORKS RESERVES THE RIGHT TO REJECT ALL BIDS RECEIVED FOR ANY PARTICULAR WORK IF HE DEEMS IT FOR THE BEST INTERESTS OF THE CITY.

Blank forms of bid or estimate, the proper envelopes in which to inclose the same, the specifications and agreements, and any further information desired, can be obtained at Rooms 10 and 11, No. 31 Chambers street.

BERNARD F. MARTIN,  
Deputy and Acting Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE,  
NO. 31 CHAMBERS STREET,  
NEW YORK, August 14, 1889.

TO OWNERS OF LANDS ORIGINALLY ACQUIRED BY WATER GRANTS.

ATTENTION IS CALLED TO THE RECENT act of the Legislature (chapter 499, Laws of 1889), which provides that whenever any streets or avenues in the city, described in any grant of land under water, from the Mayor, Aldermen and Commonalty containing covenants requiring the grantees and their successors to pave, repave, keep in repair or maintain such streets, shall be in need of repairs, pavement or repavement, the Common Council may, by ordinance, require the same to be paved, repaved or repaired, and the expense thereof to be assessed on the property benefited; and whenever the owner of a lot so assessed shall have paid the assessment levied for such paving, repaving or repairing, such payment shall release and discharge such owner from any and every covenant and obligation as to paving, repaving and repairing, contained in the water grant under which the premises are held, and no further assessment shall be imposed on such lot for paving, repaving or repairing such street or avenue, unless it shall be petitioned for by a majority of the owners of the property (who shall also be the owners of a majority of the property in frontage) on the line of the proposed improvement.

The act further provides that the owner of any such lot may notify the Commissioner of Public Works, in writing, specifying the ward number and street number of the lot that he desires, for himself, his heirs and assigns, to be released from the obligation of such covenants, and elects and agrees that said lot shall be thereupon liable to be assessed as above provided, and thereupon the owner of such lot, his heirs and assigns shall therefor be relieved from any obligation to pave, repair, uphold or maintain said street, and the lot in respect of which such notice was given shall be liable to assessment accordingly.

The Commissioner of Public Works desires to give the following explanation of the operation of this act: When notice, as above described, is given to the Commissioner of Public Works, the owner of the lot or lots therein described, and his heirs and assigns, are forever released from all obligation under the grant in respect of paving, repaving or repairing the street in front of or adjacent to said lot or lots, except one assessment for such paving, repaving or repairs, as the

Common Council may, by ordinance, direct to be made thereafter.

No street or avenue within the limits of such grants can be paved, repaved or repaired until said work is authorized by ordinance of the Common Council, and when the owners of such lots desire their streets to be paved, repaved or repaired, they should state their desire and make their application to the Board of Aldermen and not to the Commissioner of Public Works, who has no authority in the matter until directed by ordinance of the Common Council to proceed with the pavement, repavement or repairs.

THOS. F. GILROY,  
Commissioner of Public Works

DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION.

DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION,  
NO. 66 THIRD AVENUE,  
NEW YORK, March 14, 1891.

IN ACCORDANCE WITH AN ORDINANCE OF the Common Council, "In relation to the burial of strangers or unknown persons who may die in any of the public institutions of the City of New York," the Commissioners of Public Charities and Correction report as follows:

At Morgue, Bellevue Hospital, from Pier 41, North river—Unknown man, aged about 19 years; 5 feet 6 inches high; sandy hair. Had on brown mixed coat, black diagonal vest, brown and gray striped pants, brown and pink striped cotton shirt, gray woolen undershirt, gray cotton socks.

Unknown man, from Pier 2, North river, aged about 40 years; 5 feet 7 inches high; brown hair, mixed with gray, sandy moustache. Had on black overcoat, black cardigan jacket, gray vest and pants, blue flannel shirt, gray woolen undershirt, white cotton flannel drawers, white cotton socks, gaiters; wore a truss.

Unknown man from No. 205 East Eighty-sixth street, aged about 60 years; 5 feet 3 inches high; gray hair, moustache and chin beard. Had on gray checked coat, black and brown striped pants, white shirt, white knit undershirt and drawers, brown cotton socks, gaiters.

At Charity Hospital, Blackwell's Island.—Eliza Kelly, aged 52 years; 5 feet 6 inches high; gray hair and eyes. Had on when admitted spotted calico skirt, red plaid shawl, straw bonnet.

William Small, aged 54 years; 5 feet 7 inches high, gray hair, blue eyes. Had on when admitted two black coats, black vest and pants, colored shirt.

At Workhouse, Blackwell's Island—Lucy Meyer, aged 43 years. Committed February 24, 1891. Clothing destroyed on account of vermin.

Louis Stein, aged 75 years; committed February 21, 1891. Had on when admitted, brown coat, dark pants, dark woolen undershirt.

At Homeopathic Hospital, Ward's Island.—Max Miller, aged 41 years; 5 feet 10 inches high; hazel eyes, black hair. Had on when admitted black coat, vest and pants, gaiters, black derby hat.

Lizzie O'Neill, aged 25 years; 5 feet 4 inches high; brown eyes and hair. Had on when admitted brown skirt, brown cloth sacque trimmed with fur, red woolen shawl, buttoned gaiters.

Michael Mullery, aged 36 years; 5 feet 8 inches high; hazel eyes, black hair. Had on when admitted black coat, dark striped pants, check jumper, laced shoes, black derby hat.

Thomas Dugan, aged 30 years; 5 feet 8 inches high; blue eyes, black hair. Had on when admitted blue coat, gray vest, dark pants, brogan shoes, brown felt hat.

Nothing known of their friends or relatives.

By order,  
G. F. BRITTON,  
Secretary.

THE NORMAL COLLEGE OF THE CITY OF NEW YORK.

A STATED MEETING OF THE BOARD OF Trustees of the Normal College of the City of New York will be held at the Hall of the Board of Education, No. 146 Grand street, on Tuesday, March 17, 1891, at 4 o'clock P.M.

JOHN L. N. HUNT,  
Chairman.

ARTHUR McMULLIN,  
Secretary.  
Dated New York, March 11, 1891.

THE COLLEGE OF THE CITY OF NEW YORK.

A STATED MEETING OF THE BOARD OF Trustees of the College of the City of New York, will be held at the Hall of the Board of Education, No. 146 Grand street, on Tuesday, March 17, 1891, at 4:30 o'clock P.M.

JOHN L. N. HUNT,  
Chairman.

ARTHUR McMULLIN,  
Secretary.  
Dated New York, March 11, 1891.

JURORS.

NOTICE OF COMMISSIONER OF JURORS IN REGARD TO CLAIMS FOR EXEMPTION FROM JURY DUTY.

ROOM 127, STEWART BUILDING,  
NO. 280 BROADWAY, THIRD FLOOR,  
NEW YORK, June 1, 1890.

CLAIMS FOR EXEMPTION FROM JURY duty will be heard by me daily at my office, from 9 A.M. until 4 P.M.

Those entitled to exemption are: Clergymen, lawyers, physicians, surgeons, surgeon-dentists, professors or teachers in a college, academy or public school, editors, editorial writers or reporters of daily newspapers, licensed pharmacists or pharmacists, actually engaged in their respective professions and not following any other calling; militiamen, policemen, and firemen; election officers, jury non-residents, and city employees, and United States employees; officers of vessels making regular trips; licensed pilots, actually following that calling; superintendents, conductors and engineers of a railroad company other than a street railroad company; telegraph operators actually doing duty as such; Grand, Sheriff's, and Civil Court jurors; stationary engineers; and persons physically incapable of performing jury duty by reason of severe sickness, deafness, or other physical disorder.

Those who have not answered as to their liability, or proved permanent exemption, will receive a "jury enrollment notice," requiring them to appear before me this year. Whether liable or not, such notices must be answered (in person, if possible, and at this office only, under severe penalties. If exempt, the party must bring proof of exemption; if liable, he must also answer in person, giving full and correct name, residence, etc., etc. No attention paid to letters.

All good citizens will aid the course of justice, and secure reliable and respectable juries, and equalize their duty by serving promptly when summoned, allowing their clerks or subordinates to serve, reporting to me any attempt at bribery or evasion, and suggesting names for enrollment. Persons between sixty and seventy years of age, summer absentees, persons temporarily ill, and United States jurors, are not exempt.

Every man must attend to his own notice. It is a misdemeanor to give any jury paper to another to answer. It is also punishable by fine or imprisonment to give or receive any present or bribe, directly or indirectly, in relation to a jury service, or to withhold any paper or make any false statement and every case will be fully prosecuted.

CHARLES REILLY,  
Commissioner of Jurors.



CIVIL SERVICE SUPERVISORY  
AND EXAMINING BOARDS.NEW YORK CITY CIVIL SERVICE BOARDS,  
COOPER UNION,  
NEW YORK, April 3, 1890.

## NOTICE.

- Office hours from 9 A. M. until 4 P. M.
- Blank applications for positions in the classified service of the city may be procured upon application at the above office.
- Examinations will be held from time to time in the needs of the several Departments of the City Government may require. When examinations are called, all persons who have filed applications prior to that date will be notified to appear for examination for the position specified.
- All information in relation to the Municipal Civil Service will be given upon application either in person or by letter. Those asking for information by mail should inclose stamp for reply.
- The classification by schedule of city employees is as follows:

Schedule A shall include all deputies of officers and commissioners duly authorized to act for their principals, and all persons necessarily occupying a strictly confidential position.

Schedule B shall include clerks, copyists, recorders, bookkeepers and others rendering clerical services, except typewriters and stenographers.

Schedule C shall include Policemen, both in the Police Department and Department of Parks, and the uniformed force in the Fire Department, and Doormen in the Police Department.

Schedule D shall include all persons for whose duty special expert knowledge is required not included in Schedule E.

Schedule F shall include physicians, chemists, nurses, orderlies and attendants in the city hospitals and asylums, surgeons in the Police Department and the Department of Public Parks, and medical officers in the Fire Department.

Schedule G shall include stenographers, typewriters and all persons not included in the foregoing schedules except laborers or day workmen.

Schedule H shall include all persons employed as laborers or day workmen.

Positions falling within Schedules A and G are exempt from Civil Service examination.

LEE PHILLIPS,  
Secretary and Executive OfficerDEPARTMENT OF TAXES AND  
ASSESSMENTS.DEPARTMENT OF TAXES AND ASSESSMENTS,  
STAATS ZEITUNG BUILDING,  
NEW YORK, January 10, 1891.

IN COMPLIANCE WITH SECTION 87 OF THE New York City Consolidation Act of 1882, it is hereby advertised that the books of "The Annual Record of the Assessed Valuations of Real and Personal Estate" of the City and County of New York, for the year 1891 are open and will remain open for examination and correction until the thirtieth day of April, 1891.

All persons believing themselves aggrieved must make application to the Commissioners of Taxes and Assessments, at this office, during the period said books are open, in order to obtain the relief provided by law.

Applications for correction of assessed valuations on personal estate must be made by the person assessed to the said Commissioners, between the hours of 10 A. M. and 2 P. M., except on Saturdays, when between 10 A. M. and 12 M., at this office, during the same period.

MICHAEL COLEMAN,  
THOMAS L. FEINER,  
EDWARD L. PARRIS,  
Commissioners of Taxes and Assessments

## DEPARTMENT OF DOCKS.

DEPARTMENT OF DOCKS,  
PIER "A," NORTH RIVER.

## TO CONTRACTORS.

(No. 370.)

PROPOSALS FOR ESTIMATES FOR DREDGING AT THE FOLLOWING-NAMED PLACES ON THE NORTH AND EAST RIVERS:

NORTH RIVER—Canal Street Dumping-board, Dumping-board at West Twelfth Street Pier.

EAST RIVER—Dumping-board at Foot East Seventeenth Street; Dumping-board at Foot East Forty-sixth Street; Dumping-board at Foot East Eightieth Street.

ESTIMATES FOR DREDGING AT THE ABOVE-named places on the North and East rivers will be received by the Board of Commissioners at the head of the Department of Docks, at the office of said Department, on Pier "A," foot of Battery place, North river, in the City of New York, until 12 o'clock M. of

FRIDAY, MARCH 27, 1891,

at which time and place the estimates will be publicly opened by the head of said Department. The award of the contract, if awarded, will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall furnish the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation, and a statement of the work to which it relates.

The bidder to whom the award is made shall give security for the faithful performance of the contract, in the manner prescribed and required by ordinance, in the sum of Four Hundred Dollars.

The Engineer's estimate of the quantities of material necessary to be dredged in order to secure at the premises mentioned the depth of water set opposite thereto in the specifications is as follows:

ON NORTH RIVER.	
Canal Street Dumping-board.....	2,500 cubic yards.
Dumping-board at West Twelfth street.....	1,000 "
ON EAST RIVER.	
Dumping-board at East Seventeenth street.....	2,000 cubic yards.
Dumping-board at East Forty-sixth street.....	1,000 "
Dumping-board at East Eightieth street.....	1,200 "
Total.....	7,700 "

N. B.—Bidders are required to submit their estimate upon the following express conditions, which shall apply to and become part of every estimate received:

1st. Bidders must satisfy themselves, by personal examination of the locations of the proposed dredging, and by such other means as they may prefer, as to the accuracy of the foregoing Engineer's estimate, and shall not, at any time after the submission of an estimate, dispute or complain of the above statement of quantities, nor assert that there was any misunderstanding in regard to the nature or amount of the work to be done.

2d. Bidders will be required to complete the entire work to the satisfaction of the Department of Docks, and in substantial accordance with the specifications of the contract. No extra compensation, beyond the amount payable for the work before mentioned, which shall be actually performed, at the price therefor, per cubic yard, to be specified by the lowest bidder, shall be due or payable for the entire work.

The work to be done under the contract is to be commenced within five days after the date of the contract, and the entire work is to be fully completed on or before the 25th day of April, 1891, and the damages to be paid by the contractor for each day that the contract may be unfulfilled after the time fixed for the fulfillment has expired, are, by a clause in the contract, fixed and liquidated at Fifty Dollars per day.

Bidders will state in their estimates a price per cubic yard for doing such dredging in conformity with the approved form of agreement and the specifications therein set forth, by which price the bids will be tested. This price is to cover all expenses of every kind involved in or incidental to the fulfillment of the contract, including any claim that may arise through delay, from any cause, in the performing of the work thereunder.

Bidders will distinctly write out, both in words and in figures, the amount of their estimates for doing this work. The person or persons to whom the contract may be awarded will be required to attend at this office with the sureties offered by him or them, and execute the contract within five days from the date of the service of a notice to that effect; and in case of failure or neglect so to do, he or they will be considered as having abandoned it, and as in default to the Corporation; and the contract will be readvertised and relet, and so on, until it be accepted and executed.

Bidders are required to state in their estimates their names and places of residence; the names of all persons interested with them therein; and if no other person be so interested, the estimate shall distinctly state the fact; also, that the estimate is made without any connection with any other person making an estimate for the same work; and that it is in all respects fair and without collusion or fraud; and also, that no member of the Common Council, head of a department, chief of a bureau, deputy thereof or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof; which estimate must be verified by the oath, in writing, of the party making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed to by all the parties interested.

Each estimate shall be accompanied by the consent, in writing, of two householders or freeholders in the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person or persons making the estimate, they will, upon its being so awarded, become bound as his or their sureties for its faithful performance; and that if said person or persons shall omit or refuse to execute the contract, they will pay to the Corporation of the City of New York any difference between the sum to which said person or persons would be entitled upon its completion and that which said Corporation may be obliged to pay to the person to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work to be done by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety and otherwise; and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered will be subject to approval by the Comptroller of the City of New York after the award is made and prior to the signing of the contract.

No estimate will be received or considered unless accompanied by either a certified check upon one of the State or National banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of five per centum of the amount of security required for the faithful performance of the contract. Such check or money must not be included in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box; and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Bidders are informed that no deviation from the specifications will be allowed, unless under the written instructions of the Engineer-in-Chief.

No estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

THE RIGHT TO DECLINE ALL THE ESTIMATES IS RESERVED, IF DEEMED FOR THE INTEREST OF THE CORPORATION OF THE CITY OF NEW YORK.

Bidders are requested, in making their bids or estimates, to use the blank prepared for that purpose by the Department, a copy of which, together with the form of the agreement, including specifications, and showing the manner of payment for the work, can be obtained upon application therefor at the office of the Department.

EDWIN A. POST,  
JAMES MATTHEWS,  
J. SERGEANT CRAM,Commissioners of the Department of Docks.  
Dated, NEW YORK, March 13, 1891.

(Work of Construction under New Plan.)

DEPARTMENT OF DOCKS,  
PIER "A," NORTH RIVER.

## TO CONTRACTORS.

(No. 369.)

PROPOSALS FOR ESTIMATES FOR PREPARING FOR AND EXTENDING PIER, NEW 25, AT THE FOOT OF NORTH MOORE STREET, NORTH RIVER, OUT TO THE PIER-HEAD LINE OF 1890.

ESTIMATES FOR PREPARING FOR AND extending Pier, new 25, with its appurtenances, at the foot of North Moore Street, North river, will be received by the Board of Commissioners at the head of the Department of Docks, at the office of said Department, on Pier "A," foot of Battery place, North river, in the City of New York, until 12 o'clock M. of

FRIDAY, MARCH 20, 1891,

at which time and place the estimates will be publicly opened by the head of said Department. The award of the contract, if awarded, will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall furnish the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation, and a statement of the work to which it relates.

The bidder to whom the award is made shall give security for the faithful performance of the contract in the manner prescribed and required by ordinance, in the sum of Five Thousand Dollars.

The Engineer's estimate of the nature, quantities and extent of the work, is as follows:

## EXTENSION OF PIER.

	Feet, B. M., measured in the work.
1. Yellow Pine Timber, 12" x 14".....	24,792
" " " 12" x 12".....	66,741
" " " 11" x 12".....	843
" " " 10" x 12".....	6,628
" " " 10 1/2" x 12".....	1,932
" " " 10" x 10".....	900
" " " 9" x 12".....	806
" " " 8 1/2" x 12".....	576
" " " 8" x 12".....	1,460
" " " 8" x 10".....	1,738
" " " 8" x 8".....	90
" " " 7 1/2" x 12".....	504
" " " 7" x 14".....	613
" " " 6 1/2" x 12".....	3,577
" " " 6" x 12".....	2,430
" " " 5 1/2" x 12".....	2,925
" " " 5" x 11".....	8,076
" " " 5" x 10".....	18,671
" " " 4" x 10".....	28,483
" " " 2" x 4".....	1,644
Total.....	173,429

Feet, B. M., measured in the work.

2. Spruce Timber, 4" x 10".....	31,927
" " " 4" x 5".....	118
" " " 2" x 10".....	354
Total.....	32,399

Feet, B. M., measured in the work.

3. White Oak Timber, 8" x 12".....	418
NOTE.—The above quantities of timber in items 1, 2 and 3, are inclusive of extra lengths required for scarfs, laps, etc., but are exclusive of waste.	
4. White Pine, Yellow Pine or Cypress Piles for Pier, to be furnished and driven by the contractor.....	294
(It is expected that the piles will have to be from about 80 to about 85 feet in length, to meet the requirements of the specifications for driving.)	
5. White Oak Fender Piles, from about 60 to about 65 feet in length.....	37
6. White Oak Spring Piles, about 65 feet long.....	24
7. $\frac{3}{8}$ " x 28", $\frac{3}{8}$ " x 26", $\frac{3}{8}$ " x 24", $\frac{3}{8}$ " x 22", $\frac{3}{8}$ " x 20", $\frac{3}{8}$ " x 18", $\frac{3}{8}$ " x 16", $\frac{3}{8}$ " x 14", $\frac{3}{8}$ " x 12", $\frac{3}{8}$ " x 10", $\frac{3}{8}$ " x 8", $\frac{3}{8}$ " x 6", $\frac{3}{8}$ " x 4", $\frac{3}{8}$ " x 3", $\frac{3}{8}$ " x 2", $\frac{3}{8}$ " x 1", $\frac{3}{8}$ " x $\frac{1}{2}$ ", $\frac{3}{8}$ " x $\frac{1}{4}$ ", $\frac{3}{8}$ " x $\frac{1}{8}$ ", $\frac{3}{8}$ " x $\frac{1}{16}$ ", $\frac{3}{8}$ " x $\frac{1}{32}$ ", $\frac{3}{8}$ " x $\frac{1}{64}$ , $\frac{3}{8}$ " x $\frac{1}{128}$ , $\frac{3}{8}$ " x $\frac{1}{256}$ , $\frac{3}{8}$ " x $\frac{1}{512}$ , $\frac{3}{8}$ " x $\frac{1}{1024}$ , $\frac{3}{8}$ " x $\frac{1}{2048}$ , $\frac{3}{8}$ " x $\frac{1}{4096}$ , $\frac{3}{8}$ " x $\frac{1}{8192}$ , $\frac{3}{8}$ " x $\frac{1}{16384}$ , $\frac{3}{8}$ " x $\frac{1}{32768}$ , $\frac{3}{8}$ " x $\frac{1}{65536}$ , $\frac{3}{8}$ " x $\frac{1}{131072}$ , $\frac{3}{8}$ " x $\frac{1}{262144}$ , $\frac{3}{8}$ " x $\frac{1}{524288}$ , $\frac{3}{8}$ " x $\frac{1}{1048576}$ , $\frac{3}{8}$ " x $\frac{1}{2097152}$ , $\frac{3}{8}$ " x $\frac{1}{4194304}$ , $\frac{3}{8}$ " x $\frac{1}{8388608}$ , $\frac{3}{8}$ " x $\frac{1}{16777216}$ , $\frac{3}{8}$ " x $\frac{1}{33554432}$ , $\frac{3}{8}$ " x $\frac{1}{67108864}$ , $\frac{3}{8}$ " x $\frac{1}{134217728}$ , $\frac{3}{8}$ " x $\frac{1}{268435456}$ , $\frac{3}{8}$ " x $\frac{1}{536870912}$ , $\frac{3}{8}$ " x $\frac{1}{1073741824}$ , $\frac{3}{8}$ " x $\frac{1}{2147483648}$ , $\frac{3}{8}$ " x $\frac{1}{4294967296}$ , $\frac{3}{8}$ " x $\frac{1}{8589934592}$ , $\frac{3}{8}$ " x $\frac{1}{17179869184}$ , $\frac{3}{8}$ " x $\frac{1}{34359738368}$ , $\frac{3}{8}$ " x $\frac{1}{68719476736}$ , $\frac{3}{8}$ " x $\frac{1}{137438953472}$ , $\frac{3}{8}$ " x $\frac{1}{274877906944}$ , $\frac{3}{8}$ " x $\frac{1}{549755813888}$ , $\frac{3}{8}$ " x $\frac{1}{1099511627776}$ , $\frac{3}{8}$ " x $\frac{1}{2199023255552}$ , $\frac{3}{8}$ " x $\frac{1}{4398046511104}$ , $\frac{3}{8}$ " x $\frac{1}{8796093022208}$ , $\frac{3}{8}$ " x $\frac{1}{17592186044416}$ , $\frac{3}{8}$ " x $\frac{1}{35184372088832}$ , $\frac{3}{8}$ " x $\frac{1}{70368744177664}$ , $\frac{3}{8}$ " x $\frac{1}{140737488355328}$ , $\frac{3}{8}$ " x $\frac{1}{281474976710656}$ , $\frac{3}{8}$ " x $\frac{1}{562949953421312}$ , $\frac{3}{8}$ " x $\frac{1}{1125899906842624}$ , $\frac{3}{8}$ " x $\frac{1}{2251799813685248}$ , $\frac{3}{8}$ " x $\frac{1}{4503599627370496}$ , $\frac{3}{8}$ " x $\frac{1}{9007199254740992}$ , $\frac{3}{8}$ " x $\frac{1}{18014398509481984}$ , $\frac{3}{8}$ " x $\frac{1}{36028797018963968}$ , $\frac{3}{8}$ " x $\frac{1}{72057594037927936}$ , $\frac{3}{8}$ " x $\frac{1}{144115188075855872}$ , $\frac{3}{8}$ " x $\frac{1}{288230376151711744}$ , $\frac{3}{8}$ " x $\frac{1}{576460752303423488}$ , $\frac{3}{8}$ " x $\frac{1}{1152921504606846976}$ , $\frac{3}{8}$ " x $\frac{1}{2305843009213693952}$ , $\frac{3}{8}$ " x $\frac{1}{4611686018427387904}$ , $\frac{3}{8}$ " x $\frac{1}{9223372036854775808}$ , $\frac{3}{8}$ " x $\frac{1}{18446744073709551616}$ , $\frac{3}{8}$ " x $\frac{1}{36893488147419103232}$ , $\frac{3}{8}$ " x $\frac{1}{73786976294838206464}$ , $\frac{3}{8}$ " x $\frac{1}{147573952589676412928}$ , $\frac{3}{8}$ " x $\frac{1}{295147905179352825856}$ , $\frac{3}{8}$ " x $\frac{1}{590295810358705651712}$ , $\frac{3}{8}$ " x $\frac{1}{1180591620717411303424}$ , $\frac{3}{8}$ " x $\frac{1}{2361183241434822606848}$ , $\frac{3}{8}$ " x $\frac{1}{4722366482869645213696}$ , $\frac{3}{8}$ " x $\frac{1}{9444732965739290427392}$ , $\frac{3}{8}$ " x $\frac{1}{18889465931478580854784}$ , $\frac{3}{8}$ " x $\frac{1}{37778931862957161709568}$ , $\frac{3}{8}$ " x $\frac{1}{75557863725914323419136}$ , $\frac{3}{8}$ " x $\frac{1}{151115727451828646838272}$ , $\frac{3}{8}$ " x $\frac{1}{302231454903657293676544}$ , $\frac{3}{8}$ " x $\frac{1}{604462909807314587353088}$ , $\frac{3}{8}$ " x $\frac{1}{1208925819614629174706176}$ , $\frac{3}{8}$ " x $\frac{1}{2417851639229258349412352}$ , $\frac{3}{8}$ " x $\frac{1}{4835703278458516698824704}$ , $\frac{3}{8}$ " x $\frac{1}{9671406556917033397649408}$ , $\frac{3}{8}$ " x $\frac{1}{19342813113834066795298816}$ , $\frac{3}{8}$ " x $\frac{1}{38685626227668133590597632}$ , $\frac{3}{8}$ " x $\frac{1}{77371252455336267181195264}$ , $\frac{3}{8}$ " x $\frac{1}{154742504910672534362390528}$ , $\frac{3}{8}$ " x $\frac{1}{309485009821345068724781056}$ , $\frac{3}{8}$ " x $\frac{1}{618970019642690137449562112}$ , $\frac{3}{8}$ " x $\frac{1}{1237940039285380274899124224}$ , $\frac{3}{8}$ " x $\frac{1}{2475880078570760549798248448}$ , $\frac{3}{8}$ " x $\frac{1}{4951760157141521099596496896}$ , $\frac{3}{8}$ " x $\frac{1}{9903520314283042199192993792}$ , $\frac{3}{8}$ " x $\frac{1}{19807040628566084398385987584}$ , $\frac{3}{8}$ " x $\frac{1}{39614081257132168796771975168}$ , $\frac{3}{8}$ " x $\frac{1}{79228162514264337593543950336}$ , $\frac{3}{8}$ " x $\frac{1}{158456325028528675187087900672}$ , $\frac{3}{8}$ " x $\frac{1}{316912650057057350374175801344}$ , $\frac{3}{8}$ " x $\frac{1}{633825300114114700748351602688}$ , $\frac{3}{8}$ " x $\frac{1}{1267650600228229401496703205376}$ , $\frac{3}{8}$ " x $\frac{1}{2535301200456458802993406410752}$ , $\frac{3}{8}$ " x $\frac{1}{5070602400912917605986812821504}$ , $\frac{3}{8}$ " x $\frac{1}{10141204801825835211973625643008}$ , $\frac{3}{8}$ " x $\frac{1}{20282409603651670423947251286016}$ , $\frac{3}{8}$ " x $\frac{1}{40564819207303340847894502572032}$ , $\frac{3}{8}$ " x $\frac{1}{81129638414606681695789005144064}$ , $\frac{3}{8}$ " x $\frac{1}{162259276829213363391578010288128}$ , $\frac{3}{8}$ " x $\frac{1}{324518553658426726783156020576256}$ , $\frac{3}{8}$ " x $\frac{1}{649037107316853453566312041152512}$ , $\frac{3}{8}$ " x $\frac{1}{1298074214633706907132624082305024}$ , $\frac{3}{8}$ " x $\frac{1}{2596148429267413814265248164610048}$ , $\frac{3}{8}$ " x $\frac{1}{5192296858534827628530496329220096}$ , $\frac{3}{8}$ " x $\frac{1}{10384593717069655257060992658440192}$ , $\frac{3}{8}$ " x $\frac{1}{20769187434139310514121985316880384}$ , $\frac{3}{8}$ " x $\frac{1}{41538374868278621028243970633760768}$ , $\frac{3}{8}$ " x $\frac{1}{83076749736557242056487941267521536}$ , $\frac{3}{8}$ " x $\frac{1}{166153499473114484112975882535043072}$ , $\frac{3}{8}$ " x $\frac{1}{332306998946228968225951765070086144}$ , $\frac{3}{8}$ " x $\frac{1}{664613997892457936451903530140172288}$ , $\frac{3}{8}$ " x $\frac{1}{1329227995784915872903807060280344576}$ , $\frac{3}{8}$ " x $\frac{1}{2658455991569831745807614120560689152}$ , $\frac{3}{8}$ " x $\frac{1}{5316911983139663491615228241121378304}$ , $\frac{3}{8}$ " x $\frac{1}{10633823966279326983230456482242756608}$ , $\frac{3}{8}$ " x $\frac{1}{21267647932558653966460912964485513216}$ , $\frac{3}{8}$ " x $\frac{1}{42535295865117307932921825928971026432}$ , $\frac{3}{8}$ " x $\frac{1}{85070591730234615865843651857942052864}$ , $\frac{3}{8}$ " x $\frac{1}{170141183460469231731687303715884105728}$ , $\frac{3}{8}$ " x $\frac{1}{340282366920938463463374607431768211456}$ , $\frac{3}{8}$ " x $\frac{1}{680564733841876926926749214863536422912}$ , $\frac{3}{8}$ " x $\frac{1}{1361129467683753853853498429727072845824}$ , $\frac{3}{8}$ " x $\frac{1}{2722258935367507707706996859454145691648}$ , $\frac{3}{8}$ " x $\frac{1}{5444517870735015415413993718908291383296}$ , $\frac{3}{8}$ " x $\frac{1}{10889035741470030830827987437816582766592}$ , $\frac{3}{8}$ " x $\frac{1}{21778071482940061661655974875633165533184}$ , $\frac{3}{8}$ " x $\frac{1}{43556142965880123323311949751266331066368}$ , $\frac{3}{8}$ " x $\frac{1}{87112285931760246646623899502532662132736}$ , $\frac{3}{8}$ " x $\frac{1}{174224571863520493293247799005065324265472}$ , $\frac{3}{8}$ " x $\frac{1}{348449143727040986586495598010130648530944}$ , $\frac{3}{8}$ " x $\frac{1}{696898287454081973172991196020261297061888}$ , $\frac{3}{8}$ " x $\frac{1}{1393796574908163946345982392040522594123776}$ , $\frac{3}{8}$ " x $\frac{1}{2787593149816327892691964784081045188247552}$ , $\frac{3}{8}$ " x $\frac{1}{5575186299632655785383929568162090376495104}$ , $\frac{3}{8}$ " x $\frac{1}{11150372599265311570767859136324180752990208}$ , $\frac{3}{8}$ " x $\frac{1}{22300745198530623141535718272648361505980416}$ , $\frac{3}{8}$ " x $\frac{1}{44601490397061246283071436545296723011960832}$ , $\frac{3}{8}$ " x $\frac{1}{89202980794122492566142873090593446023921664}$ , $\frac{3}{8}$ " x $\frac{1}{178405961588244985132285746181186892047843328}$ , $\frac{3}{8}$ " x $\frac{1}{356811923176489970264571492362373784095686656}$ , $\frac{3}{8}$ " x $\frac{1}{713623846352979940529142984724747568191373312}$ , $\frac{3}{8}$ " x $\frac{1}{1427247692705959881058285969449495136382746624}$ , $\frac{3}{8}$ " x $\frac{1}{2854495385411919762116571938898990272765493248}$ , $\frac{3}{8}$ " x $\frac{1}{5708990770823839524233143877797980545530986496}$ , $\frac{3}{8}$ " x $\frac{1}{11417981541647679048466287755595961091061972992}$ , $\frac{3}{8}$ " x $\frac{1}{22835963083295358096932575511191922182123945984}$ , $\frac{3}{8}$ " x $\frac{1}{45671926166590716193865151022383844364247891968}$ , $\frac{3}{8}$ " x $\frac{1}{91343852333181432387730302044767688728495783936}$ , $\frac{3}{8}$ " x $\frac{1}{182687704666362864775460604089535377456991567872}$ , $\frac{3}{8}$ " x $\frac{1}{365375409332725729550921208179070754913983135744}$ , $\frac{3}{8}$ " x $\frac{1}{730750818665451459101842416358141509827966271488}$ , $\frac{3}{8}$ " x $\frac{1}{1461501637330902918203684832716283019655932542976}$ , $\frac{3}{8}$ " x $\frac{1}{2923003274661805836407369665432566039311865085952}$ , $\frac{3}{8}$ " x $\frac{1}{5846006549323611672814739330865132138623731171904}$ , $\frac{3}{8}$ " x $\frac{1}{11692013098647223345629478661730264277247462343808}$ , $\frac{3}{8}$ " x $\frac{1}{23384026197294446691258957323460528554494924687616}$ , $\frac{3}{8}$ " x $\frac{1}{46768052394588893382517914646921057108989849375232}$ , $\frac{3}{8}$ " x $\frac{1}{93536104789177786765035829293842114217979698750464}$ , $\frac{3}{8}$ " x $\frac{1}{187072209578355573530071658587684228435959397500928}$ , $\frac{3}{8}$ " x $\frac{1}{374144419156711147060143317175368456871918795001856}$ , $\frac{3}{8}$ " x $\frac{1}{748288838313422294120286634350736913743837590003712}$ , $\frac{3}{8}$ " x $\frac{1}{1496577676626844588240573268701473827487675180007424}$ , $\frac{3}{8}$ " x $\frac{1}{2993155353253689176481146537402947654975350360014848}$ , $\frac{3}{8}$ " x $\frac{1}{5986310706507378352962293074805895309950700720029696}$ , $\frac{3}{8}$ " x $\frac{1}{11972621413014756705924586149611790619901401440059392}$ , $\frac{3}{8}$ " x $\frac{1}{23945242826029513411849172299223581239802802880118784}$ , $\frac{3}{8}$ " x $\frac{1}{47890485652059026823698344598447162479605605760237568}$ , $\frac{3}{8}$ " x $\frac{1}{95780971304118053647396689196894324959211211520475136}$ , $\frac{3}{8}$ " x $\frac{1}{191561942608236107294793378393788649918422423040950272}$ , $\frac{3}{8}$ " x $\frac{1}{383123885216472214589586756787577299836844846081900544}$ , $\frac{3}{8}$ " x $\frac{1}{766247770432944429179173513575154599673689692163801088}$ , $\frac{3}{8}$ " x $\frac{1}{1532495540865888858358347027150309199347379384327602176}$ , $\frac{3}{8}$ " x $\frac{1}{3064991081731777716716694054300618398694758768655204352}$ , $\frac{3}{8}$ " x $\frac{1}{6129982163463555433433388108601236797389517537310408704}$ , $\frac{3}{8}$ " x $\frac{1}{12259964326927110866866776217202473594779035074620817408}$ , $\frac{3}{8}$ " x $\frac{1}{24519928653854221733733552434404947189558070149241634816}$ , $\frac{3}{8}$ " x $\frac{1}{49039857307708443467467104868809894379116140298483269632}$ , $\frac{3}{8}$ " x $\frac{1}{98079714615416886934934209737619788758232280596966539264}$ , $\frac{3}{8}$ " x $\frac{1}{196159429230833773869868419475239577516464561193933078528}$ , $\frac{3}{8}$ " x $\frac{1}{392318858461667547739736838950479155032929122387866157056}$ , $\frac{3}{8}$ " x $\frac{1}{784637716923335095479473677900958310065858244775732314112}$ , $\frac{3}{8}$ " x $\frac{1}{1569275433846670190958947355801916620131716489551464628224}$ , $\frac{3}{8}$ " x $\frac{1}{3138550867693340381917894711603833240263432979102929256448}$ , $\frac{3}{8}$ " x $\frac{1}{6277101735386680763835789423207666480526865958205858512896}$ , $\frac{3}{8}$ " x $\frac{1}{12554203470773361527671578846415332961053731916411717025792}$ , $\frac{3}{8}$ " x $\frac{1}{25108406941546723055343157692830665922107463832823434051584}$ , $\frac{3}{8}$ " x $\frac{1}{50216813883093446110686315385661331844214927665646868103168}$ , $\frac{3}{8}$ " x $\frac{1}{100433627766186892221372630771322663688429855331293736206336}$ , $\frac{3}{8}$ " x $\frac{1}{200867255532373784442745261542645327376859710662587472412672}$ , $\frac{3}{8}$ " x $\frac{1}{401734511064747568885490523085290654753719421325174944825344}$ , $\frac{3}{8}$ " x $\frac{1}{803469022129495137770981046170581309507438842650349889650688}$ , $\frac{3}{8}$ " x $\frac{1}{1606938044258990275541962092341162619014877685300699779301376}$ , $\frac{3}{8}$ " x $\frac{1}{3213876088517980551083924184682325238029755370601399558602752}$ , $\frac{3}{8}$ " x $\frac{1}{6427752177035961102167848369364650476059510741202799117205504}$ , $\frac{3}{8}$ " x $\frac{1}{12855504354071922204335696738729300952119021482405598234411008}$ , $\frac{3}{8}$ " x $\frac{1}{25711008708143844408671393477458601904238042964811196468822016}$ , $\frac{3}{8}$ " x $\frac{1}{51422017416287688817342786954917203808476085929622392937644032}$ , $\frac{3}{8}$ " x $\frac{1}{102844034832575377634685573909834407616952171859244785875288064}$ , $\frac{3}{8}$ " x $\frac{1}{205688069665150755269371147819668815233904343718489571750576128}$ , $\frac{3}{8}$ " x $\frac{1}{411376139330301510538742295639337630467808687436979143501152256}$ , $\frac{3}{8}$ " x $\frac{1}{822752278660603021077484591278675260935617374873958287002304512}$ , $\frac{3}{8}$ " x $\frac{1}{1645504557321206042154969182557350521871234749747916574004609024}$ , $\frac{3}{8}$ " x $\frac{1}{3291009114642412084309938365114701043742469499495833148009218048}$ , $\frac{3}{8}$ " x $\frac{1}{6582018229284824168619876730229402087484938998991666296018436096}$ , $\frac{3}{8}$ " x $\frac{1}{13164036458569648337239753460458804174969877997983332592036872192}$ , $\frac{3}{8}$ " x $\frac{1}{26328072917139296674479506920917608349939755995966665184073744384}$ , $\frac{3}{8}$ " x $\frac{1}{52656145834278593348959013841835216699879511991933330368147488768}$ , $\frac{3}{8}$ " x $\frac{1}{105312291668557186697918027683670433399759$	



the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as his sureties for its faithful performance; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion and that which the Corporation may be obliged to pay to the person to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract and stated in the proposals, over and above all his debts of every nature, and over and above his liabilities, as bail, surety, or otherwise; that he has offered himself as surety in good faith and, with an intention to execute the bond required by law. The adequacy and sufficiency of the security offered will be determined by the Comptroller of the City of New York, after the award is made and prior to the signing of the contract.

Bidders are required to state in writing, also in figures, the price per cubic yard for all earth excavation; the price per cubic yard for all rock excavation; the price per cubic yard for all filling; the price per linear foot for all new curb-stones furnished and set; the price per linear foot for all old curb-stones taken up and reset; the price per square foot for all new flagging furnished and laid; the price per square foot for all old flagging taken up and relaid; the price per square foot for all new bridge-stones for crosswalks furnished and laid; the price per cubic yard for dry rubble masonry in retaining-walls and culverts. The time allowed for the completion of the whole work will be ONE HUNDRED CONSECUTIVE WORKING DAYS.

These prices are to cover the furnishing of all the necessary materials and labor; also the expense of excavation, whether rock or otherwise; also such drainage work as may be necessary; also the taking up and resetting of all curb-stones and flagging now laid or set, and the performance of all the work as set forth in the specifications and form of agreement hereto annexed.

It being understood that the time so allowed refers to consecutive working days and not to the aggregate time of such Inspectors as may be appointed on the work, and that the damages specified in Covenant (E) will be exacted for each and every working day exceeding said number of days allowed, that may be consumed in the execution of the work.

The following allowance will be made the contractor where the amount of work returned on the completion of the contract exceeds the amount herein estimated. For every fifty cubic yards of earth excavation over and above the amount estimated, an allowance of one day. For every twenty-five cubic yards of rock excavation over and above the amount estimated, an allowance of one day. For every one hundred cubic yards of filling over and above the amount estimated, an allowance of one day. See Covenant (D).

Special attention is called to sections 3 (b), 9 (c) and Covenant (E).

The Engineer's estimate of the work to be done, and by which the bids will be tested, is as follows:

- 1,000 cubic yards of earth excavation.
- 500 cubic yards of rock excavation.
- 8,500 cubic yards of filling.
- 2,500 linear feet of new curb-stones furnished and set.
- 800 linear feet of old curb-stones taken up and reset.
- 11,000 square feet of new flagging furnished and laid.
- 2,000 square feet of old flagging taken up and relaid.
- 550 square feet of bridge-stones for crosswalks furnished and laid.
- 300 cubic yards of dry rubble masonry in retaining-walls and culverts.

N. B.—As the above-mentioned quantities, though stated with as much accuracy as is possible in advance, are approximate only, bidders are required to submit their estimates upon the following express conditions, which shall apply to and become a part of every estimate received:

Bidders must satisfy themselves by personal examination of the location of the proposed work, and by such other means as they may prefer, as to the accuracy of the foregoing Engineer's statement, and shall not, at any time after the submission of an estimate, dispute or complain of such statement or estimate, nor assert that there was any misunderstanding in regard to the depth or character of the excavation to be made or the nature or amount of the work to be done.

Bidders will be required to complete the entire work to the satisfaction of the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, and in substantial accordance with the specifications hereunto annexed and the plan therein referred to. No extra compensation beyond the amount payable for the classes of work before enumerated which shall be actually performed, at the prices therefor, to be specified by the lowest bidder, shall be due or payable for the entire work.

Bidders are particularly cautioned that a provision in the contract authorizes the sum of TWENTY-FIVE CENTS per linear foot (measured on the centre line of the street) of the work done under this agreement, to be retained out of the contract moneys as security for keeping the whole work, when completed, in good order for a period of six months from the date of its acceptance by the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, not including in the computation of the said period the months of December, January, February and March.

The amount of security required is FOUR THOUSAND DOLLARS.

Bidders are informed that no deviation from the specifications will be allowed unless a written permission shall previously have been obtained from the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards.

The contractor is required to notify the Engineer, in writing, forty-eight hours prior thereto, of the date he intends to actually begin work.

Bidders are specially notified that the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, reserves the right to determine the times and places for commencing and prosecuting the work, and that postponement or delay on the whole or any part thereof, occasioned by the precedence of other contracts which may be either let or executed before or after the execution of the contract for this work, cannot constitute a claim for damages.

Blank forms of proposals can be obtained on application to the Secretary at this office.

The form of agreement, including the specifications, and showing the mode of payment for the work, is annexed.

LOUIS J. HEINTZ,  
Commissioner of Street Improvements,  
Twenty-third and Twenty-fourth Wards.

OFFICE OF THE  
COMMISSIONER OF STREET IMPROVEMENTS,  
TWENTY-THIRD AND TWENTY-FOURTH WARDS,  
No. 2056 THIRD AVENUE, COR. 141ST STREET,  
NEW YORK, March 7, 1891.

#### TO CONTRACTORS.

PROPOSALS FOR ESTIMATES FOR REGULATING AND GRADING, SETTING CURB-STONES, FLAGGING THE SIDEWALKS, AND LAYING CROSSWALKS IN AND PAVING WITH GRANITE-BLOCK PAVEMENT THE ROADWAY OF LINCOLN AVENUE FROM THE SOUTHERLY CROSSWALK OF THE SOUTHERN BOULEVARD TO THE BULKHEAD AT HARLEM RIVER.

SEALED ESTIMATES FOR THE ABOVE work, indorsed with the above title, also with the name of the person or persons making the same, and the date of presentation, will be received at the office of

the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, No. 2056 Third Avenue, New York City, until 10 o'clock A. M. on Thursday, the 14th day of March, 1891, at which place and hour the bids will be publicly opened by the said Commissioner and read, and the award of the contract to the lowest bidder will be made as soon thereafter as practicable.

The person or persons to whom the contract may be awarded will be required to attend at the office of the said Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, with the sureties offered by him or them, and execute the contract within five days after written notice that the same has been awarded to him or their bid or estimate, and that the sureties offered by him or them have been approved by the Comptroller; and in case of failure or neglect so to do, he or they will be considered as having abandoned it, and as in default to the Corporation, and thereupon the work will be readvertised and relet, and so on, until the contract be accepted and executed. The work to commence at such time as the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, may designate.

N. B.—The prices must be written in the estimate and also stated in figures, and all estimates will be considered as informal which do not contain bids for all items called for in these specifications, or which contain bids for items not called for therein. Permission will not be given for the withdrawal of any bid or estimate, and the right is expressly reserved by the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, to reject any or all bids which he may deem prejudicial to the public interest. No estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

No estimate will be received or considered unless accompanied by either a certified check upon one of the State or National banks of the City of New York, drawn to the order of the Comptroller of the City, to the amount of *five per centum* of the amount of the security required for the faithful performance of the contract. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the said Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall neglect or refuse, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Bidders are required to state in their estimates, under oath, their names and places of residence; the names of all persons interested with them therein, and if no other person be so interested they shall distinctly state the fact; also, that such estimate is made without any connection with any other person making a bid or estimate for the same purpose, and that it is in all respects fair, and without collusion or fraud; and also that no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof.

The estimate must be verified by the oath, in writing, of the party making such estimate, that the several matters therein stated are in all respects true. When more than one person is interested in the estimate, the verification must be made by all the parties interested.

Each estimate must be accompanied by the consent in writing of two householders or freeholders in the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as his sureties for its faithful performance; and that if he shall omit or refuse to execute the same, they shall pay to the Corporation any difference between the sum to which he would be entitled on its completion and that which the Corporation may be obliged to pay to the person to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract and stated in the proposals, over and above all his debts of every nature, and over and above his liabilities as bail, surety, or otherwise; that he has offered himself as surety in good faith, and with an intention to execute the bond required by law. The adequacy and sufficiency of the security offered will be subject to approval by the Comptroller of the City of New York after the award is made and prior to the signing of the contract.

Bidders are required to state in writing, also in figures, the price per linear foot for all new curb stone, including the cost of all excavation therefor; the price per square foot for new flagging, including the cost of all excavation and grading therefor and the cost of bringing the sidewalks for the full width to the established grade as per plan; the price per square foot for new bridge-stones for crosswalks including the cost of all excavation and foundation therefor, the price per square yard for new granite-block pavement, including the cost of all excavation and preparation of foundation for the same. The time allowed for the completion of the whole work will be FORTY CONSECUTIVE WORKING DAYS.

These prices are to cover the furnishing of all the necessary materials and labor required to complete and perfect all the work as set forth in the specifications and form of agreement hereto annexed, and in strict conformity therewith.

It being understood that the time so allowed refers to consecutive working days, and not to the aggregate time of such Inspectors as may be appointed on the work, and that the damages specified in Covenant (E) (see section 9 (d) of these specifications), will be exacted for each and every working day exceeding said number of days allowed that may be consumed in the execution of the work.

The Engineer's estimate of the work to be done, and by which the bids will be tested, is as follows:

- 700 linear feet of new curb-stone furnished and set.
- 2,100 square feet of new flagging furnished and laid.
- 580 square feet of new bridge-stones for crosswalks furnished and laid.
- 3,000 square yards of new granite-block pavement.

N. B.—As the above-mentioned quantities, though stated with as much accuracy as is possible, in advance, are approximate only, bidders are required to submit their estimates upon the following express conditions, which shall apply to and become a part of every estimate received.

N. B.—In case any rock is met with in making the excavations to sub-grade for the foundation of the pavement, or for setting and resetting curb-stones, said rock must be taken out without charge other than is included in the price bid for the pavement. See section 5 (e), page 12.

Special attention is called to section 2 (f), page 10. Bidders must satisfy themselves by personal examination of the location of the proposed work, and by such other means as they may prefer, as to the accuracy of the foregoing Engineer's estimate, and shall not at any time after the submission of an estimate, dispute or complain of such statement or estimate, nor assert that there is any misunderstanding in regard to the depth or character of the excavation to be made or the nature or amount of the work to be done.

Bidders will be required to complete the entire work to the satisfaction of the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, and in substantial accordance with the specifications, hereunto annexed and the plan therein referred to.

No extra compensation beyond the amount payable for the classes of work before enumerated, which shall be actually performed at the prices therefor, to be specified by the lowest bidder, shall be due or payable for the entire work.

Work or materials not specified, and for which a price is not named in the contract, will not be allowed for. Bidders are particularly cautioned that a provision in the contract authorizes the sum of FIFTY CENTS per linear foot (measured on the centre line of the street) of the work done under this agreement, to be retained out of the contract moneys as security for keeping the whole work, when completed, in good order for a period of six months from the date of its acceptance by the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, not including in the computation of the said period the months of December, January, February and March (see Covenant 7).

The amount of security required is FIVE THOUSAND DOLLARS.

Bidders are informed that no deviation from the specifications will be allowed, unless a written permission shall previously have been obtained from the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards.

The Contractor is required to notify the Engineer, in writing, forty-eight hours prior thereto, of the date he intends to actually begin work.

Bidders are specially notified that the Commissioner of Street Improvements, Twenty-third and Twenty-fourth Wards, reserves the right to determine the times and places for commencing and prosecuting the work, and that postponement or delay on the whole or any part thereof, occasioned by the precedence of other contracts, which may be either let or executed before or after the execution of the contract for this work, cannot constitute a claim for damages, nor for a reduction of the damages fixed for delay in completing the work beyond the time allowed.

Blank forms of proposals can be obtained on application to the Secretary at this office.

The form of agreement, including the specifications, and showing the mode of payment for the work, is annexed.

LOUIS J. HEINTZ,

Commissioner of Street Improvements,  
Twenty-third and Twenty-fourth Wards.

#### FINANCE DEPARTMENT.

PROPOSALS FOR \$1,389,564 STOCKS AND BONDS OF THE CITY OF NEW YORK.

#### EXEMPT FROM TAXATION.

INTEREST THREE PER CENT. PER ANNUM.

SEALED PROPOSALS WILL BE RECEIVED by the Comptroller of the City of New York, at his office, until Wednesday, the 25th day of March, 1891, at 2 o'clock P. M., when they will be publicly opened in the presence of the Commissioners of the Sinking Fund, or such of them as shall attend, as provided by law, for the whole or a part of any of the following registered stocks and bonds of the City of New York, all of which are exempt from City and County taxation, to wit:

\$1,250,000 DOCK BONDS OF THE CITY OF NEW YORK,

authorized by section 143 of the New York City Consolidation Act of 1882 and resolutions of the Commissioners of the Sinking Fund, adopted April 23 and December 11, 1890.

The principal of said bonds is payable from the Sinking Fund November 1, 1921, and they will bear interest at the rate of three per cent. per annum, payable semi-annually, on the first day of May and November in each year. They are

#### EXEMPT FROM TAXATION

by the City and County of New York, under an ordinance of the Common Council of the City of New York, passed October 2, 1883, pursuant to the provisions of section 137 of the New York City Consolidation Act of 1882, and resolutions of the Commissioners of the Sinking Fund, adopted April 23 and December 11, 1890.

\$139,564 CONSOLIDATED STOCK of the City of New York, known as "School-house Bonds," the principal payable in lawful money of the United States of America, at the Comptroller's office of said city, on the first day of November, in the year 1908, with interest at the rate of three per centum per annum, payable semi-annually on the first day of May and November in each year.

The said stock is issued pursuant to the provisions of section 132 of the New York City Consolidation Act of 1882, chapter 252 of the Laws of 1889, for the purchase of new school sites, for the Common Schools of the City of New York, and other purposes as therein provided.

The said Consolidated Stock is

#### EXEMPT FROM TAXATION

by the City and County of New York, pursuant to the provisions of section 137 of the New York City Consolidation Act of 1882, and under an ordinance of the Common Council of said city, approved by the Mayor, October 2, 1880, and a resolution of the Sinking Fund, adopted February 20, 1891, and as authorized by resolutions of the Board of Education and approved by the Board of Estimate and Apportionment, as provided by law.

Attention is called to the provisions of an act passed by the Legislature March 14, 1889, authorizing executors, administrators, guardians and trustees and others holding trust funds to invest such funds in the stocks or bonds of the City of New York.

#### CONDITIONS.

Section 146 of the New York City Consolidation Act of 1882 provides that "the Comptroller, with the approval of the Commissioners of the Sinking Fund, shall determine what, if any, part of said proposals shall be accepted, and the payment into the City Treasury of the amounts due by the persons whose bids are accepted, respectively, certificates therefor shall be issued to them as authorized by law"; and provided also, "that no proposals for bonds or stocks shall be accepted for less than the par value of the same."

Those persons whose bids are accepted will be required to deposit with the City Chamberlain the amount of stock awarded to them at its par value, together with the premium thereon, within three days after notice of such acceptance.

The proposals should be inclosed in a sealed envelope, indorsed Stocks and Bonds of the Corporation of the City of New York, and each proposal should also be inclosed in a second envelope, addressed to the Comptroller of the City of New York.

THEO. W. MYERS,  
Comptroller.

CITY OF NEW YORK—FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE, March 13, 1891.

CITY OF NEW YORK,  
FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE,  
March 5, 1891.

#### NOTICE TO PROPERTY-OWNERS.

IN PURSUANCE OF SECTION 916 OF THE "New York City Consolidation Act of 1882," the Comptroller of the City of New York hereby gives public notice to all persons, owners of property, affected by the following assessment lists, viz.:

Fencing vacant lots on the southwest corner of Central Park, West (Eighth Avenue) and One Hundred and First Street.

Fencing vacant lots on the north side of One Hundred and Tenth Street, from Fifth to Lenox Avenue.

Regulating, grading, curbing and flagging One Hundred and Seventh Street, from Ninth to Tenth Avenue.

Regulating, grading, curbing and flagging One Hundred and Eighty-first Street, from Tenth to Eleventh Avenue.

Receiving-basin on the southeast corner of Sixty-fourth Street and Boulevard.

Receiving-basin on the southeast corner of Sixty-fifth Street and Ninth Avenue.

Receiving-basin on the southeast corner of Seventy-fourth Street and Boulevard.

Receiving-basin on the southwest corner of Seventy-fourth Street and Boulevard.

Sewer in Twelfth Avenue, between Thirty-ninth and Fortieth Streets, with alteration and improvement to sewer in Thirty-ninth Street.

Extension of sewer outlet in Eleventh Street, at East River.

Extension of sewer outlet in Sixty-second Street, at East River.

Sewer in Seventy-eighth Street, between the Boulevard and West End Avenue, and receiving-basin on southeast corner of Seventy-eighth Street and West End Avenue.

Sewer in One Hundredth Street, between Fourth and Madison Avenues.

Sewer in One Hundred and Forty-third Street, between Eighth and Bradhurst Avenues.

Sewer in One Hundred and Forty-fifth Street, south side, between Eighth and Bradhurst Avenues.

Laying a crosswalk across Hamilton place, at the northerly and southerly sides of One Hundred and Forty-third Street.

Laying crosswalks across Hamilton place, at the northerly and southerly sides of One Hundred and Forty-second Street.

Laying a crosswalk across the first new avenue west of Eighth Avenue, Bradhurst Avenue, and the southerly side of One Hundred and Forty-fifth Street.

Laying crosswalks across Edgecombe and Bradhurst Avenues, at the northerly side of One Hundred and Forty-fifth Street.

Laying crosswalks across Lenox Avenue, at the northerly and southerly sides of the following street intersections, viz.: One Hundred and Fifteenth, One Hundred and Seventeenth, One Hundred and Sixteenth, One Hundred and Twelfth, One Hundred and Thirtieth, One Hundred and Fourteenth, One Hundred and Nineteenth, One Hundred and Twentieth, One Hundred and Twenty-first, One Hundred and Twenty-second, One Hundred and Twenty-fourth, One Hundred and Twenty-eighth, and One Hundred and Twenty-ninth Streets.

Laying a crosswalk across Lexington Avenue, at the northerly side of Thirty-second Street.

Laying crosswalks across Mt. Morris Avenue, at the northerly and southerly sides of One Hundred and Twenty-first and One Hundred and Twenty-second Streets.

Laying crosswalks across Avenue St. Nicholas, at the northerly and southerly sides of One Hundred and Eighty-eighth Street.

Laying a crosswalk at the easterly side of Tenth Avenue and One Hundred and Sixty-second Street.

Laying crosswalks across One Hundred and Twenty-fourth Street, at the easterly and westerly sides of Lexington Avenue.

Repeating Fifteenth Street, from Tenth Avenue to Hudson River, with granite blocks, and laying crosswalks.

Paving Fifty-third Street, from Tenth Avenue to Eleventh Avenue, with granite blocks, and laying crosswalks.

Paving Sixty-fifth Street, from Tenth Avenue to the Boulevard, with granite blocks, and laying crosswalks.

Paving Sixty-sixth Street, from Eighth to Ninth Avenue, with granite blocks, and laying crosswalks.

Paving Sixty-ninth Street, from Eighth to Ninth Avenue, with granite blocks, and laying crosswalks.

Paving Seventieth Street, from Eighth to Ninth Avenue, with granite blocks, and laying crosswalks.

Paving Seventy-fourth Street, from Eighth to Ninth Avenue, with granite blocks.

Paving Seventy-seventh Street, from Boulevard to the Riverside Drive, with granite blocks.

Paving Eightieth Street, from the Boulevard to West End Avenue, with granite blocks, and laying crosswalks.

Paving One Hundred and First Street, from Ninth to Tenth Avenue, with granite blocks.

Paving One Hundred and Fourteenth Street, from Eighth to Manhattan Avenue, with granite blocks.

Paving One Hundred and Thirty-sixth Street, from Seventh to Eighth Avenue, with granite blocks.

Paving One Hundred and Forty-sixth Street, from St. Nicholas to Tenth Avenue, with granite blocks, and laying crosswalks.

Flagging and reflagging, curbing and recurburing south side of North Moore Street, from West Broadway to Varick Street.

Flagging and reflagging, curbing and recurburing north-east corner of West Broadway and Walker Street, extending about fifty feet on West Broadway and about sixty feet on Walker Street.

Flagging east side of Beekman Place, from Forty-ninth to Fiftieth Street.

Flagging and reflagging, curbing and recurburing, west side of Madison Avenue, from Ninety-sixth to Ninety-seventh Street, and on the north side of Ninety-sixth Street, from Madison to Fifth Avenue.

Flagging and reflagging west side of Madison Avenue, from One Hundred and Second to One Hundred and Third Street.

Flagging and reflagging, curbing and recurburing, east side of Madison Avenue, from One Hundred and Thirtieth to One Hundred and Thirty-first Street, and north side of One Hundred and Thirtieth Street, from Park to Madison Avenue.

Flagging and reflagging east side of Fifth Avenue, from Seventy-second to Seventy-ninth Street.

Flagging and reflagging, curbing and recurburing west side of Eighth Avenue (Central Park), from Ninety-fourth to Ninety-eighth Street.

Flagging and reflagging, curbing and recurburing both sides of Fifteenth Street, from Avenue A to Avenue B.

Flagging and reflagging, curbing and recurburing south side of Sixtieth Street, from First Avenue to Avenue A.

Flagging and reflagging, curbing and recurburing, north side of Sixty-ninth Street, from Ninth Avenue to the Boulevard.

Flagging and reflagging, curbing and recurburing, south side of Seventy-second Street, from First Avenue to Avenue A.

Flagging and reflagging, curbing and recurburing, both sides of Seventy-sixth Street, from Tenth Avenue to the Boulevard.

Flagging and reflagging, curbing and recurburing both sides of Eightieth Street, from Ninth to Tenth Avenue.

Flagging and reflagging, curbing and recurburing south side of Eighty-first Street, from Ninth to Tenth Avenue.

Flagging and reflagging both sides of Eighty-first Street, from Tenth Avenue to the Boulevard.

Flagging and reflagging, curbing and recurburing north side of Ninety-seventh Street, from Third to Park Avenue.

Flagging and reflagging, curbing and recurburing north side of One Hundred and Thirtieth Street, from Seventh to Eighth Avenue, and east side of Eighth Avenue, from One Hundred and Thirtieth to One Hundred and Fourteenth Street.

Flagging and reflagging, curbing and recurburing north side of One Hundred and Seventeenth Street, from Park to Madison Avenue.

Flagging and reflagging, curbing and recurburing, south side of One Hundred and Twenty-fifth Street, from Eighth to St. Nicholas Avenue.

Flagging and reflagging, curbing and recurburing, both sides of One Hundred and Thirtieth Street, from Broadway to Tenth Avenue.

Flagging and reflagging north side of One Hundred and Thirty-eighth Street, from Tenth Avenue to Hamilton Place.

Flagging and reflagging, curbing and recurburing, both sides of One Hundred and Forty-first Street, from St. Nicholas to Convent Avenue.

—which were confirmed by the Board of Revision and Correction of Assessments February 25, 1891, and entered on the same date in the Record of Titles of



Assessments, kept in the "Bureau for the Collection of Assessments and Arrears of Taxes and Assessments and of Water Rents," that unless the amount assessed for benefit on any person or property shall be paid within sixty days after the date of said entry of the assessments, interest will be collected thereon as provided in section 17 of said "New York City Consolidation Act of 1882."

Section 917 of the said act provides that, "If any such assessment shall remain unpaid for the period of sixty days after the date of entry thereof in the said Record of Titles of Assessments, it shall be the duty of the officer authorized to collect and receive the amount of such assessment, to charge, collect and receive interest thereon, at the rate of seven per centum per annum, to be calculated from the date of such entry to the date of payment."

The above assessments are payable to the Collector of Assessments and Clerk of Arrears, at the "Bureau for the Collection of Assessments and Arrears of Taxes and Assessments and of Water Rents," between the hours of 9 A. M. and 2 P. M., and all payments made thereon on or before April 27, 1891, will be exempt from interest as above provided, and after that date will be subject to a charge of interest at the rate of seven per centum per annum from the date of entry in the Record of Titles of Assessments in said Bureau to the date of payment.

THEO. W. MYERS,  
Comptroller.

#### NOTICE OF POSTPONEMENT OF SALE FOR UNPAID ASSESSMENTS.

WHEREAS, SECTION 928 OF THE NEW YORK City Consolidation Act of 1882 authorizes the Comptroller, in his discretion, to postpone any sale for unpaid taxes or assessments; and

Whereas, Many persons desire, and have applied for, a postponement of the sale for unpaid assessments advertised to be held on Monday, March 2, 1891; now, therefore, in order to afford all such persons the opportunity to pay the assessments on their property so advertised to be sold and thereby avoid the additional expense of redemption of the property, it is ordered, that the sale is hereby ordered to be postponed until Monday, the first day of June, 1891, to be held at the same time and place, to wit: at the Court-house, City Hall Park, at 12 o'clock noon.

THEO. W. MYERS,  
Comptroller.

CITY OF NEW YORK—FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE, March 2, 1891.

#### REAL ESTATE RECORDS.

THE ATTENTION OF LAWYERS, REAL Estate Owners, Monetary Institutions engaged in making loans upon real estate, and all who are interested in providing themselves with facilities for reducing the cost of examinations and searches, is invited to these Official Indices of Records, containing all recorded transfers of real estate in the City of New York from 1653 to 1887, prepared under the direction of the Commissioners of Records

Grantors, grantees, suits in equity, insolvents' and Sheriff's sales in 61 volumes, full bound, price..... \$100 00  
The same in 25 volumes, half bound..... 50 00  
Complete sets, folded, ready for binding..... 15 00  
Records of Judgments, 25 volumes, bound..... 10 00  
Orders should be addressed to "Mr. Stephen Angell Room 23, Stewart Building."

THEODORE W. MYERS,  
Comptroller.

#### FIRE DEPARTMENT.

HEADQUARTERS FIRE DEPARTMENT,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, March 5, 1891.

#### TO CONTRACTORS.

#### SEALED PROPOSALS FOR FURNISHING 100 TONS CANNEL COAL.

—will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read:

The coal is to be of the best quality of the kind known as "Incehall" to weigh 2,000 pounds to the ton, and be hand picked and free from slate.

All of the coal is to be delivered and stowed in bins or elsewhere at the various Fuel Depots of the Fire Department, south of Fifty-ninth street, in such quantities and at such times, within sixty (60) days after the execution of the contract, as may be from time to time directed, and the same is to be weighed in the presence of an Inspector designated for that purpose by the Department upon scales furnished by the Department, which are to be transported from place to place by the contractor, at his expense.

No estimate will be received or considered after the hour named.

The form of the agreement, with specifications, showing the manner of payment for the work, may be seen, and forms of proposals may be obtained at the office of the Department.

Bidders will write out the amount of their estimate in addition to inserting the same in figures.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation, and a statement of the supply to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance in the sum of seven hundred (700) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion, and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The

consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety or otherwise; and that he has offered himself as surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.

No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of thirty-five (35) dollars. Such check or money must not be included in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal, but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept, but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS  
FIRE DEPARTMENT, CITY OF NEW YORK,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

#### TO CONTRACTORS.

SEALED PROPOSALS FOR FURNISHING ONE steel frame hook and ladder truck, will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read.

No estimate will be received or considered after the hour named.

For information as to the amount and kind of work to be done, bidders are referred to the specifications, which form part of these proposals.

The form of the agreement (with specifications), showing the manner of payment for the work, may be seen, and forms of proposals, may be obtained, at the office of the Department.

Bidders will write out the amount of their estimate in addition to inserting the same in figures.

The truck to be completed and delivered within ninety (90) days after the execution of the contract.

The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired, are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation and a statement of the work to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as his sureties for its faithful performance; in the sum of one thousand (1,000) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion, and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety or otherwise; and that he has offered himself as surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York, before the award is made and prior to the signing of the contract.

No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money to the amount of fifty (50) dollars. Such check or money must not be included in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Should the person or persons to whom the contract

may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS  
FIRE DEPARTMENT, CITY OF NEW YORK,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

#### TO CONTRACTORS.

SEALED PROPOSALS FOR FURNISHING THE materials and labor and doing the work required for placing fire-alarm electrical conductors underground for this Department, will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read.

No estimate will be received or considered after the hour named.

For information as to the amount and kind of work to be done, bidders are referred to the specifications and diagrams, which form part of these proposals.

The form of the agreement (showing the manner of payment for the work) with specifications and diagrams, may be seen, and forms of proposals may be obtained at the office of the Department.

Bidders will write out the amount of their estimate in addition to inserting the same in figures.

The work is to be completed and delivered on or before the one hundred and twentieth (120) day after notice to commence, as provided in the contract.

The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired, are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation and a statement of the work to which they relate, specifying the kind of cables it is proposed to furnish.

The Fire Department reserves the right to decline any and all bids or estimates, if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair, and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance in the sum of twenty thousand (20,000) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion, and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract over and above all his debts of every nature, and over and above his liabilities as bail, surety or otherwise; and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.

No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money to the amount of one thousand (1,000) dollars. Such check or money must not be included in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal, but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept but do not execute the contract and give the proper security he or they shall be considered as having abandoned it, and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS FIRE DEPARTMENT,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

#### TO CONTRACTORS.

SEALED PROPOSALS FOR FURNISHING Eight Hose Wagons to this Department will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read:

No estimate will be received or considered after the hour named.

For information as to the description of the apparatuses to be furnished, bidders are referred to the specifications which form part of these proposals.

The form of the agreement (with specifications),

showing the manner of payment for the work, may be seen and forms of proposals may be obtained at the office of the Department.

Bidders must write out the amount of their estimate in addition to inserting the same in figures.

The apparatuses are to be completed and delivered within ninety (90) days after the execution of the contract. The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired, are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the apparatuses shall present the same in a sealed envelope, to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation, and a statement of the work to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates, if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter as surety or otherwise, upon any obligation to the Corporation.

Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance, in the sum of two thousand and five hundred (2,500) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion, and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety, or otherwise, and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.

No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller or money to the amount one hundred and twenty-five (125) dollars. Such check or money must not be included in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same, within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York as liquidated damages for such neglect or refusal, but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.

Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it, and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS FIRE DEPARTMENT,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

#### TO CONTRACTORS.

SEALED PROPOSALS FOR FURNISHING ONE First Sixty-Hayes Extension Ladder Truck and Fire-escape will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read.

No estimate will be received or considered after the hour named.

For information as to the amount and kind of work to be done, bidders are referred to the specifications, which form part of these proposals.

The form of the agreement, with specifications, showing the manner of payment for the work, may be seen, and forms of proposals may be obtained at the office of the Department.

Bidders will write out the amount of their estimates in addition to inserting the same in figures.

This truck to be completed and delivered within ninety (90) days after the execution of the contract.

The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired, are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation and a statement of the work to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof or clerk therein, or other officer



of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

*Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance, in the sum of one thousand seven hundred (\$1,700) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety or otherwise, and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.*

*No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of eighty-five (\$85) dollars. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.*

*Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept, but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it, and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.*

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS FIRE DEPARTMENT,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

TO CONTRACTORS.

**SEALED PROPOSALS FOR FURNISHING TWO**  
Third Size Steam Fire Engines with boilers of the "La France's improved nest tube" pattern will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read.

No estimate will be received or considered after the hour named.

For information as to the amount and kind of work to be done, bidders are referred to the specifications, which form part of these proposals.

The form of the agreement, with specifications, showing the manner of payment for the work, may be seen, and forms of proposals may be obtained at the office of the Department.

Bidders will write out the amount of their estimates in addition to inserting the same in figures.

The engines are to be completed and delivered within ninety (90) days after the execution of the contract.

The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired, are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation, and a statement of the work to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

*Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.*

*Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance in the sum of four thousand (\$4,000) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion, and that which the Corporation may be obliged to pay to the person to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety and otherwise; and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.*

*No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money to the amount of one hundred (\$100) dollars. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal, but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.*

troller of the City of New York before the award is made and prior to the signing of the contract.

*No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of two hundred (\$200) dollars. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same, within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.*

*Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it, and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.*

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

HEADQUARTERS FIRE DEPARTMENT,  
157 AND 159 EAST SIXTY-SEVENTH STREET,  
NEW YORK, February 27, 1891.

TO CONTRACTORS.

**SEALED PROPOSALS FOR FURNISHING**  
one First Size Steam Fire-Engine, with M.R. Clapp's latest improved coil tube boiler, will be received by the Board of Commissioners at the head of the Fire Department, at the office of said Department, Nos. 157 and 159 East Sixty-seventh street, in the City of New York, until 10 o'clock A. M. Wednesday, March 18, 1891, at which time and place they will be publicly opened by the head of said Department and read.

No estimate will be received or considered after the hour named.

For information as to the amount and kind of work to be done, bidders are referred to the specifications, which form part of these proposals.

The form of the agreement, with specifications, showing the manner of payment for the work, may be seen, and forms of proposals may be obtained at the office of the Department.

Bidders will write out the amount of their estimate in addition to inserting the same in figures.

This engine is to be completed and delivered within ninety (90) days after the execution of the contract.

The damages to be paid by the contractor for each day that the contract may be unfulfilled after the time specified for the completion thereof shall have expired are fixed and liquidated at twenty (20) dollars.

The award of the contract will be made as soon as practicable after the opening of the bids.

Any person making an estimate for the work shall present the same in a sealed envelope to said Board, at said office, on or before the day and hour above named, which envelope shall be indorsed with the name or names of the person or persons presenting the same, the date of its presentation and a statement of the work to which it relates.

The Fire Department reserves the right to decline any and all bids or estimates if deemed to be for the public interest. No bid or estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

*Each bid or estimate shall contain and state the name and place of residence of each of the persons making the same; the names of all persons interested with him or them therein; and if no other person be so interested, it shall distinctly state that fact; that it is made without any connection with any other person making an estimate for the same purpose, and is in all respects fair and without collusion or fraud; and that no member of the Common Council, head of a department, chief of a bureau, deputy thereof or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof. The bid or estimate must be verified by the oath, in writing, of the party or parties making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.*

*Each bid or estimate shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person making the estimate, they will, on its being so awarded, become bound as sureties for its faithful performance in the sum of two thousand (\$2,000) dollars; and that if he shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he would be entitled on its completion and that which the Corporation may be obliged to pay to the person or persons to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of this contract, over and above all his debts of every nature, and over and above his liabilities as bail, surety or otherwise; and that he has offered himself as a surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York before the award is made and prior to the signing of the contract.*

*No estimate will be considered unless accompanied by either a certified check upon one of the banks of the City of New York, drawn to the order of the Comptroller, or money to the amount of one hundred (\$100) dollars. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned to the persons making the same within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal, but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him.*

*Should the person or persons to whom the contract may be awarded neglect or refuse to accept the contract within five days after written notice that the same has been awarded to his or their bid or proposal, or if he or they accept but do not execute the contract and give the proper security, he or they shall be considered as having abandoned it, and as in default to the Corporation, and the contract will be readvertised and relet as provided by law.*

HENRY D. PURROY,  
S. HOWLAND ROBBINS,  
ANTHONY EICKHOFF,  
Commissioners.

CORPORATION NOTICE.

**PUBLIC NOTICE IS HEREBY GIVEN TO THE**  
owner or owners, occupant or occupants, of all houses and lots, improved or unimproved lands affected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz.:

List 3521, No. 1. Receiving-basin on the northwest corner of One Hundred and Twenty-fourth street and Fifth avenue.

List 3522, No. 2. Receiving-basin on the south side of One Hundred and Twenty-fourth street, opposite Fifth avenue.

List 3523, No. 3. Receiving-basin on the northwest corner of One Hundred and Thirty-second street and Amsterdam avenue.

List 3527, No. 4. Sewer in One Hundred and Third street, between Boulevard and West End avenue.

List 3531, No. 5. Sewer in Madison avenue, between One Hundred and Fifth and One Hundred and Seventh streets.

The limits embraced by such assessments include all the several houses and lots of ground, vacant lots, pieces and parcels of land situated on—

No. 1. North side of One Hundred and Twenty-fourth street, from Fifth to Lenox avenue.

No. 2. Mount Morris Square.

No. 3. West side of Amsterdam avenue, from One Hundred and Thirty-second to One Hundred and Thirty-third street.

No. 4. Both sides of One Hundred and Third street, from Boulevard to West End avenue.

No. 5. Both sides of Madison avenue, from One Hundred and Fifth to One Hundred and Seventh street, and south side of One Hundred and Sixth street, from Madison to Fifth avenue.

All persons whose interests are affected by the above-named assessments, and who are opposed to the same, or either of them, are requested to present their objections in writing to the Chairman of the Board of Assessors, at their office, No. 27 Chambers street, within thirty days from the date of this notice.

The above-described lists will be transmitted, as provided by law, to the Board of Revision and Correction of Assessments for confirmation on the 13th day of April, 1891.

EDWARD GILON, Chairman,  
PATRICK M. HAVERTY,  
CHAS. E. WENDT,  
EDWARD CAHILL,  
Board of Assessors.

OFFICE OF THE BOARD OF ASSESSORS,  
No. 27 CHAMBERS STREET,  
NEW YORK, March 12, 1891.

POLICE DEPARTMENT.

POLICE DEPARTMENT—CITY OF NEW YORK,  
OFFICE OF THE PROPERTY CLERK (Room No. 9),  
No. 300 MULBERRY STREET,  
NEW YORK, 1891.

**OWNERS WANTED BY THE PROPERTY**  
Clerk of the Police Department of the City of New York, No. 300 Mulberry street, Room No. 9, for the following property, now in his custody, without claimants: Boots, rope, iron, lead, male and female clothing, boots, shoes, wire, blankets, diamonds, canned goods, liquors, etc., also small amount money taken from prisoners and found by patrolmen of this Department.

JOHN F. HARRIOT,  
Property Clerk.

DEPARTMENT OF STREET CLEANING.

NOTICE.

**PERSONS HAVING BULKHEADS TO FILL, IN**  
the vicinity of New York Bay, can procure material for that purpose—ashes, street sweepings, etc., such as is collected by the Department of Street Cleaning—free of charge, by applying to the Commissioner of Street Cleaning, in the Stewart Building.

HANS S. BEATTIE,  
Commissioner of Street Cleaning.

HEALTH DEPARTMENT.

HEALTH DEPARTMENT—CITY OF NEW YORK,  
No. 301 MOTT STREET,  
NEW YORK, March 18, 1891.

**PROPOSALS FOR ESTIMATES FOR REPAIRING STEAM PROPELLER**  
"FRANKLIN EDSON," AT TRUNDY & MURPHY'S DRY-DOCK, SOUTH BROOKLYN.

**PROPOSALS FOR ESTIMATES FOR REPAIR-**  
ing steam propeller "Franklin Edson," now lying at Trundy & Murphy's Dry-dock, corner of Smith and Hallock streets, South Brooklyn, will be received by the Commissioners of the Health Department, at their office, No. 301 Mott street, until 2.30 o'clock P. M. of the 31st day of March, 1891, at which time and place they will be publicly opened and read by said Commissioners.

Any person making an estimate for the above work shall furnish the same in a sealed envelope to the head of said Health Department, indorsed "Estimate for Repairing steam propeller 'Franklin Edson,'" and also with the name of the person or persons presenting the same, and the date of its presentation.

Any bidder for this contract must be known to be engaged in and well prepared for the business, and must have satisfactory testimonials to that effect; and the person or persons to whom the contract may be awarded will be required to give security for the performance of the contract by his or their bond, with two sufficient sureties, each in the penal sum of THREE THOUSAND DOLLARS.

Bidders are required to submit their estimates upon the following express conditions, which shall apply to and become part of every estimate received:

1. Bidders must satisfy themselves, by personal examination of the location of the proposed work, and by such other means as they may prefer, as to the accuracy of the estimate, and shall not, at any time after the submission of an estimate, dispute or complain of the statement of quantities, nor assert that there was any misunderstanding in regard to the nature or amount of the work to be done.

2. Bidders will be required to complete the entire work to the satisfaction of the Health Department, and in substantial accordance with the specifications of the contract and the plans therein referred to. No extra compensation, beyond the amount payable for the work before mentioned, which shall be actually performed, at the prices therefor, to be specified by the lowest bidder, shall be due or payable for the entire work.

Bidders will state in their estimates a price for the whole of the work to be done, in conformity with the approved form of contract and the specifications therein set forth, by which price the bids will be tested. This price is to cover all expenses of every kind involved in or incidental to the fulfillment of the contract, including any claim that may arise through delay from any cause, in the performing of the work thereunder.

Bidders will distinctly write out, both in words and in figures, the amount of their estimates for doing this work.

The person or persons to whom the contract may be awarded will be required to attend at this office with the sureties offered by him or them, and execute the contract within five days from the date of the service of a notice to that effect; and in case of failure or neglect to do, he or they will be considered as having abandoned it, and as in default to the Corporation; and the contract will be readvertised and relet, and so on until it be accepted and executed.

Bidders are required to state in their estimates their names and places of residence, the names of all persons interested with them therein; and if no other person be so interested, the estimate shall distinctly state the fact; also that the estimate is made without any connection with any other person making an estimate for the same work, and that it is in all respects fair and without collusion or fraud; and also that no member of the Common Council, head of a department, chief of a bureau, deputy thereof, or clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof; which estimate must be verified by the oath, in writing, of the party making the estimate, that the several matters stated therein are in all respects true. Where more than one person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each estimate shall be accompanied by the consent, in writing, of two householders or freeholders in the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person or persons making the estimate, they will, on its being so awarded, become bound as his or their sureties for its faithful performance; and that if said person or persons shall omit or refuse to execute the contract, they will pay to the Corporation of the City of New York any difference between the sum to which said person or persons would be entitled on its completion, and that which said Corporation or the Health Department may be obliged to pay to the person to whom the contract may be awarded at any subsequent letting; the amount in each case to be calculated upon the estimated amount of the work to be done by which the bids are tested. The consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of the security required for the completion of the contract, and stated in the proposals, over and above all his debts of every nature, and over and above his liabilities as bail, surety and otherwise; and that he has offered himself as surety in good faith and with the intention to execute the bond required by law. The adequacy and sufficiency of the security offered is to be approved by the Comptroller of the City of New York, after the award is made and prior to the signing of the contract.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National banks of the City of New York, drawn to the order of the Comptroller, or money, to the amount of five per centum of the amount of the security required for the faithful performance of the contract. Such check or money must not be inclosed in the sealed envelope containing the estimate, but must be handed to the officer or clerk of the Department who has charge of the estimate-box, and no estimate can be deposited in said box until such check or money has been examined by said officer or clerk and found to be correct. All such deposits, except that of the successful bidder, will be returned by the Comptroller to the persons making the same, within three days after the contract is awarded. If the successful bidder shall refuse or neglect, within five days after notice that the contract has been awarded to him, to execute the same, the amount of the deposit made by him shall be forfeited to and retained by the City of New York as liquidated damages for such neglect or refusal; but if he shall execute the contract within the time aforesaid, the amount of his deposit will be returned to him by the Comptroller.

No estimate will be accepted from, or contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to the Corporation.

Bidders are requested, in making their bids or estimates, to use the blank prepared for that purpose by the Department, a copy of which, together with the form of the agreement, including specifications, and showing the manner of payment for the work, can be obtained upon application therefor at the office of the Department.

The Department reserves the right to reject any or all estimates not deemed beneficial to or for the public interest.

Plans may be examined, and specifications and blank forms for bids or estimates obtained by application to the Secretary of the Board, at his office, No. 301 Mott street, New York.

CHARLES G. WILSON,  
JOSEPH D. BRYANT,  
WILLIAM M. SMITH,  
CHARLES F. MCLEAN,  
Commissioners.

SUPREME COURT.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York, for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to BIRCH STREET (although not yet named by proper authority), extending from Wolf street to Marcher avenue, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS**  
of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 230 Broadway (fifth floor), in the said city, on or before the fifteenth day of April, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week-days next after the said fifteenth day of April, 1891, and for that purpose will be in attendance at our said office on each of said ten days at three o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the sixteenth day of April, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land situate, lying and being in the City of New York, which, taken together, are bounded and described as follows, viz.: Northerly by a line drawn easterly from a point on the easterly line of Wolf street, about 191 feet northerly from the intersection of the northerly line of Birch street with the easterly line of Wolf street to a point on the westerly line of Aqueduct avenue, about 249 feet northerly from the intersection of the northerly line of Birch street with the westerly line of Aqueduct avenue, the centre line of the blocks between Birch street and two certain unnamed streets or avenues lying northerly of Birch street and extending from Oden avenue to Aqueduct avenue, and the centre line of the blocks between Birch street and Orchard street, from Oden avenue to Marcher avenue; easterly by the westerly line of Marcher avenue; southerly by the centre line of the blocks between Birch street and Union street, and westerly by the easterly line of Wolf street; excepting from said area all the streets, avenues and roads or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares and places shown or laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of



1874, and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house in the City of New York, on the 1st day of May, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, March 6, 1891.  
GEORGE P. WEBSTER, Chairman,  
MOSES HERRMAN,  
JOHN H. KITCHEN,  
Commissioners.

CARROLL BERRY, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to that part of EAST ONE HUNDRED AND FIFTY-SEVENTH STREET (although not yet named by proper authority), extending from Railroad Avenue, East, to Third Avenue, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 200 Broadway (fifth floor), in the said city, on or before the thirtieth day of April, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week-days next after the said thirtieth day of April, 1891, and for that purpose will be in attendance at our said office on each of said ten days at four o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the fourteenth day of April, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the centre line of the blocks between East One Hundred and Fifty-seventh street and East One Hundred and Fifty-eighth street, from Railroad Avenue, East, to Third Avenue and the prolongation easterly from the easterly line of Third Avenue of the said centre line of the blocks for a distance of about 100 feet; easterly by a line parallel with, and distant 100 feet easterly of the easterly line of Third Avenue; southerly by the prolongation easterly from the easterly line of Third Avenue of the centre line of the blocks between East One Hundred and Fifty-sixth street and East One Hundred and Fifty-seventh street for about 10 feet; and the centre line of the blocks between East One Hundred and Fifty-sixth street and East One Hundred and Fifty-seventh street, from Third Avenue to Railroad Avenue, East; and westerly by the easterly line of Railroad Avenue, East; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares, and places shown or laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874, and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the twenty-seventh day of April, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, March 2, 1891.  
EDWARD L. PARRIS, Chairman,  
G. M. SPEIR, JR.,  
LAWRENCE WELLS,  
Commissioners.

CARROLL BERRY, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to RAILROAD AVENUE, WEST (although not yet named by proper authority), extending from Morris Avenue to East One Hundred and Sixty-fifth street, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 280 Broadway (Room 4), in said city, on or before the third day of April, 1891, and that we, the said Commissioners, will hear parties so objecting within ten week-days next after the said third day of April, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 3 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the fourth day of April, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by southerly line of East One Hundred and Sixty-fifth street; easterly and southerly by the easterly line of Railroad Avenue, West, from its intersection with the southerly line of East One Hundred and Sixty-fifth street to its intersection with the easterly line of Morris Avenue; westerly by the easterly line of Morris Avenue and the centre line of the blocks between Morris Avenue, Railroad Avenue, West, and Teller Avenue, from the junction of Railroad Avenue, West, and Morris Avenue to the northerly line of East One Hundred and Sixty-second street; thence, by the northerly line of East One Hundred and Sixty-second street to the centre line of the blocks between Teller Avenue and Railroad Avenue, West; thence by the centre line of the blocks between Teller Avenue, Railroad Avenue, West, and Clay Place, to the northerly line of East One Hundred and Sixty-fourth street; thence by the northerly line of East One Hundred and Sixty-fourth street to the westerly line of Railroad

avenue, West; thence by the centre line of the block between Clay Place and Railroad Avenue, West, to the southerly line of East One Hundred and Sixty-fifth street; excepting from said area all the streets, avenues, roads or portions thereof, heretofore legally opened, and all the unimproved lands included within the lines of streets, avenues, roads, public squares and places shown or laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874, and laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the seventeenth day of April, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 20, 1891.  
SAMUEL W. MILBANK, Chairman,  
THOMAS NOLAN,  
WILLIAM H. WILLIS,  
Commissioners.

JOHN P. DUNN, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York, for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to GEORGE STREET (although not yet named by proper authority), extending from the Boston road to Prospect Avenue, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 280 Broadway (Room 4), in said city, on or before the first day of April, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week-days next after the said first day of April, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 2 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the second day of April, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the centre line of blocks between Home street and George street, from Boston road to Union Avenue; thence by said line prolonged easterly to the westerly line of Prospect Avenue; thence southerly along the westerly line of Prospect Avenue to its intersection with the westerly prolongation of the southerly line of East One Hundred and Sixty-seventh street; thence by said southerly line of East One Hundred and Sixty-seventh street prolonged westerly to westerly line of Prospect Avenue; easterly by the rear line of the lots between Nos. 21 and 23, both included, in said block; southerly by the southerly line of Lot No. 10 in Block No. 507 to Stebbins Avenue; thence by centre line of the blocks between George street and East One Hundred and Sixty-fifth street prolonged easterly to Stebbins Avenue; westerly by the easterly line of Cauldwell Avenue and the easterly line of Boston road; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares and places shown and laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874, and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the seventeenth day of April 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 18, 1891.  
WILLIAM H. BARKER, Chairman,  
JOHN REILLY,  
LOUIS A. RISSE,  
Commissioners.

JOHN P. DUNN, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York, for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to BEACH AVENUE (although not yet named by proper authority), extending from the Southern Boulevard to Kelly street, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 280 Broadway (Room 4), in said city, on or before the 18th day of March, 1891, and that we, the said Commissioners, will hear parties so objecting within ten week days next after the said 18th day of March, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 3 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the 19th day of March, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the southerly line of Kelly street; easterly by the centre line of the blocks between Union Avenue and Beach Avenue; southerly by the northerly line of the Southern Boulevard and the northerly line of Crane street; westerly by centre line of the blocks between Wales Avenue and Beach Avenue; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues

roads, public squares and places shown and laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874, and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house in the City of New York, on the thirty-first day of March 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 6, 1891.  
DAVID THOMSON, Chairman,  
WILLIAM H. WILLIS,  
NEVIN W. BUTLER,  
Commissioners.

JOHN P. DUNN, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to WALES AVENUE (although not yet named by proper authority), extending from Kelly street to St. Joseph's street, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 280 Broadway (Room 4), in said city, on or before the eighteenth day of March 1891, and that we, the said Commissioners, will hear parties so objecting within ten week days next after the said eighteenth day of March, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 3 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the nineteenth day of March, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the southerly line of Kelly street; easterly by centre line of block between Wales Avenue and Beach Avenue, from Kelly street to Beck street; thence by a line parallel with and distant 105 feet easterly from easterly line of Wales Avenue to East One Hundred and Forty-ninth street; thence by the centre line of the blocks, between Wales Avenue and Beach Avenue; southerly by the northerly line of St. Joseph's street; westerly by centre line of the blocks between Wales Avenue and Concord Avenue; excepting from said area all the streets, avenues, roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares and places shown and laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874 and laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the 31st day of March, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 6, 1891.  
DAVID THOMSON, Chairman,  
WILLIAM H. WILLIS,  
NEVIN W. BUTLER,  
Commissioners.

JOHN P. DUNN, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to ONE HUNDRED AND SIXTY-SECOND STREET, from Eleventh Avenue to Kingsbridge road, in the Twelfth Ward of the City of New York.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants, of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 200 Broadway (fifth floor), in the said city, on or before the seventeenth day of March, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week-days next after the said seventeenth day of March, 1891, and for that purpose will be in attendance at our said office on each of said ten days at one o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the eighteenth day of March, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the centre line of the block between One Hundred Sixty-second and One Hundred and Sixty-fifth streets, from Eleventh Avenue to Kingsbridge road, and the prolongation westerly from the westerly line of Eleventh Avenue of the said centre line of the block between One Hundred and Sixty-second and One Hundred and Sixty-fifth streets; easterly by the westerly line of Kingsbridge road and Tenth Avenue; southerly by the centre line of the block between One Hundred and Sixty-second and One Hundred and Sixty-first streets, from Tenth Avenue to Eleventh Avenue, and the prolongation westerly from the westerly line of Eleventh Avenue of the said centre line of the block between One Hundred and Sixty-second and One Hundred and Sixty-first streets and westerly by a line drawn parallel with and distant one hundred feet westerly of the westerly line of Eleventh Avenue; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares and places shown and laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874 and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the twenty-third day of March, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the thirtieth day of March, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 3, 1891.  
DENIS A. SPELLISSY, Chairman,  
FRANCIS A. MARDEN,  
FRANCIS RIEDEL,  
Commissioners.

CARROLL BERRY, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to the opening of ONE HUNDRED AND TWENTY-SEVENTH STREET, from the Boulevard to Manhattan street, in the Twelfth Ward of the City of New York.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding, and to the owner or owners, occupant or occupants of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 200 Broadway (fifth floor), in the said city, on or before the 16th day of March, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week days next after the said 16th day of March, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 4 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the 17th day of March, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the centre line of the block between One Hundred and Twenty-seventh street and Manhattan street; easterly by the southerly line of Manhattan street and a line drawn southwesterly from the intersection of the southerly line of One Hundred and Twenty-seventh street with the southerly line of Manhattan street; southerly by the centre line of the block between One Hundred and Twenty-seventh street and One Hundred and Twenty-sixth street, and westerly by the easterly line of the Boulevard, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house in the City of New York, on the thirtieth day of March, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, February 3, 1891.  
EDWARD L. PARRIS, Chairman,  
JOSEPH E. NEWBURGER,  
HENRY G. CASSIDY,  
Commissioners.

CARROLL BERRY, Clerk.

In the matter of the application of the Board of Street Opening and Improvement of the City of New York for and on behalf of the Mayor, Aldermen and Commonality of the City of New York, relative to acquiring title, wherever the same has not been heretofore acquired, to TEASDALE PLACE (although not yet named by proper authority), extending from Third Avenue to Trinity Avenue, in the Twenty-third Ward of the City of New York, as the same has been heretofore laid out and designated as a first-class street or road by the Department of Public Parks.

**WE, THE UNDERSIGNED COMMISSIONERS** of Estimate and Assessment in the above-entitled matter, hereby give notice to all persons interested in this proceeding and to the owner or owners, occupant or occupants of all houses and lots and improved or unimproved lands affected thereby, and to all others whom it may concern, to wit:

First—That we have completed our estimate and assessment, and that all persons interested in this proceeding, or in any of the lands affected thereby, and having objections thereto, do present their said objections in writing, duly verified, to us at our office, No. 200 Broadway (fifth floor) in the said city, on or before the 10th day of March 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week days after the said 10th day of March, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 4 o'clock P. M.

Second—That the abstract of our said estimate and assessment, together with our damage and benefit maps, and also all the affidavits, estimates and other documents used by us in making our report, have been deposited with the Commissioner of Public Works of the City of New York, at his office, No. 31 Chambers street, in the said city, there to remain until the eleventh day of March, 1891.

Third—That the limits of our assessment for benefit include all those lots, pieces or parcels of land, situate, lying and being in the City of New York, which taken together are bounded and described as follows, viz.: Northerly by the centre line of the blocks between Teasdale place and East One Hundred and Sixty-fourth street; easterly by the westerly line of Trinity Avenue; southerly by the centre line of the blocks between Teasdale place and East One Hundred and Sixty-third street, and westerly by the easterly line of Third Avenue and the easterly line of Boston road; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, and all the unimproved land included within the lines of streets, avenues, roads, public squares and places shown and laid out upon any map or maps filed by the Commissioners of the Department of Public Parks, pursuant to the provisions of chapter 604 of the Laws of 1874, and the laws amendatory thereof, or of chapter 410 of the Laws of 1882, as such area is shown upon our benefit map deposited as aforesaid.

Fourth—That our report herein will be presented to the Supreme Court of the State of New York, at a Special Term thereof, to be held at the Chambers thereof, in the County Court-house, in the City of New York, on the twenty-third day of March, 1891, at the opening of the Court on that day, and that then and there, or as soon thereafter as counsel can be heard thereon, a motion will be made that the said report be confirmed.

Dated New York, January 27, 1891.  
JOSEPH E. NEWBURGER, Chairman,  
ROYAL S. CRANE,  
SAMUEL R. ELLIOTT,  
Commissioners.

CARROLL BERRY, Clerk

## THE CITY RECORD.

THE CITY RECORD IS PUBLISHED DAILY, Sundays and legal holidays other than the general election day excepted, at No. 2 City Hall, New York City. Price, single copy, 3 cents; annual subscription, \$9.30.

W. J. K. KENNY,  
Supervisor