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### BOARD OF ALDERMEN.

#### SPECIAL MEETING.

WEDNESDAY, October 21, 1891,  
1 o'clock P. M.

The Board met in room No. 16, City Hall, specially to receive the report of the Board of Rapid Transit Railroad Commissioners.

#### PRESENT :

Hon. John H. V. Arnold, President ;

#### ALDERMEN

Samuel H. Bailey,  
Nicholas T. Brown,  
William Clancy,  
Peter J. Dooling,  
Charles H. Duffy,  
Henry Flegenheimer,  
Cornelius Flynn,

Harry C. Hart,  
Horatio S. Harris,  
Jacob Kunzeman,  
Abraham Mead,  
George B. Morris,  
John Morris,  
Rollin M. Morgan,

Patrick J. O'Beirne,  
David J. Roche,  
Frank Rogers,  
Patrick J. Ryder,  
William Tait,  
Isaac H. Terrell.

The reading of the minutes of the last meeting was dispensed with.

#### COMMUNICATION.

The President laid before the Board the following report of the Rapid Transit Railroad Commissioners in and for the City of New York, in pursuance of the provisions of section 5 of chapter 4 of the Laws of 1891:

OFFICE OF THE  
RAPID TRANSIT RAILROAD COMMISSIONERS  
FOR THE CITY OF NEW YORK,  
No. 22 WILLIAM STREET.

To the Honorable the Common Council of the City of New York:

The Board of Rapid Transit Railroad Commissioners for the City of New York, appointed by the provisions of chapter 4 of the Laws of 1891, having determined upon the route or routes and general plan of construction of a rapid transit railway for the conveyance and transportation of persons and property to be established in the said city, in addition to the already existing lines,

#### RESPECTFULLY REPRESENT :

The Board, in entering upon the duties imposed upon it by the statutes of this State, determined at the outset that it must lay the foundation for such a broad and comprehensive system of rapid transit as would meet the needs of the city at present and be capable of expansion in the future.

That both express and way service should be provided, and that the construction should be effected with a minimum of street obstruction.

The Board, by advertisement, invited the submission to it, at public meetings, of suggestions as to routes, plans and manner of construction. These public meetings were largely attended, and plans submitted in great variety and number, which were carefully examined and considered.

The commissioners made personal investigation as to the exact needs of the city in its several localities. Statistics were gathered as to population, present lines of transit, and the number and destination of passengers carried on such lines.

The members of the Board personally went over all routes suggested, as well as over others laid out by the Board, including the ones now presented for your consideration.

It was appreciated that any system devised with a view to permanency and the capacity requisite for the future would be very costly, and the route therefore should be along main arteries of travel, in order to give relief where most needed and to command the necessary traffic to make the line remunerative.

Well known statistics established the fact that the existing north and south lines of transit nearest the centre of the city absorbed the greater traffic, and that the relative pressure upon them was substantially in proportion to their proximity to Broadway.

These considerations demanded the location of the lower part of the proposed route on or near that thoroughfare. Such a route could be continued by diverging lines above Fourteenth street on the east and west sides of the city respectively, reaching the largest centres of population, now least provided with transit facilities, and avoiding the necessity of more than one route below Fourteenth street.

With this much determined, the two governing questions remaining were the general plan of the structure and the motive power to be used.

Appreciating that a viaduct of masonry would be the most desirable means of transit, the commission considered many plans for such a route.

An elevated structure on Broadway below Thirty-third street was prohibited by the statute. A viaduct of masonry was manifestly impossible on any adjacent street.

A viaduct through the blocks in the lower part of the city, the commission believed, after searching investigation, to be too costly, and subject to too many delays in the acquisition of property rights, to be within reasonable hope of attainment.

It was therefore unavoidable that rapid transit, in the lower part of the city, must be secured by an underground structure.

The location of such an underground structure through blocks near the surface was considered. This system had some advantages.

The stations could be conveniently placed, and the amount of excavation would be reduced, which is a material item where the earth has to be removed through crowded streets.

Many of the objections, however, to the viaduct system, as to cost and long delay in the acquisition of vast amounts of real estate, applied with almost equal force to this plan, and the commission considered its adoption unwise.

It would extend this report beyond proper limits to lay before you all the reasons which influenced the selection of the line under Broadway. The determination to adopt such a line was communicated to the public in the resolutions of the 27th day of May, 1891, and generally approved.

A line under Broadway being decided upon, the question was narrowed to the character of the structure and its distance below the surface; whether it should be deep or shallow; whether in providing for the four tracks necessary, the entire width of the street or only a portion should be used; and whether the surface of the street and existing pipes should be again disturbed.

The impression prevailed to some extent that a tunnel could be driven under Broadway entirely through rock within reasonable distance of the surface, thereby obtaining a stable roof and thus avoiding many difficulties in construction.

The commission caused careful and accurate borings to be made on Whitehall street and Broadway, at every cross street from Front street to Thirty-third street. The results are shown on Exhibit 1, and are indicated generally by the following table, giving the depths of the rock below the streets surface at the street named :

Front street.....	20 feet
Pearl street.....	16 "
Stone street.....	21 "
Beaver street.....	34 "
Rector street.....	63 "
Fulton street.....	83 "
Park place.....	112 "
Chambers street.....	100 "
Duane street.....	163 "
Leonard street.....	95 "
Walker street.....	107 "
Canal street.....	87 "
Broome street.....	47 "
Houston street.....	105 "
Washington place.....	34 "
Clinton place.....	65 "
Fourteenth street.....	13 "
Thirty-third street.....	4 "

Exhibit 1 also shows the material overlying the rock to be sand of different degrees of coarseness.

The difficulties of final decision related especially to that portion of Broadway covered by these test borings. North of Thirty-third street the width of the street was greater, and the rock formation was at such height as to admit of excavation in almost any desired form without endangering foundations. This was also the case with the East Side line above Fourteenth street finally adopted.

These borings conclusively disposed of the idea of a continuous rock roof for a tunnel, except at such depth or with such grades as to be almost, if not quite prohibitory.

It followed then that a tunnel for a considerable portion of its length—and that probably under the portion of Broadway where questions of property rights would present the greatest difficulties—must be driven through sand.

The question was whether this could be best accomplished near the surface or at a considerable distance below, and, if the latter, what that distance should be.

A decision depended upon a variety of complex considerations. Some related to the convenience and cost of construction; others, and the more important ones, to operation when completed.

The cost of tunneling at such depth as to avoid all question of property rights might be cheaper, but the extent of the cheapening would depend upon the depth, and might be easily exaggerated.

Much would depend upon the number and depths of shafts used.

The mere cost of excavating below ground would be but a small proportion of the whole when it is considered that all the excavated material for a commodious four-track structure, with ample station and platform facilities, must be raised to the surface through shafts opening on or near crowded streets.

The question also arose as to what depth would secure immunity from damages when the material to be excavated was sand, liable to be wet and to run, with this liability increasing with the depth, and when the pressure from above was that of Broadway's heaviest buildings.

To this nothing but trial and experience could give an answer.

The difficulties of ventilation and drainage increase with every foot of depth.

A deep tunnel would require elevators as a means of access, and stairways would be necessary in addition, which, except for emergencies, would be practically useless, and to properly provide for emergencies must be broad and costly.

Modern and improved elevators in sufficient numbers would doubtless provide for the regular volume of traffic at ordinary stations, but they are not believed to be adapted for large crowds, such as must frequently gather on a line of transit under Broadway. Stairways one hundred feet more or less in vertical height would be of no avail as sources of relief for crowds moving upward, and would be extremely dangerous for crowds moving downward.

Moreover, it is not believed that a deep, subterranean line of transit, with elevators, would attract short trip passengers, and the short trip business is absolutely essential for the success of any line the cost of which at all approximates that of a four-track tunnel in New York City.

It is admitted by the strongest advocates of underground transit that, other things being equal, the nearer the station platforms are to the surface the more attractive the line.

Conceding, however, that there are some advantages in deep tunneling for lower Broadway, it is seen that they apply entirely during the time of construction and to the first cost of the structure. These, while important, cannot weigh against permanent advantages to be derived in comfort and convenience to the public, facility of operation and the securing of patronage after completion.

Ready accessibility by means of short, broad, and commodious stairways, supplemented where necessary by elevators, better light and better ventilation at stations; light and air at intermediate points if necessary, and the feeling of greater security on the part of the public with a structure which can be more readily reached in time of accident or other emergency, are too potent to be surrendered to mere temporary difficulties of construction.

These and other considerations led to the decision upon the part of the commission to place the underground structure as near the surface of the street as possible, and the Engineers of the Board were directed to submit two separate plans, one for four tracks on a single level, the other for a double-deck tunnel with two tracks upon each deck.

These plans were prepared, the one providing for four tracks on a level at the minimum distance below the surface to admit of the non-disturbance of existing pipes, conduits and other underground structures, and occupying substantially the entire width of Broadway from curb to curb, but not at such depth as to require excavation below the foundation of the heaviest and most costly structures abutting on the street. This it was believed would eliminate to a large degree the difficulties to be encountered in protecting abutting property during construction. This plan also provided for carrying on the work of excavation without disturbance of the street surface except for short distances at points of exceptional difficulty.

The other plan of double deck tunnel would occupy less width of the street, and presented the advantage of the removal and replacement in galleries of the pipes and other existing underground structures.

A disturbance of the street surface would be unavoidable in this case, but a great and permanent benefit would be derived from the fact that such disturbance would not be repeated in the future for any cause except the relaying of the pavement, as the pipes in galleries would be accessible at all times for purposes of repair.

The excavation required by this plan was about four feet more in depth than by the other. The length of stairway to the local stations would be less, but to the express stations greater than in the other plan.

These plans when matured, were submitted separately for separate reports to four distinguished Consulting Engineers, to wit: Messrs. Octave Chanute, of Chicago, Joseph M. Wilson, of Philadelphia, Theodore Cooper, of New York, and John Bogart, State Engineer of New York, with instructions that they were submitted not only for approval or disapproval, but for such general discussion and such suggestions as to alterations and additions as might in their judgments be regarded as necessary or desirable to accomplish in the best manner possible, the objects sought to be obtained upon the routes and under the general plans outlined in the resolutions of this commission of May 27 and July 22. Exhibits 2 and 3.

The Engineers of the commission were instructed to render such assistance and to give such information as the Consulting Engineers might desire, and to give them access to all records of the commission, and all plans and suggestions which had been placed before the Board by any person.

In accordance with these instructions, full and elaborate reports were received from each of the Consulting Engineers, copies of which are submitted herewith, marked Exhibits 4, 5, 6 and 7.

The surveys which were essential to the exact location of the line in the upper portion of the Island and in the Annexed District were completed during the present month.

All the necessary information for a final conclusion was thus in the hands of the commission.

While the double deck plan provided for subways or galleries for the pipes and other underground structures, and the Rapid Transit Act authorized the Board to make such provision, yet the Board felt that the intent of the act was that such power should be exercised only when necessary for the proper construction of any proposed railway.

The adoption of such plan would not only again require the disturbance of Broadway, but might expose the railway and passengers to great annoyance, if not serious danger, from escaping gas and steam; it was open also to the objection of greater noise and possibly inferior ventilation.

The double deck plan moreover burdened the enterprise with the heavy additional expense of pipe galleries and removal of pipes.

Another and most serious question which the commission was obliged to consider was facility of movement between the different tracks in emergencies causing congestion and delay. No system of rapid transit would be complete that did not provide on its main trunk line at numerous points for



movement of trains from either track to any other, and the transfer of passengers from disabled trains, if need be, at any point between stations.

This in the double deck plan could be but partially accomplished, while with four tracks on one level the entire blockade of the system would be almost an impossibility.

So important is this consideration that the commission would be loth to recommend any plan wanting in this feature.

It would have been regarded as essential even had the commission adopted a plan for a tunnel at greater depth than the one now reported.

The commission, after weighing carefully all these considerations, together with the recommendations of its own Engineers and of the Consulting Engineers, and the various suggestions presented to it, thereupon determined, by unanimous vote, on the 10th day of October, 1891, that the route or routes and general plan of construction of a Rapid Transit Railway for the conveyance and transportation of persons and property shall be established in this city, as follows:

A route, the centre line, commencing at a point under the westerly side of Whitehall street, distant along the same 62.5 feet north from the northerly line of South street produced; thence by diverging lines under Whitehall street and Battery Park and State street, respectively, forming a loop line, the tracks converging to parallelism at a point under Broadway between Bowling Green and Morris street; thence under Broadway and Union Square to Fifty-ninth street; thence under the Boulevard to One Hundred and Twenty-first street; thence by viaduct to One Hundred and Thirty-fourth street; thence under the Boulevard to the south line of One Hundred and Fifty-sixth street; thence by viaduct to the north line of One Hundred and Fifty-ninth street; thence under the Boulevard to One Hundred and Sixty-ninth street; thence under Eleventh avenue to a point 1,460 feet north of the centre line of One Hundred and Ninetieth street; thence by a viaduct on the same straight line produced to a point 442 feet north from the intersection of said straight line with the centre line of the Kingsbridge road; thence to the right on a curve with a radius of 1,910 feet and in tunnel a distance of 860.6 feet; thence by a tangent 138 feet; thence by curve to the left with a radius of 1,910 feet a distance of 350 feet in tunnel and a distance of 510.6 feet by viaduct, to a point on a line coincident with the centre line of Audubon avenue produced and distant 425 feet north from the centre line of Two Hundred and Seventeenth street; thence by viaduct and on a tangent coincident with the centre line of Audubon avenue produced across the Government Ship Canal, and thence by the same tangent and in depressed structure 670 feet; thence on the same tangent and by viaduct to and across Spuyten Duyvil creek; and thence on the same tangent by viaduct, depressed structure and tunnel, as the contour of the lands may require, to a point 100 feet north of the centre line of Delafield lane; thence to the left on a curve with a radius of 1,910 feet to a point 30 feet south from the centre line of Delafield's old lane; thence by a tangent to a point 112.4 feet south from the south line of Rock street; thence to the right by a curve with a radius of 500 feet for a distance of 220.8 feet to a point in the centre line of Forest street 112.4 feet north of the south line of Rock street; thence by tangent coincident with the centre line of Forest street to the city limits.

Also, a loop from Broadway, under Mail street, City Hall Park, Park Row, and Chambers street, and again connecting with the Broadway line.

Also, a route, the centre line, diverging from the Broadway line at or near Fourteenth street running under Union Square to Fourth avenue; thence under Fourth and Park avenues to a point 112.15 feet north from the north line of Forty-ninth street; thence to the left on a curve with a radius of 250 feet for a distance of 154.55 feet; thence by a tangent a distance of 292.18 feet to a point 40.1 feet north from the south line of Forty-second street, and 215.7 feet west from the centre line of Fourth avenue; thence to the right on a curve with a radius of 250 feet a distance of 124.23 feet; thence by tangent 46.39 feet; thence to the left on a curve with a radius of 250 feet a distance of 182.37 feet to a point 4.4 feet north from the north line of Forty-third street and 159.5 feet east from the centre line of Madison avenue; thence by tangent 39.53 feet; thence to the right on a curve with a radius of 400 feet a distance of 332.28 feet to a point in the centre line of Madison avenue 65.6 feet north from the north line of Forty-fourth street; thence under Madison avenue to the south line of Ninety-sixth street; thence to the right on a curve with a radius of 400 feet for a distance of 240.07 feet; thence by tangent a distance of 132.08 feet; thence to the left on a curve with a radius of 400 feet a distance of 240.07 feet to the south line of Ninety-eighth street at a point distant 175 feet east from the easterly line of Madison avenue; running thence by viaduct parallel with Madison avenue, the centre line distant 175 feet east from the easterly line thereof, across streets and private property to a point 124.6 feet north from the north line of One Hundred and Thirty-fourth street, and distant 175 feet east from the easterly line of Madison avenue; thence to the right on a curve with a radius of 357.15 feet a distance of 408.6 feet to a point on the west line of River street 54 feet 11 inches south from the south line of One Hundred and Thirty-sixth street; thence by tangent across the Harlem river a distance of 400 feet; thence to the left on a curve to the south line of One Hundred and Thirty-eighth street at its intersection with the centre line of Walton avenue, as the same is laid down upon the Topographical Maps of the Twenty-third and Twenty-fourth Wards of the City of New York, issued from the office of the Commissioner of Street Improvements of the Twenty-third and Twenty-fourth Wards; thence, according to said maps, by viaduct, depressed structure and tunnel, as the contour of the lands may require, along the line of Walton avenue to Stebbins place; thence to the intersection of the centre lines of Sylvan avenue and Belmont place; thence along the line of Sylvan avenue to its terminus at Orchard street; thence in a straight line to the centre line of Berrian avenue at the southerly point thereof; thence along the centre line of Berrian avenue to First street; thence in a straight line to the intersection of the centre lines of Kirske avenue and Croton avenue; thence along Kirske avenue to Travers street, and thence by straight line to and under Jerome avenue to the north line thereof.

The general plan of construction of the loop under Battery Park, State and Whitehall streets shall be double track; from the Morris street junction to near Vesey street shall be three parallel tracks on the same level with suitable switches and connections between them; from Vesey street to One Hundred and Ninetieth street on the West Side line shall be four parallel tracks on the same level; and thence across the Government Ship canal and Spuyten Duyvil creek to the city limits shall be two parallel tracks on the same level. On the East Side line from Fourteenth street to the Harlem river shall be four parallel tracks on the same level, and thence to the city limits shall be two parallel tracks on the same level. The tunnels shall be not less than 11 feet 6 inches in height in the clear, and 11 feet in width for each track. Whenever necessary for the proper support of the surface of the street, the roof of the tunnel shall be of iron girders with solid plate iron covering supported by suitable iron columns between each of the tracks, and supporting walls on the outside. The roof of the tunnel shall be as near the surface of the street as the pipes and underground structures now laid therein and the street grades will permit. Viaducts shall be of masonry or iron, or both combined. The Government Ship canal and the Harlem river shall be crossed by double-track draw-bridges not less than 50 feet in the clear above mean high-water mark, with clear spans of not less than 125 feet between the centre piers and bulkhead-line. North of the Harlem river the construction shall be by viaduct, depressed structure and tunnel as the grades of the land upon the proposed routes shall require. The junction of the tracks near Fourteenth street shall be effected by dividing them around Union Square, raising one pair and depressing the other, so that trains going in opposite directions shall not cross on the same level. All station approaches shall be as far as possible through private property to be acquired for that purpose, except that on the Boulevard, station approaches may be in the centre of the street.

A footway shall be provided the whole length of the line between the centre tracks, and refuge niches shall be built in the side walls at proper intervals for the convenience and protection of employees.

The motive power shall be electricity, or some other power not requiring combustion within the tunnel; and the motor or motors shall be capable of a uniform speed for long distances of not less than forty miles per hour, exclusive of stops.

The matter of construction from South Ferry to about Thirty-fourth street shall be by underground tunneling without disturbing the surface of the street. In case of necessity the excavations below Beaver street, and in the neighborhood of Canal street, and at such other special points as this commission may, during the progress of the work determine, may be made by excavation from the street surface, and all excavations in Fourth avenue above Fourteenth street and in all other streets and avenues above Thirty-fourth street may be made in the same manner.

The loop at Battery Park is adopted as furnishing the best and most convenient method for the terminal handling of the trains, both way and express.

The three tracks between Bowling Green junction and Vesey street provide amply for the volume of traffic below the City Hall, and avoid encroachment beyond the curb-line in Broadway at its narrowest points.

The introduction of a loop at City Hall Park by which trains may be stopped, turned and despatched uptown continuously and without switching and, as shown by the drawings, without grade crossings, for trains in opposite directions, furnishes the best means of a second downtown terminus at the most important point, and the best means of connecting with the Brooklyn Bridge.

At Union Square, as shown in the accompanying drawings, a system of tracks has been devised by which all trains on the Broadway and Madison avenue line are accommodated at a single station, and all grade crossings between trains in opposite directions are avoided, thus facilitating high speed and eliminating in the best manner possible the dangers and delays incident to such crossings.

At Ninety-sixth street, the contour of the ground necessitates the termination of the tunnel. It therefore became necessary to deflect the line from Madison avenue and occupy private property, thence to the Harlem river, on account of the prohibition in the Rapid Transit Act against the use of Madison avenue for an elevated structure.

The stations on the route selected have not been located, for the reason that the Board was advised that they constitute part of the detailed plans which the commission are required to complete after the general plan shall have received the approval of your Honorable Body.

Detailed plans and specifications for the construction of the railway, including stations, devices and appurtenances deemed necessary to secure the greatest efficiency, public convenience and safety, will be prepared by the commission, in accordance with the provisions of the act, if this report is approved.

The commission make no recommendations as to the method of construction. These matters the commission will deem it wise to leave, so far as permitted by the act, to the judgment of the purchaser, subject always, as the Act requires, to the control of this Board. The particular shield, if any, to be used in excavating under the streets, the details as to materials and form of walls and other interior surface should, as far as consistent with the requirements of the act, be subject to his selection. Any attempted determination of the method of construction in advance, might narrow the field of possible competition to such an extent as to endanger the success of the enterprise.

When the commission decided to adopt an underground route, it also decided that the motive power must be secured without combustion in the tunnel.

Much attention has been devoted to the consideration of electricity as a motive power. Consultations have been held with eminent electricians; experiments have been witnessed; electric roads in operation have been examined.

While the Board is convinced that electricity as a motive power is available for the purposes of the railway recommended by this report, it is not deemed wise at the present time to exclude other forms of power answering the essential conditions of speed and non-combustion in the tunnel, or to attempt to direct the exact method of application of such power as shall finally be adopted.

Attached hereto will be found certified copies of our several appointments as Commissioners of Rapid Transit by his Honor, Mayor Grant, together with certified copies of our oaths of office, both those taken before the passage of the Rapid Transit Act of 1891, upon which this report is based, and those taken after we had become Commissioners of Rapid Transit in pursuance of the provisions of such act.

The Commission also certifies to you, that within thirty days after the passage of such act it duly met and organized as a Board, and framed and adopted by-laws and established rules and regulations for the proper exercise of the powers and duties thereby conferred; and adopted a seal and kept a record of its proceedings which has been open to public inspection at all reasonable times; and of its own motion conducted an inquest and investigation as to whether it was for the interest of the public and of the City of New York that a rapid transit railway or railways for the conveyance and transportation of persons and property should be established therein, and determined that such railway or railways, in addition to those already existing, was necessary. Maps and drawings accompanying this report show the route or routes and general plan of construction. They are marked Exhibits 8 to 60.

With this general statement of the proceedings of this Board, and in accordance with the provisions of section 5 of the Rapid Transit Act of 1891, we now submit the route or routes and general plan of construction thus determined upon for your consideration.

Done under the signatures of the respective Commissioners, and the seal of the Board, at the City of New York, this 20th day of October, 1891.

[SEAL]

WILLIAM STEINWAY,  
JOHN H. STARIN,  
SAMUEL SPENCER,  
JOHN H. INMAN,  
EUGENE L. BUSHE,

Commissioners.

EXHIBIT 4.

Report of O. Chanute.

NEW YORK, August 22, 1891.

To the Board of Rapid Transit Commissioners for the City of New York:

GENTLEMEN—Having, in accordance with your letter of instructions of July 30, examined the resolutions of your Board of May 27 and of July 22, 1891, and studied the various reports, drawings and other data furnished by your Engineer department, I beg to report that, in my judgment, the engineering problem submitted is so complex that it does not seem to admit of arriving at the best solution by the exclusive adoption of any one general plan: either that of a "double-decked tunnel, with two tracks upon each deck," or that of "four tracks on the same level"; and that in order to make sure that all the surrounding conditions are observed, that all interests are considered, and that the best possible results are attained, it seems to be advisable, either that working plans shall be made in great detail or that the specifications of your Board shall, while carefully guarding public and private interests, permit of modifications in making the final plans.

The designs of your Engineers, not being intended for working plans, but simply as general exhibits to form a part of the specifications to be laid down by your Board, necessarily omit the very many details and modifications required to fit the surrounding conditions on the various portions of the twenty-nine miles of rapid transit lines proposed. They will need to be both combined and departed from, not only in order to meet the local requirements, as will be more specifically stated hereinafter, but also in order to promote efficiency in the subsequent operations of the roads.

In respect to the latter, it seems clear that the underground lines, when built, shall be subject to the following, among other operating necessities:

- (a.) They will need to be divided into operating sections, in order to apportion the train service to the density of the traffic.
- (b.) They will need connecting tracks and switches to shift trains from one track to the other, and also to run around break-downs, should any occur.
- (c.) Long sidings will be required at several points to hold spare cars and motors when not in use.
- (d.) There must be shops for repairs of rolling stock, and storage yards for materials for track repairs, etc.
- (e.) Room is needed in the tunnels for employees to make necessary repairs, without material danger to the trains or to themselves.

These conditions are easily met on a surface road, but they are difficult and expensive to provide for on an underground line, and their requirements will at many points, doubtless, modify the character and the arrangement of the construction otherwise indicated by the other and most complex conditions which will be alluded to hereafter.

Taking up more specifically the present designs for construction, their discussion will be simplified by first dividing the lines into five sections, in accordance with their differing characteristics and requirements, as follows:

- 1st. From the Battery to Union Square—Sand formation, very dense traffic, and very many complications.
- 2d. From Union Square to south end of Central Park—Chiefly rock near surface, dense traffic.
- 3d. From Central Park to Manhattanville on west line, or to Harlem on east line—Chiefly rock, considerable traffic.
- 4th. From Manhattanville to say One Hundred and Eighty-first street on west line, and from Harlem to say Morrisania on east line—Chiefly rock, traffic comparatively light.
- 5th. From One Hundred and Eighty-first street on west line, and from Morrisania on east line to the city limits—The open country.

The features of construction upon each of these sections will be separately discussed.

1st. From the Battery to Union Square.

This section, although covering but about one-tenth part of the proposed railroad lines, is by far the most important, and the most complicated. It is the one which most people have in mind when they think of underground transit in New York, or propose plans for its solution. The engineering difficulties and consequent risk of disaster, the narrow limits and the dense traffic, the complications of underground pipes and the multiple and diverse interests to be protected, appeal to the imagination, and inspire the hope that some one design can be invented which will solve all questions and reconcile all interests. I very much doubt myself, whether there is such a design in existence, save the old and well-tried plan of varying the design and the mode of construction at different points, in accordance with the varying local requirements of the case, under general and rigid restrictions, which shall ensure safety and guard existing interests.

The recent surveys, made under instructions from your Board, have elicited the fact that the construction, over this section, will be almost wholly through sand, some of it, perhaps, approaching quicksand in character. As South street is but 4 feet, Beaver street 15 feet, and Canal street but 10 feet above tide, the construction at those points will necessarily go below tide level, and while it may be made water-tight to a moderate depth, the difficulties of doing so increase rapidly with every foot of additional hydraulic head. We are therefore led to consider the advisability of having four tracks on a level at those points, but this leads into trouble at other points.

Broadway is popularly supposed to be 44 feet wide between curbs, but there are no less than 37 street crossings between the Battery and Union Square (and 12 crossings above Union Square) where the street is less than 44 feet; the narrowest being at Rector street, where the width is 34 feet 4 inches between curbs. Now, the four tracks on a level, as planned, require a width in the clear of 43 feet, and at many points this will cut into the side vaults, which, in some cases, again, have encroached upon the street.

So far as can be told by scaling from the map, every vault would be cut into from the Battery to Cortlandt street; above this they will be missed as far as Reade street, except two which extend beyond the curb; then from Reade to Canal street 16 vaults would be cut, and 23 more would suffer from Canal street to Union Square, to say nothing of those which may be required for the stations, where the latter are located.

Where it cannot be avoided, private interests will have to give way for the public good, but this unpleasant and costly necessity should be avoided, so far as it is practicable, by modifications of the plans.



We are helped partly out of the difficulty about the vaults by the design proposed for the double-decked tunnel, but even this as now planned is likely to crowd some of the vaults. The general design shows a width of 44 feet between retaining walls, in consequence of the introduction of a central pipe-chamber designed to do away with the constantly recurring necessity for tearing up the street pavement, which chamber can be varied in width where required.

This pipe-chamber is an excellent proposition. It will, when built, save a large amount of expense and annoyance in the future, but as now designed it extends but a little below the bottom of the upper tracks. The objection to this arrangement is, that if a water-pipe bursts, or springs a leak, the lower tracks may be flooded, the more so, as no provision is shown by which they can be drained.

I suggest, therefore, that the pipe-chamber of the double-decked plan be made narrower, and shall be carried down to the bottom of the lower tracks, having for its drainage the hollow crown of an inverted arch turned between the side walls to keep them asunder.

Such a design will occupy a depth of 25 or 26 feet below the curb, so that at Canal street, and also below Beaver street, it would extend from 16 to 22 feet below tide level. This suggests that, at the Battery at least, it would be preferable to adopt the alternative design of having all the tracks at the same level. At Canal street I believe this arrangement would not save much depth, because it will occupy some 22 feet of height, whether it be designed to under-run the pipes as shown upon the present plans, or with a pipe-chamber extending entirely across under all the tracks, as a modification of the design formerly proposed for the Arcade Railway, which had some excellent features.

The design for placing all four tracks on a level, prepared under instructions from your Board, seeks to avoid all complications about pipes by driving a "roof shield" under them, at a depth of 7 feet and 9 inches below the curb, but the diagrams of cross sections on Broadway, prepared by the engineers of the Broadway Cable Railway, which have been obligingly shown to me, exhibit some of the pipe at a depth of 11 and even 12 feet below the surface. Probably the lowest of them could be raised, but it seems likely that the top of the four-track "roofing shield" would have to go at least 9½ feet below the surface, and that the total depth of the design would be some 22 feet, below the curb, instead of 20 feet as shown, with no provision for drainage at the bottom.

The weak point about the present plan for four tracks on a level, as it seems to me, consists in its proposed method of execution. It provides for the driving forward of a roof shield or hood, consisting of isolated iron beams with cover plates attached, sliding past each other, and supported by temporary posts resting upon the sand below. In clay or firm soil, this method, which is known as the "Needle" or horizontal sheet-pile system, has given good results, but I believe it to be inappropriate to sand of the degree of fineness revealed by some of the borings, especially when mixed with boulders. Much of it, it is true, is dry, coarse, sharp and gritty, and will retain a fair slope, but some of it is impalpable powder, produced by the grinding down of the gneiss rock, and will, when wet, assume a very flat slope.

There would be, in my judgment, very great danger of disaster, if the attempt were made to drive a roof shield through this sand, under the existing sewers, steam, gas and water pipes, subways and cable-road track. If a wet section were struck, and there are sure to be some wet spots from leaky pipes, to say nothing of those pipes which may be broken while driving the needle beams forward, the fine sand would run away like water from under the temporary posts which sustained the overhead shield, and the whole street might cave in, as well as some of the adjoining buildings.

Moreover, no provision is shown for counteracting the side thrust or pressure, due to the weight of the material and that of the adjoining foundations. The vault walls cannot be relied upon to resist this thrust, because they do not extend deep enough. There are on Broadway, up to Union Square, as shown upon the schedule compiled by your Engineers, not less than 270 foundations, which reach less than 15 feet in depth, and the excavations must go at least 10 feet below this, say an aggregate of 25 feet, while some of the house foundations are only four feet deep, and those of Trinity Church are only 9 feet 4 inches on the Broadway side.

I cannot advise the attempt to tunnel through this sand with nothing but a roofing shield. The risk would be too great and the difficulties too formidable to warrant the undertaking. The street must, as I think, be attacked either with shields inclosed all around or from the top, as is proposed for the double-decked design, in order that the excavations and trenches may be thoroughly braced or strutted across, and all movement prevented.

I fully concede that it is most desirable that the work should be carried on, if possible, without disturbing the surface of the street anywhere, and without interference with its traffic, but I doubt whether it can be accomplished throughout, within limits of cost which will not prove prohibitory. It may be done through certain parts, and under several stretches, and I am informed that several meritorious designs have been submitted to your Board which propose to accomplish this, but I believe that over a considerable part of the line, a certain amount of interference with the street traffic, by tearing up the pavement, will be part of the price which the public will have to pay to secure underground rapid transit. We can judge approximately what this will amount to, by the present experience in the building of the cable railway. I think that the annoyance need be no greater, because as soon as the trenching has been fairly started it can be covered over, and the street traffic carried, either upon rolling bridges, somewhat as proposed by the Arcade Railway, or upon a series of rolling platforms, as proposed for use in the City of Paris, France, and illustrated in "Engineering News," of December 13, 1890.

Such present interference with traffic will be much more than repaid in future years, if a pipe-chamber be provided now, by the permanent relief from the necessity of tearing up the pavement, in order to lay down new pipes, or to repair old ones. Along certain blocks, where a detailed study of the surrounding conditions shall indicate that it is not best to proceed from the surface downward, it may be advisable to tunnel through by some of the systems of inclosed shields followed up by a water excluding construction; but such systems are not only costly through wet sand and boulders, when properly proportioned to resist all thrusts and to avoid all possible disasters, but they are also ill adapted to providing for connecting tracks and sidings, so that it seems probable that on much of the lines the same methods will need be resorted to, by which the foundations of the existing buildings have been put in and carried down in some cases as low as thirty feet deep.

Bearing in mind these general considerations and the operating necessities which have been mentioned, the following are the various designs of construction which, with my present knowledge, seem to me most appropriate to the various portions of the section between the Battery and Union Square.

From the Battery to Beaver street I believe that the design of Mr. Worthen for a single track loop line, without pipe-chamber, is the preferable one to adopt. It goes down to a depth of but 13 feet 6 inches under the sidewalk, it covers but a length of 1,300 to 1,500 feet, and it can accommodate not only all the local trains, but also such of the express trains as it may be found advisable to run to the South Ferry.

Somewhere above Beaver street, the two additional tracks may branch out; but as I also approve of Mr. Worthen's design for a loop line around City Hall Park, in order to connect with the Brooklyn Bridge, and to enable the greater proportion of the express trains to reverse their direction without switching, I am not very clear whether it is best to introduce any stretch of double-decked structure below City Hall Park or to keep all four tracks on a level. By raising one pair of tracks from Beaver to Liberty street (1,700 feet in length), a double-decked structure could be carried for 1,500 feet, from Liberty street to Park place, but it would probably interfere with arranging the loop tracks in such manner that no train should cross at grade the path of other trains going in an opposite direction, a thing which it is most desirable to accomplish. As the street widens between curbs, from 34 feet 4 inches at Rector street, to 56 feet at Chambers street, four tracks on the same level would here interfere with the vaults but a portion of the way.

From City Hall Park to Clinton place, my present judgment is that the road will best fit its surrounding conditions if designed as a double-decked structure as proposed by Mr. Parsons, but with a pipe-chamber 6 or 7 feet narrower than the one shown on the plans prepared for your Board, and extending down to the lower tracks. It would be possible, within the limits of a one per cent. grade, to have a double-decked structure opposite Park place, and to bring all 4 tracks on a level at Lispenard street, in order to save depth at Canal street, but I believe I should prefer, if the latter location proves wet, to drive through it by means of closed shields and water-tight construction, rather than to change the design of the structure. At what other points it might be advisable to resort to closed shields, I cannot now indicate for want of sufficient data and study, but there probably are several. The double-decked structure as above indicated occupies a width within the side walls of some 37 feet. This is 13 feet more than the Reno tunnel system presented to your Board, which has some good features, and which, having no pipe-chamber, occupies a width of but 24 feet, but which goes down 38 feet in depth, instead of 25 feet, as required by the design made by your Engineers. The additional cost and risk involved by this additional depth of 13 feet will best be appreciated by builders and engineers, but I may say here that I think them to be very great.

The tracks within the double-decked design may be arranged in a variety of ways. An alternative plan naturally suggests itself as desirable in some cases; to place three tracks on a level and the fourth track centrally under them, thus providing a pipe-chamber under each outer track, and carrying the house-pipe connections either under the central lower track or up overhead of the upper tracks. This arrangement admits of connections between the three upper tracks, but produces complications at the stations. It may form part of the construction in the final plans, and is here mentioned, chiefly to indicate that it may not be wise to confine the specifications to "two tracks upon each deck," as this may cramp the design.

The pipe-chamber will need to be separately inclosed and ventilated, in order to exclude leaking gas from the passenger tunnels, and the latter should preferably be separated by strong partitions, both to confine each train to its own tunnel, in case of accident, and to improve the ventilation, as indicated by experience in the recently opened "City and South London" tunnels in England. The final drainage will need be provided for, by leading all water along sub-drains to pumps at suitable points, from whence it may be pumped by electric or other motors.

From Clinton place to Union Square, a distance of 1,600 feet, I believe the preferable arrangement would be to bring the tracks gradually to the same level, partly to diminish cutting in the rock, which here comes up towards the surface, but chiefly to provide for the junction at Union Square.

At this point, the four tracks from the lower part of the city are to branch out into four tracks on the west side and four tracks on the east side lines. To arrange for an interchange of trains and cars, and yet to avoid that trains going in opposite directions shall cross each other's paths at grade, it is preferable that all four tracks shall be on a level at Fourteenth street, whence by dividing them around Union Square, raising one pair and depressing the other, they may be passed over and under the connecting tracks as proposed by Mr. Worthen.

A series of side tracks under Union Square would much add to convenience in operating, and it may also be suggested that a loop line under the walks in Madison Square would permit many trains to be turned around bodily, and thus better apportion the train service to the volume of traffic.

How far the pipe-chamber should be carried, I am not quite clear, but my impression is that the public interest will be sufficiently served if it extends from the vicinity of Rector street to Union Square, this being the portion of heaviest street traffic, where tearing up of pavement inflicts the greatest injuries.

2d. From Union Square to Central Park.—In the vicinity of Union Square, the material to be excavated changes completely in character, rock comes near the surface, and so continues all the way to the upper part of the island on both projected lines. It is ragged and broken, full of pot-holes and fissures, and further surveys are required before it can be determined how it is best to attack it.

The character of the engineering problem is thus materially changed, and the argument heretofore advanced that it would be unduly risky to rely upon obtaining a firm footing for the temporary struts sustaining an overhead shield, is only meant to apply to the soft sand in lower Broadway.

There are, however, other considerations which seem to tell against the shield. There would doubtless be points where its roof would be near the division line between the earth filling and the rock, and the necessary blasting just under the pipes and sewers would be exceedingly dangerous. On the other hand, if the excavations proceed from the top downward, the progress through the rock would be intolerably tedious, and would keep the street torn up under temporary bridges a long while. It is my impression that the preferable plan above Thirty-second street would be to sink a series of shafts to the bottom of the desired excavation, and thence to tunnel and work up to the determined height, but before it can be known whether such a plan is feasible, it is necessary to ascertain just where the rock is situated. The rock is shown on your borings as far up as Thirtieth street, where it is 15.70 feet below the curb (being only 10.15 feet down at Seventeenth street, and deeper in between these points), but it is shown at various elevations on the water-pipe diagrams of the Broadway Cable Railway as far up as Forty-fifth street. From this information, which, however, I deem insufficient, I believe the parties who may undertake to build the lines over this section will prefer to adopt a double-decked design from some point above Union Square to the vicinity of Thirty-fifth street, and above this point, where Broadway becomes sixty feet wide between curbs to adopt the design for four tracks on the same level, up to the south end of Central Park.

A loop line under a corner of the park will be required to enable trains to turn around, and some side tracks should be provided in connection therewith.

Upon the East Side line the construction should preferably consist of a tunnel in the rock, for four tracks on a level, under the existing street car tunnel on Park avenue, which is itself partly in rock. Above Forty-second street, Viele's topographical map, which I have consulted, indicates that Madison avenue is built upon the rock, and through this a tunnel for four tracks on a level can be carried as far as Central Park.

3d. From Central Park to Manhattanville, or to Harlem.—From Fifty-ninth street, north, on the West Side line, there is a wide Boulevard, and the water-pipes are said to be under the sidewalks. I believe the preferable design over this section would be that of placing the four tracks on the same level, just under the pavement, both to make them more accessible to the public and to avoid striking those deep seated springs, which prove sometimes troublesome.

As there are two rows of trees on the central grass plot, as far up as Manhattan avenue, I would suggest dividing the tracks into two roadways, one on each side of the central plot, and placing the station-houses on the latter, while providing connecting tracks and side tracks at convenient points.

The material is chiefly rock, very close to the surface, but accurate surveys will be required to determine whether it will be preferable to sink shafts to the bottom of the excavation and drift horizontally with a heading, to be carried eventually to the top or to proceed from the top downward through the earth covering, and thence into the rock.

On the East Side line the material appears to be chiefly rock, and through this the surveys authorized by your resolution of July 22, 1891, will probably show that it is best to drive a tunnel for four tracks on a level as far as Ninety-sixth street, where the viaduct specified is to begin.

4th. From Manhattanville to One Hundred and Eighty-first street, West line.—From Harlem to Morrisania, East line.—From Manhattanville to One Hundred and Eighty-first street there are no trees or grass plot in the centre of the Boulevard, and there is, as yet, very little street traffic. I believe therefore that the four tracks on the same level may be brought close together in the centre of the street, spreading them apart where sidings are required, and providing also branch lines to private property upon the hillside which is skirted by the Boulevard, so as to admit of surface sidings, loop tracks, storage yards and machine shops upon land to be purchased for such purposes.

I believe that the work upon this section can be carried on from the surface downward without material interference with the street traffic.

It may be well to consider whether, in order to save present outlay, it would not be judicious to build only two tracks at first on this section, over which trains could run as locals as far as Manhattanville, and as express trains below that point, until the increasing business warranted the building of the other two tracks.

Upon the East Side line, little can be said in advance of the proposed surveys; some of the remarks to be made hereafter concerning the West Side line north of Harlem river may also apply to the Morrisania sub-section.

5th. From One Hundred and Eighty-first street, or from Morrisania to City limits.—North of One Hundred and Eighty-first street, or of the Harlem river, the country is so broken and the present business is so thin that the problem is reduced to that of building an ordinary surface line, which shall be cheap enough to pay. The cost of the line as now located can be largely reduced by additional surveys, but even then, it seems to be a question whether there is enough traffic now to warrant building the road which will eventually be required.

Business might first be developed by an ordinary surface suburban electric road, with steep grades and crooked line, so as to fit the ground. Such roads are now operated elsewhere some of them with curves of 50 feet radius and gradients of 10 and even 14 per cent., at speeds of 7 to 10 miles per hour, at a cost less than that of animal power. They can be used as pioneers first and as feeders afterwards.

There not having been time to make surveys on the East Side line since the passage of your resolution of July 22, 1891, there are no data at hand to discuss the location or the character of structure most appropriate to this portion of the northern section.

#### EQUIPMENT.

Concerning the rolling stock, I agree with the views presented to your Board by Mr. Parsons, that the running of ordinary passenger coaches need not be provided for upon your projected lines; also that it is possible to construct cars which shall stand somewhat lower than the cars in standard use. Being apprehensive, however, that they might be rather cramped if designed to run in a tunnel 10 feet high, I have assumed a minimum height of 10 feet 6 inches in my estimate of the depths of the structures.

I also quite agree that the cars should be closely vestibuled, and shall be entered and left from the sides, as is the practice in Europe. It might be well, in addition, to provide the doors with a joint locking bar, under control of the trainmen, in order to prevent the opening of those doors while the train is under motion, and possible accidents.

I also wish to commend the proposal of Mr. Parsons to locate gradients on the approaches to local stations, wherever it is practicable to do so, in order to assist the trains both in slowing up on arriving, and in getting rapidly under way on departing.

The tracks will have to be upon metal supports, with some cushioning arrangement, and of massive proportions.

To recapitulate: The varying character of the structures which seem to me, from present information, most appropriate to the several sections of your proposed lines, is as follows:

1st. From Battery to Union Square, 2¾ miles.—Single track loop to Beaver street, thence with 2, 3 or 4 tracks on the same level to City Hall Park, thence merging into 4 tracks double decked, thence double decked to Clinton place, thence merging to 4 tracks on a level at Fourteenth street, thence in pairs around Union Square, in tunnels about 11 feet high, raised and depressed to effect junctions of lines without grade crossings. A separate pipe-chamber being provided if required.

2d. From Union Square to Central Park, 4½ miles of line.

West Line.—Starting with four tracks approximately on the same level, but changing to double decked partly in rock, to be merged into two separate tunnels for two tracks each on same level, in the vicinity of Thirty-fifth street; thence to continue in rock tunnels, straddling the cable railway as far as it goes, and thence to Central Park.

East Line.—Four tracks on the same level, in rock tunnel under Park avenue to Forty-second street, and thence under Madison avenue to Central Park.

3d. Central Park to Manhattanville or to Harlem, 7 miles of line.



West Line—Four tracks on same level, in pairs, in rock tunnels about 11 feet high, on each side of central grass plot.

East Line—Four tracks on same level in rock tunnel, to Ninety-sixth street.

4th. Manhattanville to One Hundred and Eighty-first street, Harlem river to Morrisania, 5 miles of line.

West Line—Four tracks on same level, in rock tunnel under centre of Boulevard.

East Line—Surveys not yet made.

5th. From One Hundred and Eighty-first street or Morrisania to city limits, 9¾ miles of line.

West Line—Ordinary surface railroad.

East Line—No data at hand.

This considerable diversity of structure results from the extreme complexity of the problem which your Board is making an earnest effort to solve. Not only do the ground and materials vary, but the problem involves the observance of diverse elements: to lay down specifications for the building of a four-track railway in a space which at many points is only wide enough for three tracks; to protect the property-owners from undue encroachments; to make sure of the absolute safety of the works, and of the adjoining buildings and foundations, both during construction and subsequent operation; to take due care of all sewers, water, steam and gas pipes, as well as electric subways; to guard against obstruction to the running of street and cable cars; to prevent all avoidable interference with the street traffic and access to business places; to protect all sorts of public and private interests, and to consult all sorts of people.

This seems sufficiently complex and formidable, but in addition thereto, the capitalists who may contemplate acquiring the franchise will inquire whether the problem has been solved in the most economical manner, and may propose some changes either before or during construction, which, with due regard to other interests, shall reduce the cost at certain points.

Whether the suggestions herein made, as to the character of construction required at various points be approved by your Board or not, it is clear that there must be considerable variety of structure and arrangement over the several parts of the line. I therefore believe that your Board will reach the conclusion to lay down its requirements only in a broad and general way, and to provide in its design that the specific details shall be approved or disapproved as the working plans are prepared, or as necessity thereafter arises during the execution of the work.

It would doubtless be preferable to have one single typical plan, easily understood by all, which could be carried out on all parts of the line under conditions admitting of no encroachments and no disputes. Unfortunately the problem is too complex and contains too many divergent elements to admit of this, and the construction must be varied to adapt it to the configuration of the grounds, to the materials encountered and to the surrounding circumstances.

It is evident that working plans cannot be prepared now, but after the general views of your Board have been ascertained, your Engineer Department will need to prepare some plans showing approximately how the difficulties of construction and operation can be met at the more important points, and also to gather many data, such as the exact location of the vaults and adjoining foundations, the position of water saturation from the land drainage, and more especially the position and characteristics of the rock above Union Square, to serve as a future basis for the working plans; all these being data which the capital which may be invited into the proposed enterprise will want to consider, and cannot gather for itself in advance of the award of a franchise.

There will also be need of rigid specifications as to the precautions to be observed in carrying on the work; for much, very much will depend upon the skill and care with which it is conducted, so that the average contractor, skilled only in surface operations, might fail when dealing with underground work and water. A certain latitude may be allowed in the designs, but there should be none in their strength and safety.

Your Board has already reached the general plan and conclusion that the lines shall be underground; it needs only to indicate in a general way how this can be carried out in different parts of the city.

Respectfully submitted,  
O. CHANUTE.

#### EXHIBIT 5.

Report of Joseph M. Wilson.

PHILADELPHIA, PA., September 2, 1891.

To the Board of Rapid Transit Railroad Commissioners for the City of New York:

GENTLEMEN—In response to your communication of July 30, requesting my examination and opinion on the Rapid Transit plans for the City of New York as submitted by Mr. W. E. Worthen, Engineer-in-Chief of the Commission, and Mr. W. Barclay Parsons, Assistant Engineer, I have the honor to report as follows:

Your communication states that said opinion is to comprise "not only approval or disapproval," but "such general discussion and such suggestions as to alterations or additions as might in my judgment be regarded as necessary or desirable to accomplish in the best manner possible the objects sought to be attained, upon the routes and general plans outlined" in the resolutions accompanying your letter.

The resolutions concerning the rapid transit system, as agreed to by your Board, are very comprehensive in their character and confine the subject within certain well-defined limits. The fact that the Municipal Council of Paris has lately voted in favor of a subterranean system of railways for rapid transit in that city, cannot but strengthen your own position in this matter, and the prejudice of the public in reference to underground service will be very much modified by the use of electric motors, the absence of all smoke and dirt, and clean, bright surroundings.

The lines of road, as shown by your plans, appear to have been located with good judgment for the best interests of the public, and are capable of future extension by branch lines whenever business interests or the future growth of the city may require it. In this relation the design adopted for the road should be that which (unless outbalanced by other considerations) allows the best facilities for connections with branch lines. These connections should be made without grade crossings. In the double-deck system, the tracks would require to be lowered to a considerably greater depth below curb grade to accomplish this than in the four-track-level system. The original depth of track is greater; and in addition to this, the pipe gallery which has to be passed, extends about three feet three inches below the upper-deck track, and might in the future be made still deeper, if it were necessary to increase pipe accommodation, as Mr. Parsons thinks probable.

The approximate excess of depth required in the double-deck system over the four-track-level system, for avoidance of grade crossing, is between eight and a half and nine feet. This excess may become an important factor in the construction of the road, depending more or less on the location involved. No plan has been presented for a branch connection on the double-deck system, but the obvious method of procedure is the same in both cases. Mr. Worthen shows a plan for the branch at Union Square, which I would criticize as having in it two grade crossings. It is true that these are for local and express trains in the same direction, and it may be said that the one on the north-bound tracks can be governed by the station just south of it, which would be a stopping place for all trains, while that on the south-bound lines can be controlled by block signals. It is possible, however, by a simple arrangement of tracks to obviate both of these crossings, thereby increasing by so much the safety of trains. The accompanying tracing shows how this may be accomplished, at the same time allowing the switches to be placed closer to the Fourteenth Street Station and more under command.

No plans are shown on the double-deck system for terminal arrangements at the southern end of line, but on inquiry I was informed that a loop system would most likely be used. No matter what type of construction be adopted, the looped track seems to be the only feasible arrangement for a successful rapid operation of the line at this terminal. It is of course applicable to either plan submitted, but in the double-deck system, the very considerable depth of track grade below high water, would under any circumstances render it desirable, in my opinion, to change the type of construction at this point to the four-track-level system. The same reason would render a change desirable at Canal street, and Mr. Parsons has so suggested himself.

With a four-track system running north from City Hall, and the accretions to the number of passengers at this station and others beyond it, I am of opinion that two tracks, as proposed by Mr. Worthen, would be sufficient for that portion of the line below City Hall, and taking into consideration the increased difficulties of construction on this part of the line, I think it would be wise to carry but two tracks from the City Hall to the Battery. There would probably be only three stations needed below City Hall, all of which would be for both local and express service.

In this connection, the two tracks stopping at City Hall require a loop for proper operation, and Mr. Worthen has taken good advantage of the opportunity to extend the service to the west end of Brooklyn Bridge, by adopting what appears to be the only feasible location for the loop, thus giving accommodation at a needed point, with very little outlay for construction, beyond what is necessary in order to allow an efficient operation of the road. It is possible that a branch service may some time be needed from City Hall out in the direction of East Broadway, thence northward and returning to join the main line at Union Square. For this the Brooklyn Bridge loop will become directly serviceable.

The arrangement adopted by Mr. Worthen, of placing the track beneath the sidewalk on lower Broadway, is a good one. It would appear to me, however, that unless there are obstructions with which I am not familiar, it would be preferable to place the tracks not together, but one under each sidewalk, even at the extra expense of double stations, as this will allow the track to be kept at a minimum distance below the surface, regulated only by the pipes it may be necessary to pass under at the cross streets, which in this location, are probably smaller and less in the way than further uptown.

I am not personally familiar with the New York law on the subject of pavement vaults, but have been informed that owners have only the right of possession by virtue of a small payment per horizontal square foot of vault space made to the City, which right, except five feet allowed for light areas, can be revoked at pleasure if the City desires the use of the property. Also, that such vaults

can be condemned for use by a railroad corporation, valuation to be fixed by a jury in the usual way, and that they are not considered, as a rule, so valuable a franchise as formerly. Therefore, should it prove to the advantage of an underground road to make use of a portion or all of the side pavement vaults, reserving 5 feet in the upper part for light areas, the question of giving consideration to a partial obstruction of these vaults does not appear to me to be a very important one. So far as the data furnished shows, this obstruction will be very little above the City Hall, except where the space is needed for stations, or where a special obstacle must be passed, such as the deep sheave-pit of the cable road between Thirty-sixth and Thirty-seventh streets, shown by Mr. Worthen on Section E.

More or less underpinning and strengthening of foundation walls will, in any case, be needed: a question that will require very careful study. An examination of a partial list of the buildings on Broadway, from the Battery to Forty-second street, which has been furnished me, giving the depths of foundations on each side of the street, shows many cases in which there are evidently no vaults under the side pavements, and a large number of buildings, the walls of which will require, under any circumstances, more or less underpinning. Underpinning can be successfully accomplished, and I have had, myself, some very difficult work of this kind done, where walls 50 feet in height have been underpinned with 7 to 8 feet of foundation, and have afterwards been increased to 100 feet in height without showing any visible cracking or settlement; but such an operation is one requiring great care, with more or less risk, and it is expensive. In this respect the four-track-level system possesses a great advantage over the double-deck system, in that it does not go to so great a depth for foundations by about 5 feet, and the consequent risk and expense of construction will not be so heavy.

In reference to dealing with the pipe and wire systems now occupying the ground under the streets, it would appear to me not expedient that a rapid transit railroad company should be burdened with the expense of providing a pipe gallery and a rearrangement of all of the pipes and wires in such gallery, if it can be avoided.

While admitting the advisability of such a gallery, the great advantages that the City, the gas and electric-light companies receive from it; the preservation of the street surface intact, etc.; I do not think that the cost of such work should be placed on the railroad company.

Now, the four-track-level system accomplished the construction of the road without going to so great a depth by about five feet as the double-deck system requires, and without causing disturbance of the present pipe system. At the same time, the four-track-level system allows of the construction of pipe galleries over it whenever in the future, the wants of the City, or the needs of the gas and electric-light companies may demand it, without requiring any depression of the rail level below what is given in the present plan. These galleries may be only on each side of the centre, leaving the large water-mains undisturbed, or they may extend the whole width of the railway, with a clear height of say five and a half to six feet, and would be quite ample in extent for all possible wants. They would, moreover, afford every facility for cross street and house connections, which while arranged for in the case of the double-deck system, are not in my opinion, entirely satisfactory or properly accessible for repairs or additions. The lowering of a pipe, or the undue exposure of a workman might be the cause of a serious accident. The railroad company should have exclusive control of its right of way, and be put beyond the chance of any interference such as this arrangement might cause.

The Commission has shown proper judgment in fixing definitely a four-track level system for those parts of the lines above Forty-second street, and Mr. Worthen's plans appear to meet the general requirements very well. I should favor a four-track system all the way through, or at least provision for such being put in ultimately. I should not favor building the viaducts for three tracks, as suggested by Mr. Worthen.

In regard to the proper cross-section for the tunnel, ten feet clearance in height is sufficient. Cars can be designed eight feet six inches in width and of height to pass through this clearance that will meet all requirements. Ridge ventilation of cars will not be required, and a system of ventilation suggested by Mr. Worthen, of taking air in the front of the train while in motion, can, by proper control, be very effectually carried out. The cars should be of steel, the windows fixed.

As it will be necessary to allow track inspectors and workmen in the tunnel, means must be provided for their safety from passing trains. In the four-track-level system a space of about four feet in the clear should be allowed between cars on the centre tracks, and men standing there when trains pass can cling to the columns, which are placed about four feet apart longitudinally. Refuge niches should also be built in the side walls at regular intervals, say one every ten to twelve feet; these niches to be about two to two and a half feet in depth, say four feet wide and sufficiently high for a man to stand, having also a little iron hand-rail on each side to hold by. As the tunnel will be electrically lighted from end to end, an incandescent light could be placed over each niche, showing at once its location. These niches can be built into the regular thickness of the wall without materially adding to its expense. The double-deck system shows a foot walk two feet in width over the sewer next to the side wall, which is provided as a passageway, but this would not be safe in a tunnel without refuge niches. The windage from a rapidly running train, particularly in a tunnel, is very strong, and a person would run great risk of being drawn in against the train if walking on such a footway.

The structural details of the cross-section of road as given by the plans, are shown more fully in the drawings for the double-deck system than in those for the four-track-level system. But in either case the treatment is only general and not in condition for criticism. Very considerable study and calculation would have to be bestowed on the plans and detail drawings prepared, giving sizes and weights of parts, before reliable estimates could be made from them. I see nothing in either plan, however, that is not capable of being worked up and actually constructed.

In fixing an assumed load as a basis for calculation in preparing the preliminary designs, account has very properly been taken of the risks to which the structure might be exposed from the impact of heavy loads, and perhaps of falling walls in cases of fire to adjacent buildings, etc. On the Boulevard and on the upper sections of the line where the streets are very wide, and where there is little or no warehouse loading, these conditions do not apply as they do in the narrow streets and built-up parts of the city, so that for these portions the load might very well be modified, resulting in some saving of cost.

The great mass of earth over the tunnel, in the case of the four-track level system, will very considerably modify and reduce the effect of impact from live loads, but the dead load to be carried is so much greater in this case that the assumed total load should be about the same. I understood Mr. Worthen that he has assumed 2,000 pounds per square foot for his loading. With this assumption, 15-inch beams are not heavy enough for 22-feet spans. They should be 20-inch or an intermediate column be introduced. I should prefer the latter as it would aid in distributing the load on the foundations.

I note that the spacing of girders in the double-deck system is controlled by the details of the cable railway. Otherwise, I should have much preferred that the girders be placed closer together and the size of buckled plates reduced. With the large assumed load these plates would have to be quite heavy if 4½ feet square. Under the same loading I think it will be found that a deeper longitudinal girder will be preferable under the pavement curb at stations. The span is 18 feet, and the amount of metal required in the flanges of a girder of the depth given is considerable, and not easy to dispose of satisfactorily and at the same time make a presentable appearance. These are all mere matters of detail, however, which do not affect the general question.

In reference to stations, the depth of platform floor below the curb grade of street is such in the four-track level system that it comes within your prescribed limit of 20 feet, and elevators will not be required; but for the double-deck system elevators will be necessary as an adjunct to reach the platforms for express trains. In this difference of level between platforms and street, which fixes the amount of stairway, the double-deck system favors the local traffic at the expense of the express, while the four-track level system provides a mean descent between the two extremes and accommodates all alike. The latter, with its single platform, also gives better facilities in the transfer of passengers between local and express trains in not requiring them to walk so far or to use the stairways.

Stairways in stations should in all cases be made broad and easy in the going, and if room can be obtained, they should have the steps not over 6 inches rise, by 12 or 14 inch treads. In the sketches of the two systems submitted, the stairways and platforms in the double-deck system are much the best. With the amount of business expected on this line, the platforms of stations in my opinion, should not be under 15 feet in width. Some of the plans for stations on the four-track-level system show platforms considerably less than this, and there is apparently no difficulty in the way of increasing them to the above minimum limit. In most of the sketches shown for stations on this system, the stairways and columns are placed uncomfortably near to trainways, causing great risk of accident, and also possible interference with car exits. They should be designed with a minimum clearance of at least 3 feet, and as much more as possible. The arrangement of stairways as shown on Section K, with a little increase in width of platform, would accomplish the object.

Your intention to provide entrances to stations, in buildings purchased or erected for the purpose, is an admirable one, giving thorough protection to the stairways from the weather and allowing proper provision for ticket offices, toilet rooms, etc. The under side of the sidewalk over the station should form the ceiling, giving as much height to the platform corridor as possible, and adding to its spaciousness; frequent pavement lights should be introduced, the walls lined with glazed tiles, and every effort made in the way of painting and decoration, to give brightness and cheerfulness to the general effect.

I am of opinion that in the four-track-level system it would be best to deflect the local tracks at all stations, whether local or express, and to adopt "island" platforms. This arrangement will completely satisfy any questions in the modification of the service, by allowing local to be changed to express stations at will, and either track to be used exclusively for all service; say at night when the number of trains is reduced; or in case an accident occurs, blocking one track; or should extensive repairs be needed. At stations which are only local, the express tracks can be separated by a division rail, which can be arranged so as to be readily removed when desired. The divergence of tracks at stations I do not consider a matter of any importance. Curbs would be introduced in the alignment of a road without hesitation if a change in direction of line were desired;



local trains must stop at all stations, and for safety, an absolute block system will of course be used with signals at every station at points where they can be seen, taking into account all questions of curvature.

**Ventilation**—By the employment of motors, such as will not affect the purity of the atmosphere, the question of ventilation is very much simplified, and will require but little artificial aid to render it entirely satisfactory. The piston principle is not, in my opinion, either an essential or effective method for the purpose. I would prefer leaving the whole tunnel open, ventilating the cars by a regulated admission of air at the front, as suggested by Mr. Worthen, and the use of exhaust fans placed midway between stations. This is the proper point from which to draw the foul air, and the fresh air will enter at the stations, where ample openings should be arranged for the purpose, as fans will not exhaust unless fresh air is freely supplied. This arrangement prevents the accumulation of foul air at the stations.

The construction of a tunnel under Broadway by any method that may be adopted, will be a difficult operation requiring great care and foresight, with skill and ability to meet exigencies as they arise, many of which it will be impossible to anticipate.

A personal examination of the present condition of Broadway from the Astor House to Fourteenth street, during the construction of the cable railway, has satisfied me that the question of interference with the use of the streets, in the building of any line, is one of the first importance, and that in adopting a method of construction, this matter should receive a very prominent consideration. The injury to business, private and public, from such a condition of affairs as has existed in Broadway lately is one that cannot be estimated, but must be enormous.

Of the two schemes now presented, the four-track-level system, laid below the gas and water pipes, offers very considerably less obstruction to traffic in the streets than the double-deck system. Omitting the stations, the only work which has to be done on the surface is the building of the longitudinal side walls, and these will create no disturbance except for a narrow width on or close to the sidewalks. After these walls are put in, the surface can be restored to its original condition and need not be disturbed again.

Mr. Worthen's plan for longitudinal excavation under the streets is feasible and practicable. There may be certain points, as at Canal street, where open excavation must be resorted to, but these will be very few.

I do not see how the double-deck system as proposed, or any other system where the structure comes close to the surface of the streets and interferes with the street pipes, can be built without very largely disturbing the street traffic.

This difficulty is not peculiar to the double-deck system. That type might be laid below the street pipes, but, in such event, it would involve going to so great a depth that other difficulties would be encountered; and those already indicated, owing to the present excess of depth over that required by the four-track-level system, would be largely increased.

Any system of construction worked from the streets is liable to very considerable interruption and damage from surface water accumulating in times of storm. The present work on the cable railway gave, at Fourteenth street a short time since, some little evidence of what this might amount to. This difficulty would not occur in underground work, and so long as the grade is kept above tide, I believe the tunnel would be free from water.

In any system of construction near the surface, the care of gas and water pipes and their rearrangement in a pipe gallery would be a much more serious question in my mind than might at first be supposed. The work of excavating and building must be prosecuted among these pipes, which may be met with at most unexpected places, often interfering with the proper placing of beams or columns; the pipes must be temporarily supported by timbering for long distances and for a very considerable length of time before new pipes are placed and put into use, and in every way the risks are very great. A sudden rain flood may come, washing out or settling temporary supports and causing in consequence, breakage, leakage and untold damage.

In Mr. Worthen's system of construction, the permanent work follows the excavation so closely, and this excavation is carried on in such a manner, that risk of settlement, and breaking or leakage of pipes is reduced to a minimum.

At stations, very considerable work must be done, under any circumstance, from the surface of the street, but even in this case the adoption of a type of construction which goes below the pipe systems, has a great advantage in confining the work to the sidewalks.

I think that Mr. Worthen's proposed method of excavating transversely from the curb-line will require more study and elaboration before it can be practically applied. The manner of proceeding as described by Mr. Worthen for this mode of working, is not so clear to my mind as in the case of the longitudinal method, and I think that more timbering and temporary shoring will be needed than he appears to contemplate, although the execution of the work is practicable and can be accomplished. I should favor the employment of the longitudinal method as much as possible, and would only make such amount of transverse excavation as just sufficient to start the longitudinal shields.

In conclusion, I desire to give my opinion in favor of the four-track-level system essentially as submitted by Mr. W. E. Worthen, Engineer-in-Chief of the Commission, with such modifications in detail as I have suggested, for the following reasons:

- It affords better facilities for connection with branch lines.
- It interferes less with foundations of adjacent buildings.
- It does not disturb the pipe and wire subway stations at present in existence, or their connections with buildings and cross-streets, and at the same time it permits them to be readjusted and placed in galleries in the future, if desired, on an entirely independent basis from the railway system and without any interference.
- It gives better facilities at stations for transfer of passengers.
- It is capable of being better ventilated.
- It affords better facilities for construction, with much less obstruction to street traffic.

Very respectfully submitted,

JOS. M. WILSON, Consulting Engineer.

#### EXHIBIT 6.

Report of Theodore Cooper.

THEODORE COOPER, CONSULTING ENGINEER,  
No. 85 BROADWAY, NEW YORK, August 22, 1891.

#### REPORT ON RAPID TRANSIT PLANS.

##### Rapid Transit Commission, New York:

GENTLEMEN—In accordance with the instructions contained in your communication of July 30, I have made a careful study of the plans prepared by the Commission's Engineers, Messrs. Worthen and Parsons.

In connection therewith the route has been gone over. All the records and data bearing upon the character of material to be passed through; the pipes, sewers and conduits under and across Broadway; the character of the buildings along the route and their foundations; and such other features as would bear upon the solution of the problem before the Commission, have had careful examination and consideration.

Messrs. Worthen and Parsons have rendered great assistance in the examination of this question. They have placed at my service the results of their more extended study of the problem and have freely discussed the merits and deficiencies of the proposed plans and suggested changes and variations of the same.

Mr. Worthen's plan contemplates a double track line from the Battery to City Hall, the tracks forming a loop at the Battery.

From City Hall to Spuyten Duyvil the road will consist of four tracks. All of the tracks are arranged, practically, upon the same level. The outer tracks are to serve for local trains and the inner ones for express service. Below City Hall his arrangement of tracks requires the vaults on the east side of the street to be taken for use of the railroad. The roof of his tunnel is placed at a depth of about 8 feet below the street grade in order to pass clear of the existing street pipes. The roof is formed of wrought-iron girders and a plate-iron covering, supported on a central iron column and masonry side walls.

He proposes to excavate the tunnel by the pole system of tunneling and afterwards to protect the surfaces of the iron which are in contact with the earth covering, and also to make the joints water-tight by injecting a preparation of coal tar or similar material. His station platforms are placed between the tracks and are reached by a subway from the adjacent house which will be used for the passenger station.

Mr. Parsons' plan contemplates a four-track road from the Battery to Spuyten Duyvil. The four tracks are arranged in pairs close to the curb-line on each side of the street, one track being above the other in each pair. The upper tracks are intended for local trains, and the lower ones for express service. Between these pairs of tracks, under the centre of the street, a central gallery or passage is provided for the water, gas and other pipes, electric conduits, etc. Provision is made in the tunnels for the express service for carrying a small sewer pipe for the house service of each block, such pipes being diverted into the side street at each cross street.

The station platforms are placed beneath the sidewalks and are reached by a sub-passageway from the adjacent house.

The track tunnels and the pipe gallery are covered with wrought-iron girders and buckle plates, supported upon wrought-iron posts and masonry sidewalks.

The iron covering of the track tunnels is immediately beneath the street paving and the roof of the gallery close beneath the cable railroad construction.

The concrete covering placed over the buckle plates for their protection serves also for the concrete foundation of the street paving. He proposes the following method of construction: Open one side of the street at a time and build in a narrow trench the side wall; then widen the trench for a distance of 12 feet, put in the foundation concrete and iron work for the tracks; then slip

across beneath each cable-road cast-iron yoke the cross beams that would support them. In the meantime holding the sand-filling in the centre of the street, by planks supported by shores against the side wall. In this manner the work at each side of the street is completed without disturbing but a portion of the street at a time.

The material from the central gallery is then removed from below, through the side tunnels already constructed.

In consideration of the breadth of the instructions of the Commission, that "the plans are submitted not only for approval or disapproval, but for such general discussion and such suggestions as to alterations or additions as may in your (my) judgment be regarded as necessary or desirable to accomplish in the best manner possible the objects sought to be attained, upon the routes and general plans outlined in the above resolutions of the Commission"; I feel at liberty to place before you the views reached, after such a study of the general problem and the known data, as the time placed at my disposal would allow.

While the carefully studied plans submitted by Messrs. Worthen and Parsons have been of great value in bringing out the difficulties to be overcome and in suggesting various means of avoiding or overcoming such difficulties, I am not able to give my approval to either plan in its entirety.

I fully agree with Mr. Worthen, that a two-track road will be ample to do all the passenger service for this system below City Hall.

There will be more passengers taken on at the City Hall station than at all the stations below that point. It would therefore appear as unnecessary to run more than one-half of the trains below this point. Relatively, the capacity of these two tracks to handle the traffic below City Hall will be far greater than four tracks at points above City Hall. The stations below City Hall will undoubtedly all be used as both local and express stations, so all trains would run as "locals" over this portion of the system.

The greatly increased difficulties of construction over this section, due to the narrower street widths, the crowded traffic thereon, the more important structures along the route, and the undoubted existence over most of this section of more or less treacherous quicksands, all emphasize in my opinion the desirability of restricting the tracks to the minimum number which will make the system a well-balanced one in capacity.

For constructing such a two-track road over this section, it does not appear desirable or necessary to occupy the vault spaces for other than station purposes.

Their use would be likely to engender unnecessarily the opposition of the owners or users of such vaults. I am also inclined to believe that such occupancy would make the work more difficult, tedious and expensive.

I do not approve bringing the iron covering of the tunnels in direct contact with the material of the street above, more or less saturated with corroding liquids leached through from the street surfaces; nor do I believe it possible to properly protect such iron surfaces from corrosion, by the injection of any kind of metal preservative.

The pole system of tunneling proposed by Mr. Worthen for driving his tunnels beneath the existing system of pipes, etc., without disturbance to the sand above or the street pavement, does not meet my approval; both on account of the impossibility of protecting the iron covering from corrosion and also as involving undesirable risks.

I think very favorably of the arrangement of the four tracks in double tier, as suggested by Mr. Parsons for certain portions of the route.

I do not, however, approve of the central gallery for carrying the pipes, nor the admission of the sewer pipes within the track tunnels. If it be considered desirable or necessary to provide a subway or pipe gallery, it should be, as far as practicable, entirely independent of the railroad system; it could be placed at one side.

All gas-pipes should be carried in a special conduit near the surface of the street, where it could be freely ventilated without connection with any other conduits or tunnels. Air mixed with about ten to fifteen per cent. of gas is a very powerful explosive. However well gas-pipes may be fitted to prevent leakage, a careless connection for house service or a leak caused by any accident or neglect, might readily produce an admixture of gas and air in a subway or tunnel that would be appalling in results, should it reach a point where the electric sparks from your motors could ignite it.

The sewer-pipes shown on Mr. Parsons' plan, adjacent to the express tracks, not only occupy space needed for proper track repairs and maintenance, but are objectionable from possible leakage and falling of the tunnels.

Upon neither plan submitted, is suitable provision made for cross-overs or side tracks. The central gallery on Mr. Parsons' plan, cuts off all communication between the up and down tracks of both local and express lines, by means of such cross-overs or turn-outs.

In like manner, Mr. Worthen's arrangement of his four tracks upon one level does not permit ready interchange between the outer tracks of his system.

In my opinion, it is essential to the successful operation of any system of rapid transit, to have, at suitable intervals, cross-overs between the up and down lines of both local and express service, and also at important stations, at least, one middle standing track.

Without such adjuncts to the system, the traffic becomes completely blocked by a disabled train, broken track or other accident at any point on the line.

With them trains can be kept moving over all other parts of the system, and relief to the whole system obtained much more quickly. The necessity of handling promptly a concentrated traffic at any important station, also compels the use of extra tracks and cross-overs for train operations.

The method proposed by Mr. Parsons for constructing the tunnels has the merit of finally disposing of all the pipes, etc., and making Broadway a completed street, free from future excavations. It also provides a satisfactory method of protecting the iron covering of his tunnel by a layer of concrete, etc.

The great injury to the business interests of the whole city, by opening up Broadway in the manner proposed and the risks of excavating to such great depths over so long a route, render it desirable to employ some other method, if one can be devised to accomplish the desired purpose without such inconveniences and risks.

If the changes, which I consider necessary and desirable, are made in the plans submitted, the methods proposed by both your Engineers would necessarily have to be modified to meet the new conditions.

Neither of the plans submitted provide sufficient room for the purposes of track repairs and maintenance, nor for the safety of the necessary track and patrol men.

Upon such a system as is proposed, with trains traveling at high speeds and at frequent intervals of time both day and night, occasional places of refuge for the workmen, as is the general custom in long tunnels, will not be sufficient. They will have only short intervals of time between trains to do necessary repairs, and no time to seek safety, by going to any special place of refuge. There must be sufficient room at all points for the workmen and their tools. The safety of these men and the possibility of their performing their duty is a matter of vital importance to the traveling public. If their safety is rendered a matter of doubt, it will be impossible to keep the system in that perfect condition necessary for safe operation of trains. Four feet clear of the car body is the least that, in my opinion, should be allowed for the safety of the workmen. A less space would not be sufficient to allow them to stand clear of the moving train, and resist the in-drawing effect of a train traveling at a speed of thirty to forty miles per hour through a tunnel.

The vertical depth occupied by the cars proposed by your Engineers has also been reduced below the customary heights of cars in ordinary use, by the selection of a low form of truck and by cutting off a portion of the monitor roof of the car.

Departures from tried and accepted forms of car bodies and mechanism and the making the success of a great system of rapid transit dependent upon the satisfactory results of such changes, should only be done after a most careful investigation.

The main objection which occurs to me in reference to the low track is the increased difficulty of access for inspection and repair. The ready inspection and repair of the trucks is a matter of very great importance, and especially upon a system which will be worked to its maximum capacity almost constantly.

The monitor roof is essential for the proper ventilation of the cars. However well vented the tunnels may be, there will be the same need for a proper ventilation of the car itself as if the car were in the open country.

Having thus freely criticised the plans submitted, and having pointed out such changes as are, in my opinion, essential to the success of the project, and as many of the changes are radical ones, I will point out the manner in which these changes can be made and the work executed with the least inconvenience to the public, and with the minimum of risk.

I would make the line from the Post-office to the Battery a double track line only, forming a loop at the Battery, with provision at this point for such additional tracks as may be desired.

These two tracks to be on the same level and spaced far enough apart to allow a central passenger platform at stations; all occupying as near as may be the central portion of the street, and below all pipes and conduits. This arrangement will allow a sub-passageway from the station building immediately below the pavements, for access to the central station platform, by removing the pipes on one side of the street.

Immediately above the Post-office, along and under City Hall Park, I would insert one or more central standing tracks, with cross-overs connecting them to the up and down tracks. By means of these tracks trains can be carried either entirely around the loop at the Battery, or cut out and despatched on their return, directly from the Post-office station, similarly to the operations of the Manhattan system at Rector street.

All of this portion of the line, from the Battery to the upper end of the City Hall Yard to be common to both local and express trains. This will make all stations on this line, both local and express, as would be justified by their importance.

At the upper end of this City Hall Yard, the two main tracks would branch into four tracks, two for express and two for local traffic, for all points north of the Post-office. The two inner of



these four tracks would be gradually dropped down, and the two outer drawn together until they could be brought into the double tier-form suggested by Mr. Parsons. They continue thus in double tier until it becomes necessary to flatten them out into four tracks upon one level, in order to pass beneath Canal street with a minimum depth. After passing Canal street, they are again brought into the double tier form and continue thus to near Twelfth street.

At this point the four tracks are again spread out to one level and dipped gradually down until they pass completely into the rock, with sufficient rock roof to protect the street system above, and to enable us to pass under the parks at Union and Madison Squares, without injury to those parks.

Advantage can be taken of the arrangement of the four tracks in double tier to make connections between the up and down tracks of both the local and express lines by cross-overs; and where the tracks are upon one level, connections between the local and express lines can readily be made. At Union Square, the junction between the west and east side lines can be made without any grade-crossings, by dipping one set of tracks beneath the other set. After leaving Union Square, the four tracks of the west side line are continued, still in the rock, up Broadway to some point above the crossing of Seventh avenue, near Forty-sixth street.

At this point the tracks can be brought up close to the street grades, and carried thus up through the Boulevard on each side of the parkway. At the viaducts, near One Hundred and Twenty-fifth street, and above the Cemetery of Trinity Church, the tracks should be brought close together, but upon one level for crossing these viaducts. Where the road crosses the Harlem Ship Canal, it would be well to keep up at an elevation, which would give passages below for shipping, at least equal to the openings under High Bridge; thus obviating the necessity of a draw-bridge in the system, and the great inconvenience of having the traffic broken by the necessity of opening the draw-bridge at all hours.

Having thus outlined the general scheme, we will consider the methods of constructing the same.

From the Battery to near Twelfth street the proposed lines will all be in a sub-soil of sand of various degrees of fineness and with more or less water.

In my opinion the best means of constructing tunnels in such material, with the least interference with business and property interests, and also in the most rapid and economical manner, is by the use of some modifications of the Beach shield.

This shield was devised and patented by Mr. Alfred E. Beach in 1869. It was especially designed for building, through the material underlying Broadway over the section under consideration, a pneumatic tunnel.

It was first used in 1869, to construct the existing piece of this pneumatic tunnel under Broadway near Warren street.

In 1871 it was used to build a tunnel under the streets of Cincinnati.

Modifications of this shield have been successfully used within recent years for constructing several important works.

A small tunnel 10 feet and 6 inches diameter for the City of London and Southwark Subway was pierced through the stiff London clay by a modification of this shield.

The tunnel under the St. Clair river for the Grand Trunk Railway was built through a stratum of soft blue clay, containing pockets of gravel and quicksand and more or less boulders, by its use. The diameter of this tunnel was 21 feet.

The Hudson River tunnel is being built through the river silt by a modification of the Beach shield.

I am informed by Mr. Beach that the patent has expired and that any person or construction company can use the shield without hindrance.

With the experience already obtained in the use of this method, through materials varying in character from the stiff London clay to the soft North River silt, I consider that this shield can be modified to suit the necessities of the project now under consideration; to construct tunnels under Broadway in the safest, cheapest and most rapid manner and with the least interference to the business or property interests of this street.

While most of the work from the Battery to Twelfth street could be done by means of this shield, it would perhaps be necessary to use either the open cut method or some special method of tunneling to build the work at the stations, cross-overs and junctions. Such places, however, would be but a small portion of the whole work, and they could be constructed with but little interference with the street traffic.

From Fourteenth street north the rock comes near to the surface.

The surface of the rock over the upper part of the route is irregular. In many places it was higher than the present street grades and has been cut down to these grades. In other places the surface was below the street grades. Many of these depressions have been filled with broken rock and other materials. At points along the line some of these rock depressions were naturally filled with earth, sand and stones.

To construct tunnels close to the present street grades through such materials, along an important thoroughfare with its underlying system of pipes, conduits and sewers, would be difficult, tedious and expensive, by either the open-cut method or any system of tunneling. By dropping the line down as proposed so that it would be entirely in rock, the problem of construction over such portions of the line would be rendered, comparatively, very simple.

From the borings obtained by your Engineers, the rock appears to be from about 10 to 25 feet below the streets from Fourteenth street to Thirtieth street, and from indications obtained, these depths will probably not be exceeded from Thirtieth to Forty-sixth street.

By careful working, a roof of 6 to 8 feet would be enough to protect the streets and the pipe systems from injury. The level of the station platforms would then be from 25 to 40 feet below the street grade.

No doubt by a careful survey of the rock surface over this distance from Twelfth to Forty-sixth street the stations can be located to have even less than the above maximum lift.

For this distance there would probably be only four to five stations needed; we can, therefore, avoid an expensive and difficult piece of work by keeping in the rock and equipping four or five stations with elevators, having the moderate lifts of twenty-five to forty feet.

I consider, therefore, the best solution of the problem for this section of the route to be as heretofore suggested, the lowering of the tracks until the tunnels are entirely in the rock, with a roof of six to eight feet above.

Above Forty-sixth street where the open-cut method of construction would be less objectionable owing to the greater breadths of the streets, a less crowded traffic and fewer street pipes, etc., it would be well to bring the tunnels near the surface.

A careful survey of the rock surface along the route above Forty-sixth street would determine where it would be best to keep in rock, and where to build by the open-cut method.

The character of the rock along the whole route will undoubtedly compel the lining of the tunnel with masonry.

Believing that the great difficulties of the problem to be solved are contained in the sections from the Battery to Forty-sixth street, I have devoted most of my study to this portion of the route.

The arrangement of the lines as above outlined and the work done in the manner suggested, not only reduce to the smallest proportions the risk and inconveniences to the business and property interests of the street, but they also reduce the quantity of material to be removed and enable this material to be taken out in the most economical manner.

The arrangement readily admits the necessary cross-overs, standing tracks and junctions.

While it may be best to use some other cross section of tunnel than a circle, a circular section of about 16 feet diameter for each track would give plenty of room for cars of the same type as are used upon the elevated railroads of this city, and still leave room for the safety of the track and patrolmen, by placing the track on one side of the centre-line. (See sketch annexed.) Double tunnels of this size could be built over the section from the Battery to the Post-office, without encroaching upon the vault spaces, except for station purposes.

Four tracks in double tier could also be built over the sections from City Hall to Twelfth street, within the curb-lines.

At Canal street, where the tracks will be spread out to one level, a portion of the space beneath the sidewalks would be used.

Above Twelfth street, where the tracks are in the rock, no injury would be done to the vaults by keeping the tracks upon one level.

As no plans, surveys or data have been presented for the proposed east side line, I have devoted no time to this route, I therefore have no suggestions to make in reference to this line, other than the general ones made upon the Broadway line.

In hopes that the criticisms and suggestions made above may assist the Commission to accomplish, in the best manner possible, the objects sought to be attained, I respectfully submit them to its consideration.

THEODORE COOPER, Consulting Engineer.

#### EXHIBIT 7.

Report of John Bogart, Consulting Engineer to the Rapid Transit Commission, September 16, 1891.

To the Rapid Transit Commission, New York, N. Y.:

GENTLEMEN—I have the honor to submit the result of my examination of the plans submitted to me by the communication of E. L. Bushe, Esq., Secretary of the Commission, of date of August 25. In this communication you did me the honor to ask "not only for approval or disapproval of the plans submitted, but for such general discussion and such suggestions as to alterations or additions as might, in my judgment, be regarded as necessary or desirable to accomplish in the best manner possible the object sought to be obtained, upon the routes and general plans outlined in the resolutions of the Commission, dated May 27 and July 22, 1891." These resolutions define as the

sense of the Commission that any additional rapid transit system of this city should embrace the following essential features:

"That it should be such as to provide not only for present needs, but also be susceptible, by additions and not by radical changes or alterations, of such expansion as the future growth of the city may require."

"That it should provide for express trains at high speed for long distances upon separate tracks, so located as to facilitate at proper intervals an exchange from express to local and from local to express trains."

"That the surface of the streets and avenues in the city should be obstructed to the least possible extent, and that wherever surface ground is required, private instead of public property should be used if practicable."

They also determine the route for a west side line under Broadway, from a point at or near South Ferry to Fifty-ninth street, and thence under the Boulevard to One Hundred and Sixty-ninth street, with such viaduct near Manhattan street as may be necessary, and thence northerly to the city limits.

Also, an east side line diverging from the Broadway line at or near Fourteenth street and thence under Union Square to Fourth avenue, under Fourth and Park avenues to, near and south of Forty-second street, curving to Madison avenue and under it to a point near Ninety-sixth street, thence curving to the eastward to a point not less than 100 feet east of Madison avenue, and thence by viaduct to a point south of One Hundred and Thirty-fourth street, and thence curving and crossing the Harlem river by bridge.

The resolutions also define that the general plan of construction, from, at or near South Ferry to Forty-second street shall be either by double-decked tunnel, with two tracks upon each deck, or four tracks upon the same level, the whole to be at such depth below the curb-line as not to disturb the surface or endanger building foundations. From near Forty-second street northward to be four parallel tracks upon the same level, as near the surface as practicable, but not in open cut at any point.

Also, that the plan for the east side line from Broadway to a point near Ninety-sixth street shall be either by double-decked tunnel, with two tracks upon each deck, or four tracks upon the same level, and from Ninety-sixth street north to be by viaduct, with four tracks to the Harlem river. That the motive power for such railway shall be electricity, or some other power not requiring combustion within the tunnel. Also that the stations shall be upon property acquired for the purpose and provided with ample elevator capacity wherever the platforms shall be 20 feet or more below the curb line.

In accordance with your letter of instructions the drawings and report submitted to the Commission by Mr. William E. Worthen, Engineer-in-Chief, and the drawings and report submitted by Mr. W. Barclay Parsons, your Assistant Engineer, have been studied with regard to their compliance with the several requirements of the resolutions adopted by the Commission, and also with regard to their peculiar individual features.

Information has been fully and courteously furnished by Mr. Worthen and by Mr. Parsons.

A. The plans submitted by Mr. Worthen are, briefly:

1. From Battery to City Hall only two tracks are provided for, and these along the east side of the street, one track being under the sidewalk and one under the roadway close to the east curb. These are to form a single track loop through State and Whitehall streets, the loop being under the sidewalk and close to the surface. The line (two tracks only), north of Beaver street to City Hall, being at such a depth as not to interfere with the pipes and conduits in the street.

2. From City Hall north there are to be four tracks on the same level and at such depth as not to interfere with the pipes and conduits in the street. A loop is suggested through Mail, Chatham and Chambers streets. The standard section shown in these plans has the bottom of the roof of the conduit about 9 feet below the grade of the street and the headway 11 feet in the clear, making the floor of the passageway 19 feet below the grade of the street. The car platform is to be 2 feet above top of rail, or 17 feet 6 inches below the grade of the street. The width of car adopted by Mr. Worthen is 8 feet 6 inches outside for cars making 34 feet in width. The roof girders in Mr. Worthen's plan are supported in the centre by iron columns. Allowing one foot for the width of these columns and 18 inches clearance between cars and columns or sides, there will be required 44 feet of clear space for the cars, the columns and the clearances; should the clearances be made one foot each the whole width would be 41 feet.

3. Mr. Worthen's proposed construction of this four-track road consists essentially of a tight plate iron cover, supported by wrought-iron girders and posts, with a concrete base. Above the plate iron a preparation of coal tar is to be injected, which not only secures tightness but will preserve the iron. He intends, where practicable, not to disturb the surface of the street or the present pipes and structures.

4. Mr. Worthen presents special arrangements for the portion of Broadway between Thirty-sixth and Thirty-seventh streets, where the sheave pit of cable road is deep. Here the road encroaches somewhat upon the sidewalk on one side.

5. Above Fifty-ninth street Mr. Worthen proposes a four-track railway close to the surface and with central opening of 16 feet between the cross streets.

6. The station platforms are approached by stairway from private property. At express and transfer stations the local track is curved so as to run under the sidewalk.

The plans submitted by Mr. Parsons are, briefly:

1. For Broadway below Fifty-ninth street there are four tracks, set in pairs, one track above the other, close to each curb-line. The roof of the upper track gallery being close to the surface, its track supported by a metal construction over the lower track gallery; the depth from the street grade to the platform of the upper railway to be 10 feet 10 inches, and to the platform of the lower railway 23 feet 5 inches.

2. Between the two upper lines of railway and under the centre of the street roadway there is to be a pipe gallery, the roof being a metal construction which supports the cable road and the street pavement, and which is supported at the sides by the railway structure and, except where the street is narrow, by central columns.

3. The four-track structure, with the pipe gallery, will be wider in the lower part of Broadway than the carriageway and will extend somewhat under the sidewalk. North of this part of Broadway the structure will not go inside the curb-line.

4. Above Fifty-ninth street the double-decked structure is continued, but without the pipe gallery, the pipes in that portion of the city being already at the sides of the street.

5. Mr. Parsons' proposed structure has the house-vault wall at one side of each double railway, this wall being built down to the requisite depth. On the other side of the lower railway is a similar wall, supporting a metal construction which forms the side of the upper railway passage. He proposes for each of these passages a total width of 12 feet. The cars are 8 feet 8 inches wide, and provision is made for a walk of 2 feet in width along the whole length of each gallery. The height of car and truck is such as to run in a space of 10 feet between the roof and the top of rail.

6. The stations are approached by stairs within private property, the platforms for both railways being under the sidewalks.

7. The pipe gallery being in the centre of street, is approached at suitable points by stairway from the sidewalk and by passage between the upper and lower railway galleries, the lower or express track being depressed at such points.

These plans presented by the Engineers of your Board are radically different. Each gives evidence of earnest study of the problem, and each presents a practicable solution.

One essential difference between these two proposed methods of securing rapid transit under Broadway is apparent at a glance and may be at once considered. The method of Mr. Parsons provides a continuous gallery under the middle of the street for the water, gas and other pipes, the electrical subways and other conduits. In the construction of the railway by this method all the existing pipes and conduits must be protected or supported during construction of the work, and finally either moved to the place assigned each in the new pipe gallery or replaced by new pipes and conduits if that proves the better plan. When the railway is finished there will be a continuous pipe subway under the cable road.

The method proposed by Mr. Worthen leaves all existing subterranean pipes, conduits and subways undisturbed, and places the railway below them. The depth necessary to go below existing pipes is less than has been popularly supposed, Mr. Worthen reporting that "the water-pipes, at their outer bottom, are generally from 6 to 7 feet deep." He also suggests that, should it be deemed necessary in the future to provide galleries for pipes and conduits, these could be constructed with economy adjacent to each curb-line and over the roof of the railway.

The question is immediately presented whether the construction of subways or tunnels for sewer, gas and water pipes, electrical conductors, etc., is an essential feature of the plans for a rapid transit railway. You have furnished me with a copy of the law (chapter 4, Laws of 1891), "The Rapid Transit Act," under which the Board of Commissioners is acting. Section 6 of that law provides that "the said Board may, in its discretion, include in said plans provisions for subways or tunnels for sewer, gas or water pipes, electric wires and other conductors proper to be placed underground, whenever necessary so to do in order to permit of the proper construction of any railway herein provided for in accordance with the plans and specifications of the said Board. Whenever the construction of any railway, depressed way, subway or tunnel under the provision of this act shall interfere with, disturb or endanger any sewer, water-pipe, gas-pipe or other duly authorized sub-surface structure, the work of construction at such points shall be conducted in accordance with the reasonable requirements and under the supervision of the Commission of Public Works. All expenses incidental to such supervision and to the work of reconstructing, readjusting and supporting any such sewer, water-pipe, gas-pipe or other duly authorized sub-surface structure shall be borne and paid by the company constructing any such railway, depressed way, subway or tunnel."

The law thus provides that the Board of Commissioners may include in its plans provisions for pipe and sub-surface conduits, whenever necessary so to do, in order to permit of the proper construction of the plan of railway adopted by the Board.

\* The form of car adopted by Mr. Parsons requires less headroom, and if the same form is applied to Mr. Worthen's plan the depth of the platform below the grade of street becomes 17 feet.



Should such a plan of railway be adopted whose proper construction does not necessarily require a provision for pipe and wire subways, there would then seem to be no requirement in the law that the Board of Commissioners should make such provision.

It is undoubtedly true that the construction of some system of conduits for sub-surface uses in Broadway would be a comfort and boon to our citizens, and such construction, properly designed, would probably in the end be an economical work for the City to undertake, as it would permit the pavements to remain undisturbed and would do away with the constant opening of the street to give access to pipes and other subway constructions.

It would not, perhaps, be quite proper that a plan for a rapid transit railway should be adopted which would interfere with the construction in the future of suitable sub-surface conduits.

The plans submitted by Mr. Worthen do not require in their execution any provision for these subways for pipes, etc.; the existing pipes are to be left undisturbed. The plan submitted by Mr. Parsons requires the removal of all these pipes to the new gallery provided directly under the cable road. The plan some time ago considered by a number of engineers as a suitable one for a depressed railway provided for the removal of the pipes and sub-surface constructions to two galleries under the side tracks of the proposed railway.

In my opinion the plan submitted by Mr. Worthen is the more economical, as far as this feature is concerned, and in this regard seems to me to be a suitable one to adopt under the provisions of the Rapid Transit Act.

Should it be deemed proper, at some future time, to place the pipes, etc., in the galleries, suggested by Mr. Worthen, adjacent to each curb, they would be readily accessible from the basements of houses, or from the sidewalks, and would not be at any very great depth. In my opinion the floor of such a gallery over the roof of the depressed railway could be made tight, and the load upon it would not be greater than the weight of the present material.

The requirement of the resolutions of your Board for the provision of express trains and for way service upon separate tracks, so located as to facilitate at proper intervals an exchange from express to local and from local to express trains, is complied with by both systems under consideration, but, in my opinion, such transfer would be more easily accomplished when the tracks are upon the same level, and therefore the plan of Mr. Worthen and the arcade plan are preferable in this respect.

Another requirement is that the surface of streets should be obstructed to the least possible extent. In the construction of the double-deck railway suggested by Mr. Parsons, a width of some twelve feet of trench must be excavated on one side of the street, and afterwards on the other side. These could, of course, be covered temporarily after a moderate depth should be reached. The construction suggested by Mr. Worthen would be that of a tunnel. The question arises whether the material under the Broadway pavement could be securely retained and prevented from flowing into the excavation during the progress of the work. The test borings exhibited at your rooms show that the material underlying Broadway, below Union Square, is sand, some of it, in the lower part of the city, very fine and apt to flow easily. The material, however, to some depth, substantially to the depth of most of the pipes and subways, I am informed by your Engineers, has been worked over and is of a heterogeneous character and not so liable to flow.

The question as to the probability of successfully carrying a tunnel through this material, without endangering the stability of the pipes and pavements, is, in my opinion, the most serious one connected with the construction of such a depressed road. I am assured, however, by persons of large experience in tunnel and sewer construction that this can be done. Should extraordinary difficulties occur at particular points, special means for meeting and overcoming them can be devised and adopted. It is my opinion that a tunnel excavation can be carried, at the moderate depth proposed by Mr. Worthen, 7 feet 9 inches below the curb, without endangering the pavements or the pipes.

I do not consider that there is danger to the foundations of houses and structures from the construction of either of the proposed plans, when carried on under proper supervision. Of course, the less the depth of the depressed road and its foundations, the less will be the danger. There is not very great difference in the depth of foundation excavation of the plans considered, the depth of the double-decked plan being somewhat greater than the other. The existence of the cable conduit and its appurtenances would require a road, built on the so-called arcade plan, to have its roof supports below the cable conduit, and this, with the proposed pipe gallery under the side tracks, would place its foundation quite low.

Another important point is the convenience at stations of access from the street to each track, way and express. In the plan submitted by Mr. Parsons the way platform is reached at a depth of 11 feet below the sidewalk, and the express platform at a depth of 22 feet 4 inches from the sidewalk. In the plan submitted by Mr. Worthen the way and express platforms are at the same level and at a depth of 17 feet below the sidewalk. In Mr. Parsons' plan the tracks are continuous in alignment with the street roadway. In Mr. Worthen's the outer tracks are curved so as to run under the sidewalk at all express stations and the approach to the platform is over this outer track; but as the alignment of the express tracks is continuous and only the way tracks are thus curved, and that only at stations where the way trains are to stop, such curving is not, in my opinion, disadvantageous.

I venture to suggest that, in the plan of construction finally adopted, a large proportion of the stations be made so as to give access to both way and express tracks. At times it may be advisable or necessary to use one track for the service ordinarily assigned to another. Should one of the way tracks be temporarily out of order it would be of great advantage to be able to receive and discharge passengers at points not too far apart. It may also in the train service be found expedient to have some express trains stop at one point and others at another point in accordance with a published time-table. Such provision of a considerable number of double stations could be made without great expense during the original construction, but would be difficult to arrange for afterwards.

It has been suggested that the lines, or at least the express track, should be so constructed as to permit the passage of cars, both freight and passenger, of the sizes in use on standard steam railroads. In my opinion this is not necessary. Transfers of passengers can be easily and quickly made from railroad stations, and rapid transit facilities for freight cars of standard sizes are hardly needed on this Broadway line.

It seems to me that it is very important that the four tracks should be so laid as to permit the transfer of cars and trains from any track to either of the other tracks at any time and at many points along the line. In case of cars or engine breaking down or of any accident, traffic can be maintained easily by methods well known to railway managers if there are frequent opportunities for transfer. With regard to this point the plan which provides four tracks on one level is, in my opinion, superior to the double-deck plan.

I think that a footway, at least two feet wide, should be provided for the whole length of the line. This is important for a proper and safe supervision of track and structure, and also to give passengers an opportunity to reach the nearest station in case a train becomes disabled. Mr. Parsons' plan provides for this, and such a footway should be added to the plan suggested by Mr. Worthen.

In my judgment, tracks for a railway, with the enormous traffic this will have, had better be founded on the natural ground if possible, than upon a structure subject to constant vibration and carrying heavy trains. Excellent results have been secured on elevated structures, but where the circumstances permit the tracks to be founded directly upon the ground, the cost of maintenance will be reduced.

The Boulevard line, with the four tracks upon the same level, seems to me to be the simple and suitable solution for that portion of the route.

Whether it is better to provide four tracks below the City Hall, or whether only two are required, as is suggested by your Chief Engineer, is an interesting question. He argues that the records of travel in the city show that more than half is above City Hall. His plan, however, could provide four tracks or three tracks below the City Hall, the latter, in my opinion, being preferable for many reasons to only two.

The details of construction for each plan have been shown on the drawings to such an extent as to warrant the opinion that the structures are feasible and can be built substantially as proposed. Special details can be studied and determined after the general features of the plan are decided upon.

With regard to these general features and summarizing what has been said above, I consider that a plan can be adopted whose proper construction does not necessarily require a provision for pipe or wire subways and that this feature of Mr. Worthen's plan is a desirable one to adopt, as far as the economical construction of a rapid transit railway is concerned.

That a plan with the four tracks upon the same level is decidedly preferable, because it would best promote the transfer of passengers from one train to another, local or express, and because it would permit the transfer of cars and trains from any track to either of the other tracks. For this purpose it might be possible to occasionally run crossings from one to the other of the express or lower tracks suggested by Mr. Parsons, but these could not well be put in very frequently without considerable addition to the expense of construction.

Without such rather frequent transfers, these lower express passageways would give rise to serious complications in cases of accident. It would be possible, perhaps, to transfer from one to the other of the upper, or way tracks of Mr. Parsons' plan by crossings through the pipe gallery, but this would require special arrangement of the pipes and conduits at such places and this would also necessitate considerable additional expense. In the plan proposed by Mr. Worthen crossings could be laid as frequently as might be deemed desirable, a simple change of arrangement of the central columns being required at such points.

It may be found that the plan of Mr. Worthen could be changed so as to provide for two supports under the roof of the passageway, instead of one, as shown in his drawings, although the span of 22 feet required by the single system of central supports is not excessive.

With regard to the obstruction of the streets during the construction of the railway, the method of tunneling has the advantage, and I believe that the tunnel excavation at the depth proposed can be made without endangering the stability of the pipes or of the pavements or of the buildings facing the street.

With regard to access from the street for passengers, the depth to the platform of both express and way trains by Mr. Worthen's plan is 17 feet, and this seems to be about the least depth which can be arranged for in the approach to a depressed railway, if the approach to the stations is through private property and the stairs are inside of the buildings to be secured for that purpose. These stairs must lead to a basement approach under the sidewalk, and this approach must have a reasonable height of headroom. This is secured in Mr. Worthen's plan, in the same height that is left in the center of the street undisturbed, the side tracks being curved under the sidewalk and the approach going over them, but such tracks not requiring a depression. In the plan that was shown me, for station provision of the Arcade railway, the tracks at express stations are depressed so as to reach a level substantially as low as shown by the Worthen plans, and the way track is curved under the sidewalk. This depression must be made, unless the approach to stations is by stairways from the sidewalk within the line of curb, and I cannot recommend the placing of such a permanent obstruction to passage as these would be, particularly at points where the large number of passengers approaching and departing from the stations would be added to the general travel of the street.

In Mr. Parsons' plan the depth from the street to the way service is but 11 feet and to the lower or express platforms 22 feet 4 inches. The depth to this lower platform is slightly greater than that which, under the resolutions of your Commission, demands elevator service, although it is not greater than the height from the street to some of the platforms of the elevated railroads.

I think that the location of the double stations, which could be used for both express and way service, should occur at points not very far apart.

I do not think it necessary to arrange for standard steam railroad cars.

For that portion of Broadway above the City Hall, where the width of roadway is less than 44 feet, the plan having four tracks upon the same level will require that a part of the structure shall be under the sidewalk, but not anywhere to such an extent as to endanger the foundations of buildings.

I think that, in the event of a future construction of subways for pipes, etc., they would be well placed over the roof of the depressed railway. I doubt the expediency of placing some of the pipes, particularly gas-pipes, under a covered railway. Every arrangement should be made to preserve the purity of the atmosphere through which the passengers are to be carried.

I have become satisfied that motors, probably with the use of electricity or compressed air, will be so perfected in construction as to give rapid speed, without vitiating the air.

I think that the ventilation of the conduit can be made perfect, without difficulty, by the constant introduction of fresh air.

It will be seen that I have understood the request of your Commission to be, as expressed in your letter, such general discussion and such suggestions as may, in my judgment, be regarded as desirable to accomplish in the best manner possible the objects sought to be attained, upon the routes and general plans outlined in the resolutions of the Commission. I have not gone beyond these general plans and I do not think it necessary to do so, to secure the best result. The plans presented by your engineers are plainly the result of very careful study. The one presented by Mr. Parsons is a most interesting solution of a difficult problem. In my judgment, the method and plan in general as suggested by Mr. Worthen is the best practical mode of construction of a depressed rapid transit railway, having due regard to reasonable economy of expenditure, probable return on capital invested and the full measure capacity for passenger service.

Respectfully,

JOHN BOGART, Consulting Engineer.

*Oath of Commissioner, Appointed December 24, 1890, under Chapter 606 of the Laws of 1875.*

City and County of New York, ss.:

I, Eugene L. Bushe, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, by appointment dated the twenty-third day of December, 1890, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully discharge the duties of the office of Commissioner aforesaid, according to the best of my ability, and that I will faithfully perform the duties of my office.

EUGENE L. BUSHE.

Sworn to before me this 29th day of December, 1890.

TERENCE FARLEY, Commissioner of Deeds, New York City.

*Bond of Commissioner, under Chapter 606 of the Laws of 1875.*

Know all men by these presents, That we, Eugene L. Bushe, Howard W. Coates and the American Surety Company of New York, are held and firmly bound unto the People of the State of New York, in the penal sum of twenty-five thousand dollars, lawful money of the United States of America, to be paid unto the said People of the State of New York;

For which payment well and truly be made and done, we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally firmly by these presents.

Sealed with our seals and dated this 30th day of December, in the year of our Lord eighteen hundred and ninety.

Whereas, The above bounden Eugene L. Bushe has been duly appointed to the office of a Commissioner under the provisions of chapter 606 of the Laws of 1875,

Now the condition of this obligation is such that if the above bounden Eugene L. Bushe shall in all things well, truly and faithfully perform the duties that may be legally required of him to perform and do, during his continuance in the said office of a Commissioner, under the provisions of chapter 606 of the Laws of 1875, then this obligation to be void; otherwise to remain in full force and virtue.

EUGENE L. BUSHE.

HOWARD W. COATES.

AMERICAN SURETY COMPANY OF NEW YORK.

By HENRY D. LYMAN, Vice-President.

FRED. F. NUGENT, Secretary.

Sealed and delivered in the presence of

FREDERICK L. FISHEL as to Eugene L. Bushe and Howard W. Coates.

H. G. HINTON as to American Surety Company.

State of New York, City and County of New York, ss.:

Howard W. Coates, in the within bond named, being duly sworn, deposes and says that he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars (\$50,000) over and above all the debts and liabilities which he owes or has incurred, and exclusive of property exempt by law from levy and sale under an execution.

HOWARD W. COATES.

Sworn to before me this 30th day of December, 1890.

FRED'K E. FISHEL, Notary Public, Kings Co.

Certificate filed in N. Y. Co.

State of New York, City and County of New York, ss.:

On this 30th day of December, 1890, before me, a Notary Public, personally appeared the above named Eugene L. Bushe and Howard W. Coates, known to me to be the same persons described in and who executed the above bond, and they severally acknowledged to me that they executed the same.

FREDERICK E. FISHEL, Notary Public, Kings Co.

Certificate filed in N. Y. Co.

State, City and County of New York, ss.:

On the 30th day of December, 1890, before me personally appeared Henry D. Lyman, Vice-President of the American Surety Company, with whom I am personally acquainted, who being by me duly sworn, said that he resided in New York City, and that he is the Vice-President of the American Surety Company of New York; that he knew the corporate seal of said company; that the seal affixed to the foregoing instrument is such corporate seal; that it was affixed by an order of the Board of Directors of said company, and that he signed said instrument as Vice-President of said company by like authority, and that the liabilities of said company do not exceed its assets as ascertained in the manner provided in section 3, chapter 486 of the Session Laws of 1861; and the said Henry D. Lyman further said that he was acquainted with Fred. F. Nugent, and knew him to be the Secretary of said company; that the signature of said Fred. F. Nugent subscribed to the said instrument is in the genuine handwriting of the said Fred. F. Nugent, and was thereto subscribed by the like order of the said Board of Directors, and in the presence of him, the said Henry D. Lyman, Vice-President.

H. G. HINTON, Notary Public, Kings County, N. Y.

Certificate filed in New York County.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said county, do certify that I have compared the preceding with the original bond (filed and recorded January 2, 1891); oath of office (filed January 2, 1891), of Eugene L. Bushe, as a Commissioner, under chapter 606, Laws of 1875, on file in my office, and that the same are correct transcripts therefrom, and the whole of such originals.

In witness whereof, I have hereunto subscribed my name, and affixed my official seal, this 26th day of February, 1891.

[SEAL]

LEONARD A. GIEGERICH, Clerk.



*Oath of Commissioner, Appointed December 24, 1890, under Chapter 606, Laws of 1875.*

City and County of New York, ss.:

I, John H. Starin, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, by appointment, dated the twenty-third day of December, 1890, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully discharge the duties of the office of Commissioner aforesaid, according to the best of my ability, and that I will faithfully perform the duties of my office.

JOHN H. STARIN.

Sworn to before me this 30th day of December, 1890.

HORACE B. FREEMAN, Notary Public, City and County of New York.

*Bond of Commissioners under Chapter 606, Laws of 1875.*

Know all men by these presents: That we, John H. Starin, Sam Sloan and Percy R. Pyne, are held and firmly bound unto the People of the State of New York in the penal sum of twenty-five thousand dollars, lawful money of the United States of America, to be paid unto the said people of the State of New York, for which payment, well and truly to be made and done, we bind ourselves our heirs, executors, administrators and assigns jointly and severally firmly by these presents.

Sealed with our seals, and dated this 30th day of December, in the year of our Lord eighteen hundred and ninety.

Whereas, the above bounden John H. Starin has been duly appointed to the office of a Commissioner under the provisions of chapter 606 of the Laws of 1875, now the condition of this obligation is such that if the above bounden John H. Starin shall in all things well, truly and faithfully perform the duties that may be legally required of him to perform and do during his continuance in the said office of a Commissioner under the provisions of chapter 606 of the Laws of 1875, then this obligation to be void; otherwise to remain in full force and virtue.

JOHN H. STARIN. [SEAL.]  
SAM SLOAN. [SEAL.]  
PERCY R. PYNE. [SEAL.]

Sealed and delivered in the presence of  
L. R. MILLER.

State of New York, City and County of New York, ss.:

Samuel Sloan, in the within bond named, being duly sworn, doth depose and say: That he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars (\$50,000) over and above all the debts and liabilities which he owes or has incurred and exclusive of property exempt by law from levy and sale under an execution.

SAM. SLOAN.

Sworn to before me this 30th day of December, 1890.

LUDLOW R. MILLER, Notary Public,  
Appointed from Kings County. Certificate filed in New York County.

State of New York, City and County of New York, ss.:

Percy R. Pyne, in the within bond named, being duly sworn, doth depose and say: That he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars (\$50,000) over and above all the debts and liabilities which he owes or has incurred, and exclusive of property exempt by law from levy and sale under an execution.

PERCY R. PYNE.

Sworn to before me this 30th day of December, 1890.

LUDLOW R. MILLER, Notary Public,  
Appointed from Kings County. Certificate filed in New York County.

State of New York, City and County of New York, ss.:

On this 30th day of December, 1890, before me, a notary public, personally appeared the above-named John H. Starin, Samuel Sloan and Percy R. Pyne, known to me to be the same persons described in and who executed the above bond, and they severally acknowledged to me that they executed the same.

LUDLOW R. MILLER,  
Notary Public, appointed from Kings County.  
Certificate filed in New York County.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original bond (filed and recorded January 2, 1891), and oath of office (filed January 2, 1891), of John H. Starin as a Commissioner, under chap. 606, Laws 1875, on file in my office, and that the same are correct transcripts therefrom, and the whole of such originals.

In witness whereof, I have hereunto subscribed my name and affixed my official seal this 26th day of February, 1891.

[SEAL.] LEONARD A. GIEGERICH, Clerk.

*Oath of Commissioner appointed December 24, 1890, under Chapter 606, Laws of 1875.*

City and County of New York, ss.:

I, William Steinway, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, by appointment, dated the twenty-third day of December, 1890, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully discharge the duties of the office of Commissioner aforesaid, according to the best of my ability, and that I will faithfully perform the duties of my office.

WILLIAM STEINWAY.

Sworn to before me, this 29th day of December, 1890.

WM. J. DUGGETT, Commissioner of Deeds, N. Y. City.

*Bond of Commissioners under Chapter 606, Laws of 1875.*

Know all men by these presents: That we, William Steinway, Oswald Ottendorfer and the American Surety Company of New York, are held and firmly bound unto the People of the State of New York in the penal sum of twenty-five thousand dollars (\$25,000) lawful money of the United States of America, to be paid unto the said people of the State of New York.

For which payment well and truly to be made and done we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this 29th day of December, in the year of our Lord eighteen hundred and ninety.

Whereas, The above-bounden William Steinway has been duly appointed to the office of a Commissioner under the provisions of chapter 606 of the Laws of 1875.

Now the condition of this obligation is such that if the above-bounden William Steinway shall in all things well, truly and faithfully perform the duties that may be legally required of him to perform and do during his continuance in the said office of a Commissioner, under the provisions of chapter 606 of the Laws of 1875, then this obligation to be void; otherwise to remain in full force and virtue.

WILLIAM STEINWAY [SEAL.]  
OSWALD OTTENDORFER. [SEAL.]  
AMERICAN SURETY COMPANY. [SEAL.]  
By HENRY D. LYMAN, Vice-President,  
FRED. F. NUGENT, Secretary.

Sealed and delivered in the presence of

WILLIAM J. DUGGETT, as to Oswald Ottendorfer and William Steinway.  
H. S. HINTON, as to American Surety Company.

State of New York, City and County of New York, ss.:

Oswald Ottendorfer, in the within bond named, being duly sworn, doth depose and say: That he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars (\$50,000) over and above all the debts and liabilities which he owes or has incurred, and exclusive of property exempt by law from levy and sale under an execution.

OSWALD OTTENDORFER.

Sworn to before me, this 29th day of December, 1890.

WM. J. DUGGETT, Commissioner of Deeds, N. Y. Co.

State of New York, City and County of New York, ss.:

On this 29th day of December, 1890, before me, a Commissioner of Deeds, personally appeared the above-named William Steinway and Oswald Ottendorfer, known to me to be the same persons described in and who executed the above bond, and they severally acknowledged to me that they executed the same.

WM. J. DUGGETT,  
Commissioner of Deeds, New York County.

State, City and County of New York, ss.:

On this 30th day of December, 1890, before me personally appeared Henry D. Lyman, Vice-President of the American Surety Company, with whom I am personally acquainted, who being by me duly sworn, said that he resided in New York City, and that he is the Vice-President of the American Surety Company of New York; that he knew the corporate seal of said company; that

the seal affixed to the foregoing instrument is such corporate seal; that it was affixed by an order of the Board of Directors of said company, and that he signed said instrument as Vice-President of said company by like authority and that the liabilities of said company do not exceed its assets as ascertained in the manner provided in section 3, chapter 476 of the Session Laws of 1881, and the said Henry D. Lyman further said that he was acquainted with Fred. F. Nugent, and knew him to be the Secretary of said company; that the signature of said Fred. F. Nugent subscribed to the said instrument is in the genuine handwriting of the said Fred. F. Nugent and was thereto subscribed by the like order of the said Board of Directors and in the presence of him the said Henry B. Lyman, Vice-President.

H. G. HINTON,

Notary Public, Kings County, N. Y. Certificate filed in New York Co.

At a meeting of the Board of Directors of the American Surety Company, held at the office of the company, on the 9th day of June, 1886, on motion, it was

“Resolved, That, in pursuance of chapter 416, Laws of 1886, amending section eight hundred and eleven of the Code of Civil Procedure, the President or Vice-President be and either of them is hereby authorized and empowered to sign, execute and deliver any and all bonds and undertakings for and on behalf of the company, and to attach thereto the seal of the company, the same to be attested by the Secretary or Assistant Secretary.”

City and County of New York, ss.:

I, Frederick F. Nugent, Secretary of the American Surety Company, have compared the foregoing resolution with the original thereof, as recorded in the minute book of the said company, and do certify that the same is a correct and true transcript therefrom and the whole of said original resolution.

Given under my hand and seal of the company, at the City of New York, this 29th day of December, 1890.

FRED. F. NUGENT, Secretary.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original bond (filed and recorded January 2, 1891), and oath of office (filed January 2, 1891) of William Steinway, as a Commissioner under chapter 606, Laws 1875, on file in my office, and that the same are correct transcripts therefrom and the whole of such originals.

In witness whereof, I have hereunto subscribed my name and affixed my official seal, this 26th day of February, 1891.

[SEAL.]

LEONARD A. GIEGERICH, Clerk.

*Oath of Commissioner, Appointed December 24, 1890, under Chapter 606, Laws of 1875.*

City and County of New York, ss.:

I, Samuel Spencer, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, by appointment, dated the twenty-third day of December, 1890, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully discharge the duties of the office of Commissioner aforesaid, according to the best of my ability, and that I will faithfully perform the duties of my office.

SAMUEL SPENCER.

Sworn to before me this 31st day of December, 1890.

THOMAS E. RUSH, Commissioner of Deeds, New York City.

*Bond of Commissioner, under Chapter 606, Laws of 1875.*

Know all men by these presents that we, Samuel Spencer and the United States Guarantee Company (a corporation organized under the Laws of New York) and the Guarantee Company of North America (a corporation created by the Laws of the Dominion of Canada and duly licensed to transact business within the State of New York), are held and firmly bound unto the People of the State of New York in the penal sum of twenty-five thousand dollars, lawful money of the United States of America, to be paid unto the said People of the State of New York;

For which payment well and truly to be made and done, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

Sealed with our seals and dated this second day of January, in the year of our Lord eighteen hundred and ninety-one.

Whereas, the above bounden Samuel Spencer has been duly appointed to the office of a Commissioner, under the provisions of chapter 606 of the Laws of 1875,

Now the condition of the above obligation is such, that if the above bounden Samuel Spencer shall in all things well, truly and faithfully perform the duties that may be legally required of him to perform and do, during his continuance in the said office of a Commissioner, under the provisions of chapter 606 of the Laws of 1875, then this obligation to be void; otherwise to remain in full force and virtue.

SAMUEL SPENCER. [SEAL.]  
UNITED STATES GUARANTEE COMPANY. [SEAL.]  
By LOGAN C. MURRAY, 1st Vice-President. [SEAL.]  
DANIEL J. TOMPKINS, Secretary.  
THE GUARANTEE COMPANY OF NORTH AMERICA.  
By L. C. MURRAY, Director. [SEAL.]  
DANIEL J. TOMPKINS, Secretary N. Y. Branch Board.

Sealed and delivered in the presence of  
WALTER B. HORNE.

State of New York, City and County of New York, ss.:

On this second day of January, 1891, before me, a Notary Public, personally appeared the above-named Samuel Spencer, known to me to be the same person described in and who executed the above bond, and acknowledged to me that he executed the same.

WALTER B. HORNE, Notary Public, Kings Co.

Certificate filed in New York Co.

Residence, No. 56 Hewes street, Brooklyn, E. D.

State of New York, City and County of New York, ss.:

Be it remembered that on the second day of January, in the year one thousand eight hundred and ninety-one, before me, the subscriber, a Notary Public in and for said City and County, personally came Daniel J. Tompkins, known to me to be the Secretary of the United States Guarantee Company, the corporation described in and which executed the annexed instrument, who, being by me duly sworn, did depose and say that he resides in the City of Brooklyn, in the State of New York; that he is the Secretary of the said United States Guarantee Company and knows the corporate seal thereof; that the seal affixed to the annexed instrument is the corporate seal of said company and was thereto affixed by order of the Board of Directors of said company, and that he signed his name thereto by the like order as Secretary of said company; and deponent further said that he is acquainted with Logan C. Murray, and knows him to be the 1st Vice-President of said company, and that the signature of the said Logan C. Murray subscribed to the annexed instrument is in the genuine handwriting of the said Logan C. Murray, and was thereto subscribed by the like order of the said Board of Directors and in the presence of said deponent, and that the assets of the said company exceed its liabilities of all kind by more than the sum of two hundred and fifty thousand dollars.

In witness whereof, I have hereunto set my hand and affixed my notarial seal this second day of January, in the year one thousand eight hundred and ninety-one.

[SEAL.]

THOS. D. RAMBAUT,  
Notary Public, Kings and New York Counties.

State of New York, City and County of New York, ss.:

Be it remembered, that on this second day of January in the year one thousand eight hundred and ninety-one, before me, the subscriber, a notary public in and for the said City and County, personally came Daniel J. Tompkins, known to me to be the Secretary of the Branch Board of Directors, at New York, of the Guarantee Company of North America, the corporation described in and which executed the annexed instrument, who, being by me duly sworn, did depose and say that he resides in the City of Brooklyn, in the State of New York; that he is the Secretary of the Branch Board of Directors, at New York, of the said Guarantee Company of North America, and knows the corporate seal thereof; that the seal affixed to the annexed instrument is the corporate seal of said company, and was affixed thereto by order of the said Branch Board of Directors of said company, and that he signed his name thereto by the like order as Secretary of said Branch Board.

And the deponent further said that he is acquainted with Logan C. Murray and knows him to be one of the Directors of said Branch Board, and that the signature of the said Logan C. Murray subscribed to the said annexed instrument is in the genuine handwriting of said Logan C. Murray, and was thereto subscribed by the like order of the said Branch Board of Directors, and in the presence of said deponent, and that the assets of said company exceed the liabilities of all kinds by more than the sum of five hundred thousand dollars.

In witness whereof, I have hereunto set my hand and affixed my notarial seal this second day of January in the year one thousand eight hundred and ninety-one.

[SEAL.]

THOS. D. RAMBAUT,  
Notary Public, Kings and New York Counties.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original bond (filed and recorded January 2, 1891) of Samuel Spencer and oath of office of same as Commissioner



under chapter 606, Laws of 1875, on file in my office, and that the same are correct transcripts thereof, and the whole of such originals.

In witness whereof, I have hereunto subscribed my name and affixed my official seal this 26th day of February, 1891.

[SEAL.]

LEONARD A. GIEGERICH, Clerk.

*Appointment of John H. Inman by the Mayor of the City of New York, under Chapter 606, Laws of 1875.*

Whereas, On the 23d day of December, 1890, application was made to me, Hugh J. Grant, Mayor of the City of New York, by George P. Read and others, being more than fifty reputable householders and taxpayers of the City and County of New York, which said application was duly verified upon oath before a Justice of the Supreme Court, by which it appears that there is need in the City and County of New York of a steam railway or railways, for the transportation of passengers, mails and freight, and by which I am requested, in pursuance of the provisions of chapter 606 of the Laws of 1875, and the several acts amendatory thereof, to appoint five commissioners, who shall be residents of the said City and County of New York, and who shall have full power and authority to do and provide all that they are directed to do and provide by the said act of 1875; and

Whereas, It is provided in and by the first section of the said chapter 606 of the Laws of 1875, that upon the presentation of such an application to the Mayor of any city of this State, whenever a proposed railway shall be wholly within the limits of the said city, such Mayor shall appoint such commissioners; and

Whereas, I did, within thirty days after the presentation to me of the said application, appoint William Steinway, John H. Starin, Samuel Spencer, Eugene L. Bushe and Frederick P. Olcott, each of whom was a resident of the City and County of New York, as Commissioners, with full power and authority to do and provide all that is directed to be done and provided, under the provisions of the said act, chapter 606 of the Laws of 1875, and the various acts amendatory thereof; and

Whereas, The said Frederick P. Olcott did resign said appointment and did not qualify in the manner provided in said chapter 606 of the Laws of 1875.

Now, therefore, I, said Hugh J. Grant, Mayor of the City of New York, pursuant to the authority conferred upon me by the provisions of the said act of 1875, do appoint John H. Inman, resident of the City of New York, in the place and stead of Frederick P. Olcott as Commissioner, with full power and authority to do and provide all that Commissioners appointed under said chapter 606 of the Laws of 1875, and the various acts amendatory thereof are required to do and provide.

In witness whereof, I have hereunto set my hand in this, the City of New York, on the 5th day of January, in the year of our Lord one thousand eight hundred and ninety-one.

HUGH J. GRANT, Mayor.

*Oath of Commissioner Appointed under Chapter 606, Laws of 1875.*

City and County of New York, ss.:

I, John H. Inman, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, by appointment dated the fifth day of January, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully discharge the duties of the office of Commissioner aforesaid according to the best of my ability, and that I will faithfully perform the duties of my office.

JOHN H. INMAN.

Sworn to before me this 5th day of January, 1891.

THOMAS E. RUSH,

Commissioner of Deeds, N. Y. City.

*Bond of Commissioner, under Chapter 606, Laws of 1875.*

Know all men by this presents: That we, John H. Inman, Bernard S. Clark and Robert W. Inman, are held and firmly bound unto the People of the State of New York in the penal sum of twenty-five thousand dollars lawful money of the United States of America, to be paid unto the said People of the State of New York;

For which payment well and truly to be made and done, we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally firmly by these presents.

Sealed with our seals and dated this fifth day of January, in the year of our Lord eighteen hundred and ninety-one.

Whereas, The above bounden John H. Inman has been duly appointed to the office of a Commissioner under the provisions of chapter 606 of the Laws of 1875,

Now the condition of this obligation is such, that if the above bounden John H. Inman shall in all things well, truly and faithfully perform the duties that may be legally required of him to perform and do during his continuance in the said office of a Commissioner, under the provisions of chapter 606 of the Laws of 1875, then this obligation to be void; otherwise to remain in full force and virtue.

JOHN H. INMAN. [SEAL-]  
BERNARD S. CLARK. [SEAL-]  
ROBERT W. INMAN. [SEAL-]

Sealed and delivered in the presence of

THOMAS E. RUSH.

State of New York, City and County of New York, ss.:

Bernard S. Clark, in the within bond named, being duly sworn, doth depose and say: That he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars (\$50,000), over and above all the debts and liabilities which he owes or has incurred, and exclusive of property exempt by law from levy and sale under an execution.

BERNARD S. CLARK.

Sworn to before me this 5th day of January, 1891.

THOMAS E. RUSH, Commissioner of Deeds, New York City.

State of New York, City and County of New York, ss.:

Robert W. Inman, in the within bond named, being duly sworn, doth depose and say: That he is a resident of and freeholder within this State, and that he is worth the sum of fifty thousand dollars over and above all the debts and liabilities which he owes or has incurred, and exclusive of property exempt by law from levy and sale under an execution.

ROBERT W. INMAN.

Sworn to before me this 5th day of January, 1891.

THOMAS E. RUSH, Commissioner of Deeds, New York City.

State of New York, City and County of New York, ss.:

On this 5th day of January, 1891, before me, a Commissioner of Deeds, personally appeared the above-named John H. Inman, Bernard S. Clark and Robert W. Inman, known to me to be the same persons described in and who executed the above bond, and they severally acknowledged to me that they executed the same.

THOMAS E. RUSH, Commissioner of Deeds,

New York City.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original bond (filed and recorded January 5, 1891), and oath of office (filed January 5, 1891), of John H. Inman as a Commissioner under chapter 606, Laws 1875, and appointment (filed January 5, 1891), on file in my office, and that the same are correct transcripts thereof, and the whole of such originals.

In witness whereof I have hereunto subscribed my name, and affixed my official seal, this 26th day of February, 1891.

LEONARD A. GIEGERICH, Clerk.

*Appointment of Commissioners by the Mayor of the City of New York, under Chapter 606, Laws of 1875.*

Whereas, On the 23d day of December, 1890, application was made to me, Hugh J. Grant, Mayor of the City of New York, by George P. Read and others, being more than fifty reputable householders and taxpayers of the City and County of New York, which said application was duly verified upon oath, before a Justice of the Supreme Court, by which it appears that there is need in the City and County of New York of a steam railway or railways for the transportation of passengers, mails and freight, and by which I am requested, in pursuance of the provisions of chapter 606 of the Laws of 1875, and the several acts amendatory thereof, to appoint five Commissioners who shall be residents of the said City and County of New York, and who shall have full power and authority to do and provide all that they are directed to do and provide by the said act of 1875; and

Whereas, It is provided in and by the first section of the said chapter 606 of the Laws of 1875 that upon the presentation of such an application to the Mayor of any City in this State, whenever a proposed railway shall be wholly within the limits of the said City, such Mayor shall appoint such Commissioners;

Now, therefore, I, said Hugh J. Grant, Mayor of the City of New York, within thirty days after the presentation to me of the said application, do hereby appoint William Steinway, John H. Starin, Samuel Spencer, Eugene L. Bushe and Frederick P. Olcott, each of whom is a resident

of the City and County of New York as Commissioners, with full power and authority to do and provide all that they are directed to do and provide under the provisions of the said act, chapter 606 of the Laws of 1875, and the various acts amendatory thereof.

In witness whereof I have hereunto set my hand in this the City of New York on the 23d day of December, in the year of our Lord one thousand eight hundred and ninety.

HUGH J. GRANT, Mayor.

State of New York, City and County of New York, ss.:

I, Leonard A. Giegerich, Clerk of the said City and County, and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original appointment of Commissioners, William Steinway, John H. Starin, Samuel Spencer, Eugene L. Bushe, and Frederick P. Olcott by the Mayor of the City of New York, under chapter 606 of the Laws of 1875 (filed December 24, 1890), on file in my office, and that the same is a correct transcript thereof, and the whole of such original.

In witness whereof, I have hereunto subscribed my name, and affixed my official seal, this 26th day of February, 1891.

[SEAL]

LEONARD A. GIEGERICH, Clerk.

*Oath of Commissioners appointed under Chapter 606, Laws of 1875, and Chapter —, Laws of 1891.*

City and County of New York, ss.:

I, William Steinway, one of the Commissioners heretofore appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, and as such appointee being one of the Commissioners appointed by the provisions of an act entitled "An act to provide for rapid transit railways in cities of over one million inhabitants," passed January 31, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully perform the duties of the office of Commissioner aforesaid.

WILLIAM STEINWAY.

Sworn to before me this 9th day of February, 1891.

WM. J. DUGGETT, Commissioner of Deeds, N. Y. Co.

(A copy).

[SEAL]

LEONARD A. GIEGERICH, Clerk.

Filed February 9, 1891.

City and County of New York, ss.:

I, John H. Starin, one of the Commissioners heretofore appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, and as such appointee being one of the Commissioners appointed by the provisions of an act entitled "An act to provide for rapid transit railways in cities of over one million inhabitants," passed January 31, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully perform the duties of the office of Commissioner aforesaid.

JOHN H. STARIN.

Sworn to before me this 6th day of February, 1891.

TERENCE FARLEY, Commissioner of Deeds, New York City.

A copy.

[SEAL]

LEONARD A. GIEGERICH, Clerk.

Filed February 9, 1891.

City and County of New York, ss.:

I, Samuel Spencer, one of the Commissioners appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, and as such appointee being one of the Commissioners appointed by the provisions of an act entitled "An act to provide for rapid transit railways in cities of over one million inhabitants," passed January 31, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully perform the duties of the office of Commissioner aforesaid.

SAMUEL SPENCER.

Sworn to before me, this 5th day of February, 1891.

TERENCE FARLEY, Commissioner of Deeds, N. Y. City.

(A copy).

[SEAL]

LEONARD A. GIEGERICH, Clerk.

Filed February 9, 1891.

City and County of New York, ss.:

I, John H. Inman, one of the Commissioners heretofore appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, and as such appointee being one of the Commissioners appointed by the provisions of an act entitled "An act to provide for rapid transit railways in cities of over one million inhabitants," passed January 31, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully perform the duties of the office of Commissioner aforesaid.

JOHN H. INMAN.

Sworn to before me, this 2d day of February, 1891.

JAMES M. VALLES, Notary Public, N. Y. Co.

A copy.

[SEAL]

LEONARD A. GIEGERICH, Clerk.

Filed February 9, 1891.

City and County of New York, ss.:

I, Eugene L. Bushe, one of the Commissioners heretofore appointed by the Mayor of the City of New York, under the provisions of chapter 606 of the Laws of 1875, and as such appointee being one of the Commissioners appointed by the provisions of an act entitled "An Act to provide for rapid transit railways in cities of over one million inhabitants," passed January 31, 1891, do solemnly swear that I will support the Constitution of the United States and the Constitution of the State of New York, and that I will faithfully perform the duties of the office of Commissioner aforesaid.

EUGENE L. BUSHE.

Sworn to before me this 5th day of February.

TERENCE FARLEY, Commissioner of Deeds, New York City.

(A Copy)

LEONARD A. GIEGERICH, Clerk.

Filed February 9, 1891.

#### EXHIBIT 2.

#### Resolution of May 27, 1891.

Resolved, That after a thorough investigation, it is the sense of this Board that any additional rapid transit system for the City of New York should embrace the following essential features:

1. That it should be such as to provide not only for present needs, but also be susceptible, by additions and not by radical changes or alterations, of such expansion as the future growth of the city may require.

2. That it should provide for express trains at high speed for long distances, and for way service for intermediate distances upon separate tracks, so located as to facilitate at proper intervals an exchange from express to local and from local to express trains.

3. That the surface of the streets and avenues in the city should be obstructed to the least possible extent, and that wherever surface ground is required private instead of public property should be used if practicable.

4. That the first lines of railway to be constructed should be on or near the important thoroughfares coincident—or as nearly so as possible—with the main arteries of travel.

Resolved, That as meeting these requirements in the manner most feasible for the west side of the city, this Board hereby approves of a plan for an underground four-track railway under Broadway from a point at or near South Ferry to Fifty-ninth street; thence under the Boulevard to a point at or near One Hundred and Sixty-ninth street, with such length of viaduct at and near Manhattan street as may be necessary; thence under Eleventh avenue, or under private property immediately to the west thereof, as may be found most convenient to such point as the contour of the ground may determine; thence by viaduct across Spuyten Duyvil creek, and by tunnel or viaduct to the city limits.

Resolved, That the general plan of construction from, at or near South Ferry to near Forty-second street, shall be either by double-decked tunnel, with two tracks upon each deck or four tracks on the same level, as may be found upon examination or survey most expedient; the whole to be at such depth below the curb-line as not to disturb the surface or endanger building foundations; from near Forty-second street north to be four parallel tracks upon the same level; as near the surface of the street as practicable when in tunnel, but not in open cut at any point.

Resolved, That the stations for such line of railway shall be upon property acquired for the purpose, and shall be provided with ample elevator capacity wherever the platforms shall be 20 feet or more below the curb-line.

Resolved, That the motive power for such railway shall be electricity or some other power not requiring combustion within the tunnel.



Resolved, That the Engineers of this Board be and are hereby instructed to make the necessary surveys and prepare in detail the plans and specifications for such railway and submit the same promptly to this Board for its further action in finally determining a general plan for submission to the Common Council in accordance with the provisions of the Rapid Transit Act of January 31, 1891.

## EXHIBIT 3.

## Resolution of July 22, 1891.

Resolved, That this Board approves a plan for an underground four-track railway, diverging from the proposed Broadway line at or near Fourteenth street; thence under Union Square to Fourth avenue, and under Fourth and Park avenues to, near and south of Forty-second street; thence by suitable curve to the westward, under such private property and streets as shall be found practicable, to Madison avenue at or near Forty-fourth street; thence under Madison avenue to a point near Ninety-sixth street; thence curving to the eastward to a point not less than one hundred feet east of Madison avenue; thence by viaduct over private property parallel to and not less than one hundred feet east of Madison avenue to a point near and south of One Hundred and Thirty-fourth street; thence by curve to the eastward and by bridge across Harlem river.

Resolved, That the general plan of construction, from Broadway to a point near Ninety-sixth street, shall be either by double-deck tunnel, with two tracks upon each deck, or four tracks upon the same level, as may be found upon further examination and survey to be most expedient, and as near the surface as shall be found practicable. From near Ninety-sixth street north to be by viaduct, with four tracks, to Harlem river.

Resolved, That the conditions as to location of stations in tunnel, and all appliances connected therewith, shall be substantially the same as those required for the proposed west side line, described in resolution of this Board, approved May 27, 1891.

Resolved, That the Engineers of this Board are hereby directed to make the necessary surveys, plans and specifications for the above described east-side line south of the Harlem river at the earliest practicable date, and submit the same promptly to the Board in such form and manner as may be necessary to place the same before the Common Council of the City of New York, as required by the Rapid Transit Act of January 31, 1891.

Resolved, That from the Harlem river north to the city limits, the exact location and mode of construction can be determined only by instrumental survey, having due regard to the present sparseness of population and necessary economy of construction, and that the Engineers of this Board are hereby instructed to make such surveys at the earliest date practicable, but without delaying the preparation of the plans and specifications for that portion of the line of Harlem river.

Pending the reading of the report, Alderman Morgan moved that the further reading thereof be dispensed with. The President put the question whether the Board would agree with said motion. Which was decided in the affirmative.

Alderman Morgan then moved that the report be received and that Wednesday, October 28, 1891, at 2 o'clock P. M., be fixed as the time for the consideration of this subject by this Board.

Alderman Flynn moved that the report be referred to the Committee on Railroads. But the President ruled the motion out of order.

The President then put the question whether the Board would agree with the motion of Alderman Morgan. Which was decided in the affirmative.

## MOTIONS AND RESOLUTIONS.

Alderman Clancy moved that the Board do now adjourn. The President put the question whether the Board would agree with said motion. Which was decided in the affirmative. And the President announced that the Board stood adjourned until Tuesday, October 27, 1891, at 1 o'clock P. M.

FRANCIS J. TWOMEY, Clerk.

## BOARD OF ESTIMATE AND APPORTIONMENT

BOARD OF ESTIMATE AND APPORTIONMENT—CITY OF NEW YORK,  
MAYOR'S OFFICE, CITY HALL,  
MONDAY, October 19, 1891—11 o'clock A. M.

The Board met in pursuance of an adjournment. Present—All the members, viz.: Hugh J. Grant, the Mayor; Theodore W. Myers, the Comptroller; John H. V. Arnold, the President of the Board of Aldermen; Edward P. Barker, the President of the Department of Taxes and Assessments.

The minutes of the meeting held October 15, 1891, were read and approved.

The following communications were received:

DEPARTMENT OF STREET CLEANING—CITY OF NEW YORK,  
STEWART BUILDING,  
NEW YORK, October 14, 1891.

Hon. HUGH J. GRANT, President of the Board of Estimate and Apportionment:

SIR—I have the honor to respectfully request a transfer of the sum of forty thousand (40,000) dollars from the appropriation for cleaning streets, account of "Sweeping," 1891, to the appropriation for cleaning streets, account of "Carting," 1891, for the reason that the amount appropriated for the collection of ashes, garbage and street sweeping is not sufficient to complete the business of the year.

Also, a transfer of the sum of forty thousand (40,000) dollars from the appropriation for cleaning streets, account of "New Stock," 1891, to the appropriation for cleaning streets, account of "Final Disposition," 1891, for the same reason as hereinbefore assigned for the transfer requested to be made from the account of "Sweeping" to the account of "Carting."

These transfers are made necessary because the balance left for "Carting" on September 30, 1891, amounted to only \$93,788.82, and the balance left for "Final Disposition" amounted to only \$35,380.95, amounts wholly insufficient for the work to be done for the balance of the year.

The appropriation for "Carting" for the year was \$400,000 00  
September 11, 1891, transfer from "Sweeping" 15,000 00  
" 16, " " 35,000 00  
" 16, " " "New Stock" 100,000 00

\$550,000 00

## Carting.

The expenses of "Carting" for the nine months which ended on September 30, was. 456,211 18

Which leaves for the remainder of the year (92 days).... 93,788 82

The cost of carting, per month, for the past nine months was as follows:

January	\$61,112 39
February	58,089 97
March	62,122 46
April	51,924 74
May	46,923 87
June	42,635 85
July	42,961 47
August	44,081 76
September	46,358 67
	\$456,211 18

During the month of September just past, a part of which time the present incumbent has held office, the number of loads of ashes carted is 18,815 loads in excess of September, 1890, and the street sweepings 2,637 loads in excess, making a total of 21,452 loads in September, 1891, in excess of amount collected in September, 1890.

## Final Disposition.

The appropriation for "Final Disposition" for the year was. \$250,000 00  
The expense for the nine months last past were 214,619 05

Which leaves for the remainder of the year (92 days) only 35,380 95

The cost of "Final Disposition," per month, for the past nine months, was as follows:

January	\$27,794 82
February	24,667 84
March	26,198 85
April	23,477 90

May	\$19,865 35
June	21,722 52
July	23,007 52
August	22,932 21
September	24,952 04
Total	\$214,619 05

Very respectfully, yours,  
THOMAS S. BRENNAN, Commissioner.

DEPARTMENT OF STREET CLEANING—CITY OF NEW YORK,  
STEWART BUILDING,  
NEW YORK, October 14, 1891.

Hon. HUGH J. GRANT, President of the Board of Estimate and Apportionment:

DEAR SIR—In submitting my application to the Honorable the Board of Estimate and Apportionment, in which I ask for a transfer of certain moneys, I respectfully beg to state that up to and including September 17, on which day I was appointed to my present position, there had been expended for the item of Carting, \$436,075.28, leaving a balance only of \$113,924.72.

For the item of Final Disposition, up to and including the same date, September 17, the expenditure was \$203,371.38, leaving a balance only of \$46,628.62.

Under my predecessor in office, from September 1 to September 16, inclusive (16 days), the number of loads of ashes collected amounted to 56,404 (an average of 3,525 loads of ashes per day), and the number of loads of street sweepings, 13,932 (an average of 870 loads of street dirt per day), making a total of ashes and street dirt combined of 70,336 loads, or an average of 4,395 loads per day.

From September 17, on which date I was appointed to my present office, up to and including October 2 (16 days), the number of loads of ashes collected amounted to 59,477 (an average of 3,717 per day), and the number of loads of street sweepings collected amounted to 21,833 (an average of 1,365 per day), making a total of ashes and street sweepings combined of 81,310 loads, or an average of 5,082 loads per day, being an excess of ashes and dirt collected in the second 16 days over the amount collected in the first 16 days of 10,974 cart-loads, or an average daily increase of 686 loads. Naturally, this increase calls for a corresponding outlay for carting, and the same may be said in relation to final disposition.

Very respectfully,  
THOMAS S. BRENNAN, Commissioner of Street Cleaning.

Thomas S. Brennan, Commissioner of Street Cleaning, appeared and made a statement in explanation thereof. After debate, the communication was laid over, in order to allow the Comptroller to examine into the same.

The Comptroller presented the following:

CITY OF NEW YORK—DEPARTMENT OF PUBLIC PARKS,  
COMMISSIONERS' OFFICE, NOS. 49 AND 51 CHAMBERS STREET,  
October 13, 1891.

To the Honorable Board of Estimate and Apportionment:

GENTLEMEN—I have the honor to inform you of the adoption of the following resolution at a meeting of the Board of Parks held this day:

Resolved, That the Board of Estimate and Apportionment be respectfully requested to transfer the sum of four thousand two hundred and twenty dollars and seventy-seven cents from the following appropriations for the current year for which the several amounts will not be required, viz.:

"Police Salaries"	\$2,000 00
"Resurfacing the Roadway of Fifth Avenue, from Ninetieth to One Hundred and Tenth Street"	206 89
"Surveys, Maps and Plans"	994 88
"Music"	13 00
"Settees and Tree Labels"	6 00
"Telephonic Service"	1,000 00
	\$4,220 77

—to the appropriation for "Care and Maintenance of New Parks north of Harlem River" for the current year, which is insufficient.

Very respectfully,  
CHARLES DE F. BURNS, Secretary, D. P. P.

And offered the following:

Resolved, That the sum of four thousand two hundred and twenty dollars and seventy-seven cents (\$4,220.77) be and the same is hereby transferred from the following appropriations made to the Department of Public Parks for 1891, the same being in excess of the amounts required for the purposes thereof, viz.:

"Police—Salaries of Captains, etc."	\$2,000 00
"Resurfacing the Roadway of Fifth Avenue, from Ninetieth to One Hundred and Tenth Street"	206 89
"Surveys, Maps and Plans"	994 88
"Music"	13 00
"Settees and Tree Labels"	6 00
"Telephonic Service"	1,000 00
Total	\$4,220 77

—to the appropriation made to the same Department for the year 1891, entitled "Care and Maintenance of New Parks north of Harlem River, etc.," which is insufficient for the objects thereof.

Which was adopted by the following vote:  
Affirmative—The Mayor, Comptroller, President of the Board of Aldermen and President of the Department of Taxes and Assessments—4.

The Comptroller offered the following:

Whereas, The Board of Education adopted a resolution on October 7, 1891, subject to the approval of this Board, that the title to No. 234 East Twenty-eighth street be accepted, upon compliance with the requirements of the resolution of the Board of Education of July 1, 1891, and approved by the Board of Estimate and Apportionment September 9, 1891, and on presentation to the Comptroller of the deed or deeds for said premises, together with the certificate of the Counsel to the Corporation that the title thereto is satisfactory and free from all incumbrances, except certain encroachments of a party-wall and of another wall on the easterly side of said premises, and is vested in the Mayor, Aldermen and Commonalty of the City of New York;

Whereas, The sum of sixteen thousand dollars (\$16,000) was appropriated by this Board at its meeting of September 9, 1891, for the purchase of said property; therefore

Resolved, That this Board hereby approves of said resolution of the Board of Education, adopted October 7, 1891, for the purchase of the property mentioned, upon the terms and conditions contained therein; and that the Counsel to the Corporation be requested to take such measures as may be necessary to protect the interests of the City in the matter, and upon the certificate of the Counsel to the Corporation, the Comptroller be authorized to make payment for said premises.

Which were adopted by the following vote:

Affirmative—The Mayor, Comptroller, President of the Board of Aldermen and President of the Department of Taxes and Assessments—4.

The President of the Board of Aldermen was excused from further attendance at this session of the Board.

The Comptroller presented the following:

DEPARTMENT OF PUBLIC WORKS—COMMISSIONER'S OFFICE,  
NO. 31 CHAMBERS STREET,  
NEW YORK, October 5, 1891.

Hon. HUGH J. GRANT, Chairman, Board of Estimate and Apportionment:

DEAR SIR—Work is now in progress and is nearly completed, under a contract amounting to \$4,751, payable out of the appropriation for "Public Buildings—Construction and Repairs," for extensive repairs and improvements on the buildings composing Clinton Market, and these improvements include the removal of the sheds and stands on and over the sidewalks on the Spring street and Washington street fronts. The former occupation of these sidewalks by the stand-holders has rendered them absolutely unfit and even dangerous for public travel, and the other portions of the sidewalks fronting on the market are also much in need of reflagging and repairs. Provision should, therefore, be made to have the sidewalks on the whole frontage of the market put in good condition and properly flagged for the convenience of pedestrian travel generally as well as the business of the market. The expense of this work is estimated at \$3,700, while the present appropriation for "Flagging Sidewalks and Fencing Vacant Lots in Front of City Property" is only \$2,000, and will be completely absorbed by work already done or about to be done in front of other City



property. The improvement of the sidewalks around Clinton Market can therefore only be provided for by transfer, and I respectfully ask that the unexpended balance of \$3,699.31 in the appropriation for "Water Supply for the Twenty-fourth Ward," for 1890, for which the same is not needed, be transferred to the appropriation for "Flagging Sidewalks and Fencing Vacant Lots in Front of City Property," for 1891, in order that these sidewalks may be put in proper condition before winter sets in.

Very respectfully,  
THOS. F. GILROY, Commissioner of Public Works.

CITY OF NEW YORK—FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE,  
October 15, 1891.

*To the Board of Estimate and Apportionment:*

I present herewith an application from the Commissioner of Public Works requesting the transfer of an unexpended balance from the appropriation allowed for the "Water Supply of the Twenty-fourth Ward," for 1890, to the appropriation for "Reflagging Sidewalks in front of City Property." In the course of the alterations and improvements by the Department of Public Works, now in progress at Clinton Market, the stalls which were built on the sidewalks have been removed, leaving the walks themselves in a very bad condition, as appears from the report of the Engineer of the Finance Department, whose report is submitted and who has examined the market property at my direction; and the object of the transfer is to provide the necessary funds to meet the expenditure required on a contract to reflag the walks. The improvement is one greatly to be desired, and I offer the following resolution for adoption.

Respectfully,  
THEO. W. MYERS, Comptroller.

CITY OF NEW YORK—FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE,  
October 14, 1891.

*Hon. THEO. W. MYERS, Comptroller:*

SIR—The Commissioner of Public Works requests the transfer by the Board of Estimate and Apportionment, of the sum of \$3,699.31, being the unexpended balance in the appropriation for "Water Supply for the Twenty-fourth Ward," for 1890, for which the same is not needed, to the appropriation for "Flagging Sidewalks and Fencing Vacant Lots in front of City Property," for 1891, for the purpose of putting in proper condition the sidewalks around Clinton Market. These sidewalks are in very bad condition and to put them in good order would require the amount estimated, \$3,700. It appears to me that the transfer requested ought to be made.

Respectfully,  
EUG. E. McLEAN, Engineer.

And offered the following:

Resolved, That the sum of thirty-six hundred and ninety-nine dollars and thirty-one cents (\$3,699.31) be and the same is hereby transferred from the appropriation made to the Department of Public Works for 1890, entitled "Water Supply for the Twenty-fourth Ward," the same being in excess of the amount required for the purposes and objects thereof, to the appropriation made to the said Department for 1891, entitled "Flagging Sidewalks and Fencing Vacant Lots in Front of City Property," the amount of said appropriation being insufficient.

Which was adopted by the following vote:

Affirmative—The Mayor, Comptroller and President of the Department of Taxes and Assessments—3.

On motion, the Board proceeded to the consideration of the Provisional Estimate for the year 1892.

The Departmental Estimate of the Department of Public Works was taken up and considered. Thomas F. Gilroy, Commissioner of Public Works, appeared and made a statement in explanation thereof.

The Departmental Estimates of the Mayoralty, Finance Department, State Taxes, Department of Taxes and Assessments, Police Justices and District Courts were taken up and considered.

On motion, the Board took a recess until 2 o'clock P. M.

The Board reassembled at 2 o'clock P. M.

Present—The Mayor, Comptroller and President of the Department of Taxes and Assessments. Absent—The President of the Board of Aldermen.

The Departmental Estimate of the Department of Public Charities and Correction was taken up and considered.

H. H. Porter, President, and Edward C. Sheehy, Commissioners, and A. E. McDonald, General Superintendent of Insane, Department of Public Charities and Correction, appeared and made statements in explanation thereof.

William H. Nicholson and William C. Reddy, representing the Associated Posts of the Grand Army of the Republic, appeared and presented the following:

*To the Board of Estimate and Apportionment of the City of New York:*

The undersigned, who are Commanders of Posts of the Grand Army of the Republic, in the City of New York, to wit, the said George Pfitzer is Commander of A. S. Williams Post No. 394; the said James T. Walsh is Commander of Hans Powell Post No. 638, and the said Bradley S. Osbon is Commander of Naval Post No. 516, and representing, at their request, the Associated Commanders and Quartermasters of Posts of the Grand Army of the Republic, in the City of New York, respectfully represent;

That pursuant to the provisions of chapter 261 of the Laws of the State of New York for the year 1888, an application was made on behalf of the said posts of the Grand Army of the Republic, in said city, to the Commissioners of Charities and Correction, to include in their estimate for the coming fiscal year, a request for an appropriation of the sum of \$10,000 for the relief of indigent soldiers, etc., of the late War for the Union, which estimate and request, we are informed, has been made by said Commissioners to your Honorable Board;

We further represent that said sum of \$10,000 is reasonably, justly and necessarily required for said purpose, and that a lesser sum will be entirely insufficient, for the following reasons:

First—Although the act of 1888 aforesaid has been in force for more than three years, and is mandatory, no appropriation whatever has been made in this city and county as required by said act, although repeatedly requested, while the burden of supplying the needs of the persons to be beneficiaries under said act has been thrown upon the posts of the Grand Army of the Republic;

Second—That during the past year there has been expended by the posts of the Grand Army of the Republic, in the City of New York, for the purposes specified in said act, and out of their scanty funds, derived from dues paid by their members and voluntary contribution of their members, the sum of \$21,000, or thereabout, as appears by their official reports to the Department Headquarters, a copy of which is hereto appended.

Third—That there are 55 posts of the Grand Army of the Republic meeting regularly in the City of New York, comprising about 10,000 members (all citizens), a part of whom will necessarily be beneficiaries under said act.

Fourth—That there are about 15,000 other resident honorably discharged soldiers, sailors and marines and the widows and orphans of such who are in destitute circumstances and who are proper beneficiaries under said act, and from whom applications for relief are constantly being presented to said posts, and their number is constantly increasing with advancing years and infirmities.

Fifth—That the City of Troy, in this State, alone appropriated last year \$3,000 for the purposes specified in said act, although there are but five posts of the Grand Army of the Republic in said city and but about 1,500 persons who are likely to be entitled to relief therefrom residing in said city.

The undersigned indulge the belief that the Metropolis of the Nation will not be more niggardly in patriotic and charitable works than a city of but 60,000 inhabitants.

Sixth—That the statute provides ample safeguards for the proper expenditure of said desired appropriation.

The undersigned therefore respectfully request that the sum recommended by the Commissioners of Charities and Correction aforesaid, to wit, the sum of not less than ten thousand dollars, be appropriated by your Honorable Board for the purpose above specified, without reduction, postponement or delay.

We have the honor to be,

Very respectfully, your fellow citizens,

GEORGE PFITZER, Commander, Post 394, G. A. R.  
JAS. T. WALSH, Commander, Post 638, G. A. R.  
BRADLEY S. OSBON, Commander, Post 516, G. A. R.

On behalf of the Associated Commanders and Quartermasters of Posts of the Grand Army of the Republic in the City of New York.

City and County of New York, ss.:

James T. Walsh and Bradley S. Osbon, the signers of the foregoing statement and request, being severally sworn, say that the foregoing statement is true to the best of their knowledge, information and belief.

JAS. T. WALSH.  
BRADLEY S. OSBON.

Sworn to before me this 14th day of October, 1891.

GEORGE T. MORTIMER, Commissioner of Deeds, New York County.

City and County of New York:

George Pfitzer, being duly sworn, deposes and says that the foregoing statement, signed by him, is true to the best of his knowledge and belief.

GEORGE PFITZER.

Sworn before me this 14th day of October, 1891.

W. T. BOGERT (63), Notary Public, New York County.

Which were ordered to be printed in the minutes.

On motion, the Board adjourned to meet to-morrow, October 20, at 11 o'clock A. M.

E. P. BARKER, Secretary.

## DEPARTMENT OF DOCKS.

At an adjourned meeting of the Board of Docks of the City of New York, held at the office of the Board, Pier "A," Battery place, Friday, October 2, 1891.

Present—President Post.

Commissioner Cram.  
Phelan.

The President of the Knickerbocker Ice Company appeared and reiterated the offer made by him October 1, 1891, for the sale to the City of certain water-front property owned by said company at the foot of Forty-third street, North river; whereupon

Commissioner Cram moved that the words eighty thousand dollars (\$80,000) in the report of the President, submitted September 17, 1891, in relation to the value of said property, be stricken out and the words one hundred and twenty thousand dollars (\$120,000) substituted in place thereof, which was adopted, whereupon Commissioner Cram offered for adoption the following preamble and resolutions:

Whereas, Robert Maclay, President of the Knickerbocker Ice Company, has this day signified his willingness, on behalf of said company, to accept the sum of one hundred and twenty thousand (\$120,000) dollars for the purchase by the City of the Pier and bulkhead at the foot of Forty-third street, North river, as hereinafter described; therefore be it

Resolved, That, pursuant to section 715 of the New York City Consolidation Act of 1882, this Board enters into an agreement with the Knickerbocker Ice Company for the purchase and acquisition for the sum of one hundred and twenty thousand (\$120,000) dollars, of the Pier foot of Forty-third street, North river, together with the one hundred feet of bulkhead southerly therefrom, including all the right to wharfage, cramage, advantages and emoluments from said pier, together with all the tenements, hereditaments and appurtenances thereunto belonging and covered by the deed from the City to Caleb F. Lindsley, dated November 11, 1852, and including all the right to wharfage, cramage and emoluments from said one hundred feet of bulkhead southerly of said pier, and all the right, title and interest in and to the land and land under water, lying westerly of Twelfth avenue, between Forty-third street and the centre line of the block between Forty second and Forty-third streets, North river, covered by grant from the City to Caleb F. Lindsley, July 1, 1850, said agreement and purchase to be subject to the approval of the Commissioners of the Sinking Fund, as provided by section 715, chapter 410 of the Laws of 1882.

Resolved, That, by virtue of the power and authority vested in this Board, and in pursuance of the statutes in such cases made and provided, this Department hereby agrees to lease, grant and assign to the Knickerbocker Ice Company all and singular the wharfage which may arise, accrue, or become due in the manner and at the rates prescribed by law for the use and occupation of a pier to be built by this Department at the foot of Forty-third street, North river, together with the privilege of shedding and maintaining a shed thereon, for the period of ten years from the first day of for the sum of five thousand dollars (\$5,000) per annum, payable quarterly in advance to the Treasurer of this Department during the continuance of the lease; the said lessee shall have the privilege of two renewals of ten years each; the annual rent for the first renewal term of ten years to be five thousand two hundred and fifty dollars (\$5,250), the annual rent for the second renewal term of ten years to be five thousand seven hundred and twenty-five dollars (\$5,725), the rental for the renewal terms to be paid quarterly in advance as above; the said lease or any renewal thereof shall contain the usual terms and conditions as at present embodied in the lease of wharf property now used by this Department; provided, however, that this resolution shall not be binding, or of any force or effect unless the said lessee shall within twenty days after receipt hereof accept in writing the terms and conditions contained herein, and agree to execute a lease when prepared and ready for execution; and provided further, that unless the Commissioners of the Sinking Fund consent to and approve the purchase of said above-mentioned property, this resolution shall be of no force or effect.

The aforesaid preamble and resolutions were adopted.

The following communications were received, read and,

On motion, ordered to be placed on file, viz.:

From John D. Crimmins, on behalf of the Pennsylvania Railroad Company—Requesting to be informed whether it was not a part of the agreement leasing the Pier foot of Thirty-seventh street, North river, that the said company should be placed in possession of said pier.

On motion, P. White's Sons were assigned a berth at the Pier foot of Forty-seventh street, North river. Notify said contractors that they must remove forthwith to the place designated.

From Dock Master Abeel—Reporting repairs required to the sheathing on Pier, old 54, North river. The Engineer-in-Chief directed to examine and if necessary repair.

From the Department of Street Cleaning—Requesting dredging at the dumping-board foot of Canal street, North river. Advise that the Barney Dumping-boat Company have been notified to forthwith dredge the said slip.

From the West Shore Railroad—Stating that the repairs ordered to the Pier foot of Thirty-sixth street, North river, will receive attention.

The Treasurer, to whom was referred, October 1, 1891, the report of the Engineer-in-Chief, as to the cost of completing the work of building a new pier and dumping-board foot of One Hundred and Tenth street, Harlem river (the said work having been abandoned by the contractor), reported that in his opinion a requisition should be drawn upon the Comptroller in favor of William W. Hegeman for the sum of \$13,465.79, balance due on said contract, and that the same, together with a statement of the case, and a list of the liens, be also forwarded to the Department of Finance, and he further recommended that the time for the completion of the work of building said pier and dumping-board, under Contract No. 339, be extended to September 10, 1891.

On motion, said report was approved, and recommendation adopted.

Commissioner Cram moved that Pier, new 15, North river, be built by the force of the Department, but failing to receive a unanimous vote as required by law, was lost, as follows:

Affirmative—Commissioner Cram.

Phelan.

Negative—President Post.

Whereupon Commissioner Cram moved that the Engineer-in-Chief be directed to prepare plans, specifications and form of contract for building Pier, new 15, North river, which was unanimously adopted by the affirmative votes of President Post and Commissioners Cram and Phelan.

Commissioner Cram moved that the Treasurer be directed to procure a steam launch for the uses and purposes of the Department, and that the same be purchased otherwise than by contract. Tabled.

The action of the President and Commissioner Phelan in consenting to the assignment made by Joseph W. Duryee to Graves & Steers of the sum of eleven thousand two hundred and fifty dollars (\$11,250) of the moneys due or to grow due under Contract No. 367, for furnishing sawed yellow pine timber, was approved.

The following resolution was unanimously adopted by the affirmative votes of President Post and Commissioners Cram and Phelan:

Resolved, That the Engineer-in-Chief be and hereby is directed to proceed with the extension of Pier, new 26, North river, to the pier-head line of 1890, and that all the work hereby ordered be performed otherwise than by contract, as provided by section 714 of the New York City Consolidation Act of 1882, and that it be done by the force of the Department by day's work, except so much of the labor and material as is now or may hereafter be contracted for, and that all the materials, tools and dredging necessary therefor, and not heretofore contracted for, or which may not hereafter be contracted for, be purchased by the Treasurer otherwise than by contract.

On motion, the Board adjourned.

AUGUSTUS T. DOCHARTY, Secretary.

The Board then convened in executive session.

The following persons were appointed:

Dock Builder.  
John Mulrooney.



## Laborers.

John Shea.  
On motion, the Board adjourned.

John McNamee.

AUGUSTUS T. DOCHARTY, Secretary.

At a special meeting of the Board of Docks of the City of New York, held at the office of the Board, Pier "A," Battery place, Tuesday, October 6, 1891.

Present—President Post.  
" Commissioner Cram.  
" Phelan.

The Board met for the purpose of awarding the contracts for preparing for and extending Piers, old 57 and 58, with appurtenances, near the foot of Bloomfield street, North river, and for repairing the existing crib-bulkhead at Pier, old 58; for furnishing granite stones for bulkhead or river wall; for removing the existing earth, etc., from the newly-made land for a width of fifty feet, extending from Dey street to Vesey street, North river, which is to be paved, and preparing for and paving the same with granite or Staten Island syenite blocks; laying crosswalks and building the necessary drains or sewers; and for preparing for and building a crib-bulkhead from a point about one hundred feet north of West Ninety-seventh street, North river, to a point about twenty-nine feet six inches north of West Ninety-ninth street, North river, and for dredging thereat, under Contracts Nos. 395, 396, 397 and 399, respectively; whereupon, Commissioner Cram offered the following resolutions, which were unanimously adopted:

Resolved, That the contract opened September 11, 1891, for preparing for and extending Piers, old 57 and 58, near the foot of Bloomfield street, North river, and for repairing the existing crib-bulkhead at Pier, old 58, be and hereby is awarded to Barth. S. Cronin, he being the lowest bidder, upon the approval of the sureties by the Comptroller.

Resolved, That the contract opened September 24, 1891, for furnishing granite stones for bulkhead or river wall be and hereby is awarded to James Symington, he being the only formal bidder, upon the approval of the sureties by the Comptroller.

Resolved, That the contract opened September 24, 1891, for removing the existing earth, etc., from the newly-made land for a width of fifty feet, extending from Dey street to Vesey street, North river, and for paving the same with granite or Staten Island syenite blocks, for laying crosswalks and building the necessary drains or sewers, be and hereby is awarded to Joseph Moore, he being the lowest bidder, upon the approval of the sureties by the Comptroller.

Resolved, That the contract opened October 1, 1891, for preparing for and building a crib-bulkhead from a point about one hundred feet north of West Ninety-seventh street to a point about twenty-nine feet six inches north of West Ninety-ninth street, North river, and for dredging thereat, be and hereby is awarded to James D. Leary, he being the lowest bidder, upon the approval of the sureties by the Comptroller.

The following communication was received, read and,

On motion, ordered to be placed on file, viz.:

From the West Shore Railroad Company—Accepting the terms and conditions of the resolution adopted September 17, 1891, authorizing the leasing of Pier, new 23, North river.

By unanimous consent, J. D. Layng, General Manager of the West Shore Railroad Company, appeared before the Board and was heard respecting the payment to the Department of the rent of Pier, new 23, North river.

On motion of Commissioner Cram, the President voting in the negative, the Treasurer was authorized to receive from said company a check for the sum of \$10,500 and credit the same to the first quarter's rent of said pier.

On motion of Commissioner Cram, the President voting in the negative, the Engineer-in-Chief was directed to remove Pier, old 34, North river, Mr. Layng, consenting to said action.

On motion, the Board adjourned.

AUGUSTUS T. DOCHARTY, Secretary.

## BOARD OF CITY RECORD.

MAYOR'S OFFICE, CITY HALL,  
NEW YORK, October 9, 1891.

The Hons. Hugh J. Grant, Mayor; William H. Clark, Counsel to the Corporation, and Thomas F. Gilroy, Commissioner of Public Works, the officers designated by section 66 of the New York City Consolidation Act, met this day.

The minutes of the meeting of October 7 were read and approved.

The Mayor asked if the other members of the Board had considered the statement and estimate for 1892 presented by the Supervisor of the City Record at the meeting on the 7th instant.

The Counsel to the Corporation and the Commissioner of Public Works said they had read the communication and agreed with the proposals and conclusions contained in it.

The Mayor said he had not had time to read the paper. On motion of the Counsel to the Corporation, the matter was laid over to await the Mayor's convenience.

The following requisition was allowed by a concurrent vote of the three officers:

No.	DATE.	APPLIED FOR.	ACTION OF BOARD.
		By Board of Estimate.	
	Oct. 8, 1891	100 copies Departmental Estimates, in book form..... 100 copies circular calling for unexpended balances.....	

The bill of John F. Hahn, for \$647.79, for printing the indexes to births, marriages and deaths for July, was approved.

Adjourned.

W. J. K. KENNY, Supervisor, City Record.

## OFFICIAL DIRECTORY.

STATEMENT OF THE HOURS DURING which 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.  
Secretary and Chief Clerk.

## COMMISSIONERS OF ACCOUNTS.

Rooms 114 and 115, Stewart Building, 9 A. M. to 4 P. M.  
MICHAEL T. DALY, CHARLES G. F. WAHLE.

## 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.

## 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.

## DEPARTMENT OF PUBLIC WORKS.

## Commissioner's Office.

No. 31 Chambers street, 9 A. M. to 4 P. M.  
THOMAS F. GILROY, Commissioner; MAURICE F. HOLAHAN, Deputy Commissioner.

## DEPARTMENT OF STREET IMPROVEMENTS

## TWENTY-THIRD AND TWENTY-FOURTH WARDS.

No. 2622 Third avenue, northeast corner of One Hundred and Forty-first street. Office hours, 9 A. M. to 4 P. M.; Saturdays, 12 M.  
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. LOWBER SMITH, Assistant Deputy Comptroller.

## 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.  
ANDREW T. CAMPBELL, Chief Clerk.

## 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 Persona Taxes.

Stewart Building, Broadway and Chambers street, 9 A. M. to 4 P. M.  
JOHN G. H. MEYERS, Attorney.  
MICHAEL J. DOUGHERTY, Clerk.

## Office of the Corporation Attorney

No. 49 Beekman street, 9 A. M. to 4 P. M.  
LOUIS HANNEMAN, 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.

## FIRE DEPARTMENT.

Nos. 157 and 159 East Sixty-seventh street.  
HENRY D. PURROY, President; CARL JUSSEN, Secretary.

## 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.

## 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.  
EDWARD P. BARKER, President; FLOYD T. SMITH, Secretary.

## DEPARTMENT OF STREET CLEANING.

Stewart Building. Office hours, 9 A. M. to 4 P. M.  
THOMAS S. BRENNAN, Commissioner; WILLIAM DALTON, Deputy Commissioner; J. Joseph Scully, 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

The Mayor, Chairman. E. P. BARKER, Secretary  
CHARLES V. ADEE, Clerk.  
Office of Clerk, Staats Zeitung Building, Room 5.

## 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 MEAKIN, 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.  
BERNARD F. MARTIN, Commissioner; JAMES E. CONNER, 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.

## SURROGATE'S COURT.

New County Court-house. Court opens at 10.30 A. M.  
RASTUS S. RANSOM, Surrogate; WILLIAM V. LEARY, Chief Clerk.

## 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

## COURT OF COMMON PLEAS.

Third floor, New County Court-house, 9 A. M. to 4 P. M.  
JOSEPH F. DALY, Chief Justice; S. JONES, Chief Clerk.

## OVER 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.

## SUPREME COURT

Second floor, New County Court-house, opens 10.30 A. M.  
CHARLES H. VAN BRUNT, Presiding Justice; LEONARD A. GIEGERICH, Clerk.

## CITY COURT.

City Hall.  
Clerk's Office, Room No. 10, City Hall, 9 A. M. to 4 P. M.  
SIMON M. EHRLICH, Chief Justice; JAMES P. KEATING, Clerk.

## SUPERIOR COURT.

Third floor, New County Court-house, 11 A. M.  
JOHN SEDGWICK, Chief Judge; THOMAS BOESE, Chief Clerk.

## CIVIL SERVICE SUPERVISORY AND EXAMINING BOARDS.

NEW YORK CITY CIVIL SERVICE BOARDS,  
COOPER UNION,  
NEW YORK, October 13, 1891.

PUBLIC NOTICE IS HEREBY GIVEN THAT open competitive examinations will be held at this office for the positions below mentioned, upon the dates specified:

October 22. INSPECTOR OF COAL in Finance Department.  
Friday, October 23. STOREKEEPER and CLERK, Street Cleaning Department.

Application blanks may be obtained at the office of the Secretary, Room No. 30, Cooper Union.  
LEE PHILLIPS,  
Secretary and Executive Officer.

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 as 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 type-writers 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 E 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 F shall include stenographers, type-writers and all persons not included in the foregoing schedules except laborers or day workmen.
    - Schedule G 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 Officer

## COMMISSIONER OF STREET IMPROVEMENTS OF THE TWENTY-THIRD AND TWENTY-FOURTH WARDS.

OFFICE OF THE  
COMMISSIONER OF STREET IMPROVEMENTS  
OF THE TWENTY-THIRD AND TWENTY-FOURTH WARDS,  
NEW YORK, October 21, 1891.

## AUCTION SALE.

THE COMMISSIONER OF STREET IMPROVEMENTS of the Twenty-third and Twenty-fourth Wards will sell at public auction, by Albert F. Schwanneke, auctioneer, buildings and parts of buildings, fences, etc., now standing within the lines of—  
Melrose avenue, between East One Hundred and Forty-ninth street and Third avenue, and the south side of One Hundred and Sixty-third street.  
John street, between St. Ann's and Eagle avenues, north side.  
East One Hundred and Sixty-fifth street, between Union and Prospect avenues.  
East One Hundred and Seventy-second street, between Vanderbilt avenue, East, and Washington avenue.  
MONDAY, NOVEMBER 9, 1891, at 10 o'clock A. M.  
The sale will begin with, and in front of, premises numbered one on the catalogue.

## TERMS OF SALE.

The purchase moneys to be paid in bankable funds at the time of sale. The purchasers will be required to remove their property on or before the expiration of thirty days from the date of sale. Purchasers to be liable for any and all damages to persons, animals or property by reason of the removal of said buildings, etc.  
For further information and for the catalogues apply at the office of the Commissioner of Street Improvements of the Twenty-third and Twenty-fourth Wards, No. 2622 Third avenue.  
By order of the Commissioner.  
WILLIAM H. TEN EYCK,  
Secretary.

OFFICE OF  
COMMISSIONER OF STREET IMPROVEMENTS  
OF THE TWENTY-THIRD AND TWENTY-FOURTH WARDS,  
NEW YORK, October 19, 1891.

## TO CONTRACTORS.

SEALED BIDS OR ESTIMATES FOR EACH OF the following-mentioned works, 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 by the Commissioner of Street Improvements of the Twenty-third and Twenty-fourth Wards, at his office, No. 2622 Third avenue, corner of One Hundred and Forty-first street, until 3 o'clock P. M., on Friday, October 30, 1891, at which place and hour they will be publicly opened.

- FOR REGULATING, GRADING, CURBING AND FLAGGING JULIET STREET, from Mott to Walton avenue.
- FOR REGULATING, GRADING, SETTING CURB-STONES AND LAYING FLAG-STONES AND CROSSWALKS IN BURNSIDE AVENUE, from Sedgwick avenue to Webster avenue.
- FOR REGULATING, GRADING, SETTING CURB-STONES, FLAGGING THE SIDEWALKS AND LAYING CROSSWALKS IN TEASDALE PLACE, from Third avenue to Trinity avenue.
- FOR REGULATING, GRADING, SETTING CURB-STONES, FLAGGING THE SIDEWALKS AND LAYING CROSSWALKS IN ONE HUNDRED AND FORTY-SIXTH STREET, between Third avenue and Railroad avenue, East.
- FOR REGULATING, GRADING, SETTING CURB-STONES, FLAGGING THE SIDEWALKS AND LAYING CROSSWALKS IN ONE HUNDRED AND FIFTY-SECOND STREET, between Courtlandt avenue and the easterly curb-line of Railroad avenue, East.

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 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 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 the deposit will be returned to him.

The Commissioner of Street Improvements of the Twenty-third and Twenty-fourth Wards 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 other information desired, can be obtained at this office.

LOUIS J. HEINTZ,  
Commissioner of Street Improvements,  
Twenty-third and Twenty-fourth Wards.

## DEPARTMENT OF STREET CLEANING.

DEPARTMENT OF STREET CLEANING,  
CITY OF NEW YORK,  
STEWART BUILDING, No. 280 BROADWAY,  
NEW YORK, October 19, 1891.

### TO CONTRACTORS.

SEALED PROPOSALS FOR FURNISHING THE Department of Street Cleaning with the following articles:

365,000 pounds clean No. 1 White Oats.  
162,000 pounds Hay, of the quality and standard known as best Sweet Timothy.  
48,000 pounds good clean Rye Straw.  
4,000 pounds Bran.

—will be received by the Commissioner of Street Cleaning at the office of said Department, Room 189, Stewart Building, No. 280 Broadway, in the City of New York, until 12 o'clock M. October 30, 1891, at which place and time they will be publicly opened by the Commissioner of Street Cleaning and read.

All of the articles are to be delivered at the Department Stables, Seventeenth street and Avenue C, and No. 614 West Fifty-second street, in such quantities and at such times as may be directed.

No estimate will be received or considered after the hour mentioned.

The form of the agreement, with specifications, showing the manner of payment for the articles, may be seen, and forms of proposals may be obtained at the office of the Department.

Proposals must include all the items, specifying the price per cwt. of Hay, Straw, Oats and Bran. 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 above shall present the same in a sealed envelope to said Commissioner of Street Cleaning, 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 Commissioner of Street Cleaning 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 upon 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 his liabilities as bail, surety, or otherwise; and that he has offered himself as a surety in good faith, 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 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 the 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.

THOMAS S. BRENNAN,  
Commissioner 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.

THOMAS S. BRENNAN,  
Commissioner of Street Cleaning.

### BOARD OF EDUCATION.

SEALED PROPOSALS FOR CONVEYING pupils from Morris Heights to Primary School No. 45 and return, from date of commencement of service, after execution of contract to July 3, 1892, will be received by the Board of Trustees of Common Schools of the Twenty-fourth Ward, at Grammar School No. 64, No. 2436 Webster avenue, until the 31st day of October, 1891.

For terms of contract and further information inquire of Trustee J. E. Eustis, Morris Heights.

The Trustees reserve the right to reject any and all proposals.

ELMER A. ALLEN, Chairman,  
LOUIS L. EICKWORT, Secretary,  
Board of Trustees, Twenty-fourth Ward.

### DEPARTMENT OF PUBLIC PARKS

CITY OF NEW YORK—DEPARTMENT OF PUBLIC PARKS,  
Nos. 49 & 51 CHAMBERS STREET,  
October 13, 1891.

### NOTICE.

OWNERS OF PROPERTY AFFECTED BY THE taking of land for the easterly approach to the proposed bridge over the Harlem river at One Hundred and Fifty-fifth street (to replace the old McComb's Dam bridge) are requested to attend a hearing before the Board of Commissioners of Public Parks on Wednesday, October 21, 1891, at 10 o'clock A. M., with reference to the value of the land to be taken for such purpose.

CHARLES DE F. BURNS,  
Secretary.

### DEPARTMENT OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE,  
Room 6, No. 31 CHAMBERS STREET,  
NEW YORK, October 21, 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 Thursday, November 5, 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 THE CARRIAGEWAY OF FIFTY-SECOND STREET, from the easterly side of Twelfth avenue to bulkhead-line of Hudson river.

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 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 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 1, No. 31 Chamber street.

THOS. F. GILROY,  
Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE,  
Room 6, No. 31 CHAMBERS ST.,  
NEW YORK, October 16, 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, October 28, 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 THE ROADWAY OF ONE HUNDREDTH STREET, from Third to Lexington avenue.

No. 2. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT THE ROADWAY OF ONE HUNDRED AND FIRST STREET, from Third to Lexington avenue.

No. 3. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT THE ROADWAY OF ONE HUNDRED AND FIRST STREET, from First to Second avenue.

No. 4. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT THE ROADWAY OF ONE HUNDRED AND SEVENTEENTH STREET, from Madison to Fifth avenue.

No. 5. FOR REGULATING AND PAVING WITH GRANITE-BLOCK PAVEMENT THE ROADWAY OF ONE HUNDRED AND TWENTY-SECOND STREET, from Avenue A to Harlem river.

No. 6. FOR REGULATING AND PAVING WITH ASPHALT PAVEMENT, ON THE PRESENT FOUNDATION, THE CARRIAGEWAY OF TWELFTH STREET, from a line about 98 feet east of Seventh avenue, and running easterly about 136 feet.

No. 7. FOR FLAGGING AND REFLAGGING, CURBING AND RECURBING THE SIDEWALKS ON NORTHEAST CORNER OF FIFTH AVENUE AND EIGHTY-FIFTH STREET.

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 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 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 1 and 5, No. 31 Chambers street.

THOS. F. GILROY,  
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 449, 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 thereafter liable to be assessed as above provided, and thereupon the owner of such lot, his heirs and assigns shall thenceforth 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 to 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

### ELECTION NOTICE.

NOTICE IS HEREBY GIVEN, PURSUANT TO the requirements of section 1890 of chapter 410 of the Laws of 1882, being an act entitled "An act to consolidate into one act and to declare the special and local laws affecting public interests in the City of New York," that at the next General Election to be held on the Tuesday succeeding the first Monday of November following, being the third day of November, 1891, the following municipal officers are to be chosen, and the following officers are to be elected by wards or districts in and for the City and County of New York, to wit:

A Justice of the Supreme Court, in the place of George L. Ingraham, appointed by the Governor to fill the vacancy caused by the death of John R. Brady.

A Judge of the Superior Court of the City of New York, in place of Henry A. Gildersleeve, appointed by the Governor to fill the vacancy caused by the resignation of George L. Ingraham.

A Judge of the Court of Common Pleas for the City and County of New York, in place of Roger A. Pryor, appointed by the Governor to fill the vacancy caused by the resignation of Richard L. Larremore.

A Justice of the City Court, in place of Simon Ehrlich.

A Justice of the City Court, in place of John H. McCarthy, appointed by the Governor to fill the vacancy caused by the resignation of David McAdam.

A Justice of the District Court in the City of New York for the Tenth Judicial District, the said district embracing all that portion of the City of New York known as the Twenty-third and Twenty-fourth Wards of the City of New York, in place of Andrew J. Rogers. A Representative in Congress from the Tenth Congressional District of the City and County of New York, to fill the vacancy caused by the death of Francis B. Spinola.

A Representative in Congress from the Twelfth Congressional District of the City and County of New York, to fill the vacancy made by the resignation of Roswell P. Flower.

Seven Senators, one Senator in each of the following Senate Districts, as now established by law, to wit: the Fifth, Sixth, Seventh, Eighth, Ninth, Tenth and Eleventh.

Twenty-four Members of Assembly in the County of New York, one Member of Assembly to be elected in each of the Assembly Districts in the City and County of New York, as now established by law.

Three Coroners, in place of Ferdinand Levy, Louis W. Schultze and Daniel Hanly.

Twenty-five Aldermen, one of whom shall be elected in the territory embraced in each Assembly District as the same existed on the first day of January, 1882, except that in the territory embraced in the Twenty-fourth Assembly District there shall be elected two of said Aldermen, one from the district comprising the territory embraced within the Twenty-third Ward of the City of New York, and one from the district embraced within the Twenty-fourth Ward of said city, as the said wards now exist by law.

FRANCIS J. TWOMEY,  
Clerk of Common Council.

### 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 3506, No. 1. Paving Eighty-seventh street, from Madison to Fifth avenue, with granite blocks.

List 3507, No. 2. Paving Eightieth street, from Amsterdam avenue to the Boulevard, with granite blocks, and laying crosswalks.

List 3504, No. 3. Repaving Thirteenth avenue, from Seventeenth to Eighteenth streets (so far as the same is within the limits of grants of land under water), with granite blocks, and laying crosswalks.

List 3507, No. 4. Flagging, reflagging, curbing and recurbings both sides of Seventy-seventh street, from Boulevard to West End avenue.

List 3508, No. 5. Flagging, reflagging, curbing and recurbings south side of Fifty-first street, from Eleventh to Twelfth avenue.

List 3522, No. 6. Flagging, reflagging and recurbings both sides of Seventy-seventh street, from Avenue A to the East river.

List 3525, No. 7. Laying crosswalks across Tenth avenue, at the northerly side of One Hundred and Sixty-second street and across Tenth avenue and Avenue St. Nicholas, at the southerly side of One Hundred and Sixty-second street.

List 3529, No. 8. Laying crosswalks across Amsterdam avenue, at the northerly side of One Hundred and Fifty-fifth street and the northerly and southerly sides of One Hundred and Fifty-sixth, One Hundred and Fifty-seventh, One Hundred and Fifty-eighth, One Hundred and Fifty-ninth and One Hundred and Sixtieth streets.

List 3534, No. 9. Regulating and grading, setting curb-stones and flagging One Hundred and Eleventh street, from Eighth to Manhattan street.

List 3536, No. 10. Extension of sewer in Twenty-eighth street, between East river and First avenue, connecting with present sewer built by Department of Docks.

List 3540, No. 11. Sewer in Twelfth avenue, east side, between Thirty-fifth and Thirty-seventh streets, with outlet through pier at Thirty-sixth street, North river, and connections to present sewers in Thirty-sixth and Thirty-seventh streets.

List 3544, No. 12. Sewer in Park avenue, east side, between One Hundred and Twenty-fourth and One Hundred and Twenty-fifth streets.

List 3547, No. 13. Alteration and improvement to sewer in Essex street, between Delancey and Broome streets.

List 3548, No. 14. Sewer in First avenue, between Forty-fourth and Forty-fifth streets.

List 3550, No. 15. Alteration and improvement to sewer in Fifty-fifth street, between Eighth and Ninth avenues.

List 3554, No. 16. Receiving-basin on the northwest corner of One Hundred and Forty-sixth street and Eight avenue.



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. Both sides of Eighty-seventh street, from Madison to Fifth avenue, and to the extent of half the block at the intersecting avenues.

No. 2. Both sides of Eightieth street, from Amsterdam avenue to the Boulevard, and to the extent of half the block at the intersecting avenues.

No. 3. Both sides of Thirtieth avenue, from Seventeenth to Eighteenth streets, North river.

No. 4. South side of Seventy-seventh street, from Boulevard to West End avenue.

No. 5. South side of Fifty-first street, from Eleventh to Twelfth avenue.

No. 6. Both sides of Seventy-seventh street, from Avenue A to the East river.

No. 7. Farm No. 53, Ward Nos. 34-40, inclusive; also Ward Nos. 57-61, inclusive, and 66-73, inclusive; also Farm No. 9, Ward Nos. 31-35, inclusive, and Ward No. 124 and Farm No. 53A, Ward Nos. 32-38, inclusive.

No. 8. Both sides of Amsterdam avenue, from One Hundred and Fifty-fifth to One Hundred and Sixtieth street, and to the extent of half the block at the intersecting streets.

No. 9. Both sides of One Hundred and Eleventh street, from Eighth to Manhattan avenue.

No. 10. East side of First avenue, from Twenty-sixth to Thirtieth street; west side of First avenue, from Twenty-seventh street to one-half the distance between Thirtieth and Thirty-first streets; both sides of Second avenue, from Twenty-seventh to Twenty-ninth street, and east side of Second avenue, from Twenty-ninth street to one-half the distance between Thirtieth and Thirty-first streets; both sides of Thirtieth street, from First to Second avenue; both sides of Twenty-ninth street, from First to Second avenue; south side of Twenty-ninth street, from Second to Third avenue; both sides of Twenty-eighth street, from Third avenue to the East river; north side of Twenty-seventh street, from Second to First avenue, and north side of Twenty-sixth street from First avenue to East river.

No. 11. Property bounded by Thirty-third and Thirty-ninth streets, Tenth avenue and the Hudson river, and east side of Tenth avenue, from Thirty-fourth to Thirty-fifth street, both sides of Thirty-fourth street and south side of Thirty-fifth street, extending about 325 feet easterly from Tenth avenue.

No. 12. East side of Park avenue, from One Hundred and Twenty-fourth to One Hundred and Twenty-fifth street.

No. 13. Both sides of Essex street, from Broome to Delancy street.

No. 14. Both sides of First avenue, from Forty-fourth to Forty-fifth street.

No. 15. Both sides of Fifty-fifth street, from Eighth to Ninth avenue.

No. 16. North side of One Hundred and Forty-sixth street, from Eighth to Bradhurst 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 November, 1891.

EDWARD GILON, Chairman,  
PATRICK M. HAVERLY,  
CHAS. E. WENDT,  
EDWARD CAHILL,  
Board of Assessors.

OFFICE OF THE BOARD OF ASSESSORS,  
No. 27 CHAMBERS STREET,  
NEW YORK, October 12, 1891.

## POLICE DEPARTMENT.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
No. 300 MULBERRY STREET.

### TO CONTRACTORS.

#### PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, at No. 137 West Thirtieth street, will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Nineteenth Precinct," and with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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; also 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 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 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, upon 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 upon 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 and herein stated, 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.

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.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.

NEW YORK, October 8, 1891.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
No. 300 MULBERRY STREET.

### TO CONTRACTORS.

#### PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, at No. 146 East One Hundred and Twenty-sixth street, will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Twenty-ninth Precinct," and with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all the materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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; also 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 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 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, upon 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 upon 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, and herein stated, 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 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.

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.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.

NEW YORK, October 8, 1891.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
No. 300 MULBERRY STREET.

### TO CONTRACTORS.

#### PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, known as "Union Market," will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Thirtieth Precinct, known as 'Union Market,'" and with his or their name or names, and the date of presentation to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all the materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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; also 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 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 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, upon 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 upon 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 as herein stated, 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.

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.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.

NEW YORK, October 8, 1891.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
No. 300 MULBERRY STREET.

### TO CONTRACTORS.

#### PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, at No. 105 Eldridge street, will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Eleventh Precinct," and with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and

specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all the materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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; also 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 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 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, upon 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 upon 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, and herein stated, 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.

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.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.

NEW YORK, October 8, 1891.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
No. 300 MULBERRY STREET.

### TO CONTRACTORS.

#### PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, at No. 221 Mercer street, will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Fifteenth Precinct," and with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all the materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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; also 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 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 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 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 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 and herein stated, 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.

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.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.  
NEW YORK, October 8, 1891.

POLICE DEPARTMENT—CITY OF NEW YORK,  
OFFICE OF THE PROPERTY CLERK (Room No. 9),  
No. 300 MULBERRY STREET,  
NEW YORK, 1891.

## TO CONTRACTORS.

## PROPOSALS FOR ESTIMATES.

**SEALED ESTIMATES FOR ALTERING THE** Station-house, Lodging-house and Prison on the ground and premises, situated in the City of New York, at No. 160 East Thirty-fifth street, will be received at the Central Office of the Department of Police in the City of New York, until 12 o'clock M. of Friday, the 23d day of October, 1891.

The person or persons making an estimate shall furnish the same in a sealed envelope, indorsed "Estimate for Altering the Station-house, Lodging-house and Prison of the Twenty-first Precinct," and with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above named, at which time and place the estimates received will be publicly opened by the head of said Department and read.

For particulars of the nature and extent of the work to be done, reference must be made to the plans and specifications on file in the office of the Chief Clerk of the said Department.

Bidders will state in writing, and also in figures, a price for the work complete. The price is to cover the furnishing of all the materials and labor and the performance of all the work called for by the specifications, plans, drawings and form of agreement.

No estimates will be accepted from, or a 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 entire work is to be completed within SIXTY DAYS from the date of the contract.

The person or persons to whom the contract may be awarded will be required to give security for the performance of the contract in the manner prescribed by law, in the sum of FIVE THOUSAND DOLLARS.

Each 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 any other person be so interested, it shall distinctly state that fact; also, 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 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 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 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 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 and herein stated, 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.

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tion, and the contract will be readvertised and relet as provided by law.

No estimate will be received or considered unless accompanied by either a certified check upon one of the National or State 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 to and be 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.

Plans may be examined and specifications and blank estimates may be obtained by application to the undersigned, at his office in the Central Department.

By order of the Board,  
WILLIAM H. KIPP,  
Chief Clerk.  
NEW YORK, October 8, 1891.

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: Boats, rope, iron, lead, male and female clothing, boots, shoes, wine, 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

## NEW AQUEDUCT.

NEW AQUEDUCT, WESTCHESTER  
COUNTY SECTION

SUPREME COURT—SECOND JUDICIAL  
DISTRICT.

In the matter of the petition of Hubert O. Thompson, Commissioner of Public Works of the City of New York, under and in pursuance of chapter 490 of the Laws of 1883, and on behalf of the Mayor, Aldermen and Commonalty of the City of New York, for the appointment of Commissioners of Appraisal, under chapter 490 of the Laws of 1883.

To all persons interested in this proceeding:

**NOTICE IS HEREBY GIVEN THAT THE** sixth separate report of the above-mentioned Commissioners of Appraisal, appointed herein on October 11, 1884, which report was filed on August 25, 1891, in the office of the Clerk of Westchester County, at the Court-house in the Village of White Plains, in said County, will be presented for confirmation to the Supreme Court, at a Special Term thereof, to be held in the Second Judicial District, at the Court-house, in Poughkeepsie, Dutchess County, on October 24, 1891, at 11 o'clock in the forenoon.

Dated NEW YORK, September 24, 1891.  
WILLIAM H. CLARK,  
Counsel to the Corporation,  
No. 2 Tryon Row, New York City.

## FINANCE DEPARTMENT.

FINANCE DEPARTMENT,  
BUREAU FOR THE COLLECTION OF TAXES,  
No. 57 CHAMBERS STREET (STEWART BUILDING),  
NEW YORK, October 5, 1891.

## NOTICE TO TAXPAYERS.

**NOTICE IS HEREBY GIVEN THAT THE** Assessment Rolls of Real Estate, Personal Property and Bank Stock in the City and County of New York, for the year 1891, and the warrants for the collection of taxes, have been delivered to the undersigned, and that all the taxes on said assessment rolls are now due and payable at this office.

In case of payment on or before the first day of November next, the person so paying shall be entitled to the benefits mentioned in section 842 of the New York City Consolidation Act of 1882, viz.: a reduction of interest at the rate of 6 per cent. per annum between the day of such payment and the first day of December next.

GEORGE W. MCLEAN,  
Receiver of Taxes.

## 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.

Grantees, grantees, suits in equity, insolvents' 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 THOMAS DWYER, Room 23, Stewart Building.

THEODORE W. MYERS,  
Comptroller.

## INTEREST ON CITY BONDS AND STOCKS.

**THE INTEREST DUE NOVEMBER 1, 1891, ON** the Register of Bonds and Stocks of the City and County of New York will be paid on that day by the Comptroller at the office of the City Chamberlain Room 27, Stewart Building, corner of Broadway and Chambers street.

The Transfer Books will be closed from September 30 to November 1, 1891.

The interest due November 1, 1891, on the Coupon Bonds of the City of New York will be paid on that day by the State Trust Company, No. 50 Wall street.

THEO. W. MYERS,  
Comptroller.

CITY OF NEW YORK—FINANCE DEPARTMENT,  
COMPTROLLER'S OFFICE, Sept. 21, 1891.

## DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION.

DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION,  
No. 66 THIRD AVENUE,  
NEW YORK, October 20, 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 No. 165 Forsyth street—Unknown man, aged about 35 years; 5 feet 4 inches high; sandy hair and moustache; gray eyes. Had on black and brown striped coat, brown mixed vest, brown and gray striped pants, one blue and one gray sock, gaiters.

At Charity Hospital, Blackwell's Island—Henry Baptiste, aged 45 years; 5 feet 6 inches high; brown hair and eyes. Had on when admitted dark coat, pants, and vest, red and white striped shirt, derby hat, shoes.

John Peterson, aged 53 years; 5 feet 8½ inches high; brown eyes; black hair; brown whisker; transferred from Workhouse and had on corporation clothing.

Timothy Ryan, aged 64 years; 5 feet 7 inches high; light gray eyes; dark brown hair. Had on when admitted black coat, pants and vest, colored shirt, straw hat, shoes.

At Alm-house, Blackwell's Island—Maggie Mullin, aged 68 years. Transferred from Workhouse September 18, 1891.

Ellen O'Connor, aged 50 years. Transferred from Workhouse August 17, 1891.

At N. Y. City Asylum for Insane, Blackwell's Island—Alice McNamara, aged 23 years; 5 feet 1½ inches high. Transferred from Workhouse November 17, 1890.

At Homoeopathic Hospital, Ward's Island—Mary Costello, aged 43 years; 5 feet 6 inches high; blue eyes; auburn hair. Had on when admitted blue merino skirt, black merino waist, laced shoes, black straw bonnet.

Nothing known of their friends or relatives.

By order,  
G. F. BRITTON, Secretary.

## DEPARTMENT OF DOCKS.

DEPARTMENT OF DOCKS,  
PIER "A," NORTH RIVER.

## TO CONTRACTORS.

(No. 401.)

**PROPOSALS FOR ESTIMATES FOR EXTENDING THE EXISTING PIER AT THE FOOT OF JANE STREET, NORTH RIVER, TO THE PIER-HEAD LINE OF 1890.**

**ESTIMATES FOR EXTENDING THE EXISTING** pier at the foot of Jane street, North river, to the pier-head line of 1890 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 1 o'clock P. M. of

THURSDAY, OCTOBER 29, 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 Three Thousand Two Hundred 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".....	630	
" " " 12" x 12".....	30,936	
" " " 10" x 14".....	420	
" " " 10" x 12".....	988	
" " " 10" x 10".....	172	
" " " 8" x 16".....	110	
" " " 8" x 15".....	493	
" " " 8" x 10".....	68	
" " " 8" x 8".....	2,584	
" " " 7" x 14".....	418	
" " " 7" x 12".....	373	
" " " 7" x 9".....	79	
" " " 6" x 12".....	2,280	
" " " 5" x 12".....	1,990	
" " " 5" x 10".....	8,234	
" " " 5" x 9".....	377	
" " " 4" x 10".....	22,475	
" " " 2" x 4".....	830	
Total.....	73,457	
		Feet, B. M., measured in the work.
2. Spruce Timber, 3" x 10".....	19,996	
" " " 2" x 10".....	132	
Total.....	20,128	
		Feet, B. M., measured in the work.
3. White Oak Timber, 8" x 12".....	1,672	

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..... 138

(It is expected that these piles will have to be about 75 feet in length to meet the requirements of the specifications for driving.)

5. White Oak Fender-piles, about 60 feet long.... 14

6. ¾" x 26", ¾" x 24", ¾" x 22", ¾" x 20", ¾" x 18", ¾" x 16", ¾" x 14", ¾" x 12", ¾" x 10", ¾" x 9", ¾" x 8", ¾" x 7", ¾" x 6", ¾" x 5", ¾" x 4", ¾" x 3", ¾" x 2", ¾" x 1", ¾" x ½", ¾" x ¼", ¾" x ⅛", ¾" x ⅙", ¾" x ⅓", ¾" x ⅔", ¾" x 1", ¾" x 2", ¾" x 3", ¾" x 4", ¾" x 5", ¾" x 6", ¾" x 7", ¾" x 8", ¾" x 9", ¾" x 10", ¾" x 12", ¾" x 14", ¾" x 16", ¾" x 18", ¾" x 20", ¾" x 22", ¾" x 24", ¾" x 26", ¾" x 28", ¾" x 30", ¾" x 32", ¾" x 34", ¾" x 36", ¾" x 38", ¾" x 40", ¾" x 42", ¾" x 44", ¾" x 46", ¾" x 48", ¾" x 50", ¾" x 52", ¾" x 54", ¾" x 56", ¾" x 58", ¾" x 60", ¾" x 62", ¾" x 64", ¾" x 66", ¾" x 68", ¾" x 70", ¾" x 72", ¾" x 74", ¾" x 76", ¾" x 78", ¾" x 80", ¾" x 82", ¾" x 84", ¾" x 86", ¾" x 88", ¾" x 90", ¾" x 92", ¾" x 94", ¾" x 96", ¾" x 98", ¾" x 100", ¾" x 102", ¾" x 104", ¾" x 106", ¾" x 108", ¾" x 110", ¾" x 112", ¾" x 114", ¾" x 116", ¾" x 118", ¾" x 120", ¾" x 122", ¾" x 124", ¾" x 126", ¾" x 128", ¾" x 130", ¾" x 132", ¾" x 134", ¾" x 136", ¾" x 138", ¾" x 140", ¾" x 142", ¾" x 144", ¾" x 146", ¾" x 148", ¾" x 150", ¾" x 152", ¾" x 154", ¾" x 156", ¾" x 158", ¾" x 160", ¾" x 162", ¾" x 164", ¾" x 166", ¾" x 168", ¾" x 170", ¾" x 172", ¾" x 174", ¾" x 176", ¾" x 178", ¾" x 180", ¾" x 182", ¾" x 184", ¾" x 186", ¾" x 188", ¾" x 190", ¾" x 192", ¾" x 194", ¾" x 196", ¾" x 198", ¾" x 200", ¾" x 202", ¾" x 204", ¾" x 206", ¾" x 208", ¾" x 210", ¾" x 212", ¾" x 214", ¾" x 216", ¾" x 218", ¾" x 220", ¾" x 222", ¾" x 224", ¾" x 226", ¾" x 228", ¾" x 230", ¾" x 232", ¾" x 234", ¾" x 236", ¾" x 238", ¾" x 240", ¾" x 242", ¾" x 244", ¾" x 246", ¾" x 248", ¾" x 250", ¾" x 252", ¾" x 254", ¾" x 256", ¾" x 258", ¾" x 260", ¾" x 262", ¾" x 264", ¾" x 266", ¾" x 268", ¾" x 270", ¾" x 272", ¾" x 274", ¾" x 276", ¾" x 278", ¾" x 280", ¾" x 282", ¾" x 284", ¾" x 286", ¾" x 288", ¾" x 290", ¾" x 292", ¾" x 294", ¾" x 296", ¾" x 298", ¾" x 300", ¾" x 302", ¾" x 304", ¾" x 306", ¾" x 308", ¾" x 310", ¾" x 312", ¾" x 314", ¾" x 316", ¾" x 318", ¾" x 320", ¾" x 322", ¾" x 324", ¾" x 326", ¾" x 328", ¾" x 330", ¾" x 332", ¾" x 334", ¾" x 336", ¾" x 338", ¾" x 340", ¾" x 342", ¾" x 344", ¾" x 346", ¾" x 348", ¾" x 350", ¾" x 352", ¾" x 354", ¾" x 356", ¾" x 358", ¾" x 360", ¾" x 362", ¾" x 364", ¾" x 366", ¾" x 368", ¾" x 370", ¾" x 372", ¾" x 374", ¾" x 376", ¾" x 378", ¾" x 380", ¾" x 382", ¾" x 384", ¾" x 386", ¾" x 388", ¾" x 390", ¾" x 392", ¾" x 394", ¾" x 396", ¾" x 398", ¾" x 400", ¾" x 402", ¾" x 404", ¾" x 406", ¾" x 408", ¾" x 410", ¾" x 412", ¾" x 414", ¾" x 416", ¾" x 418", ¾" x 420", ¾" x 422", ¾" x 424", ¾" x 426", ¾" x 428", ¾" x 430", ¾" x 432", ¾" x 434", ¾" x 436", ¾" x 438", ¾" x 440", ¾" x 442", ¾" x 444", ¾" x 446", ¾" x 448", ¾" x 450", ¾" x 452", ¾" x 454", ¾" x 456", ¾" x 458", ¾" x 460", ¾" x 462", ¾" x 464", ¾" x 466", ¾" x 468", ¾" x 470", ¾" x 472", ¾" x 474", ¾" x 476", ¾" x 478", ¾" x 480", ¾" x 482", ¾" x 484", ¾" x 486", ¾" x 488", ¾" x 490", ¾" x 492", ¾" x 494", ¾" x 496", ¾" x 498", ¾" x 500", ¾" x 502", ¾" x 504", ¾" x 506", 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¾" x 690", ¾" x 692", ¾" x 694", ¾" x 696", ¾" x 698", ¾" x 700", ¾" x 702", ¾" x 704", ¾" x 706", ¾" x 708", ¾" x 710", ¾" x 712", ¾" x 714", ¾" x 716", ¾" x 718", ¾" x 720", ¾" x 722", ¾" x 724", ¾" x 726", ¾" x 728", ¾" x 730, ¾" x 732, ¾" x 734, ¾" x 736, ¾" x 738, ¾" x 740, ¾" x 742, ¾" x 744, ¾" x 746, ¾" x 748, ¾" x 750, ¾" x 752, ¾" x 754, ¾" x 756, ¾" x 758, ¾" x 760, ¾" x 762, ¾" x 764, ¾" x 766, ¾" x 768, ¾" x 770, ¾" x 772, ¾" x 774, ¾" x 776, ¾" x 778, ¾" x 780, ¾" x 782, ¾" x 784, ¾" x 786, ¾" x 788, ¾" x 790, ¾" x 792, ¾" x 794, ¾" x 796, ¾" x 798, ¾" x 800, ¾" x 802, ¾" x 804, ¾" x 806, ¾" x 808, ¾" x 810, ¾" x 812, ¾" x 814, ¾" x 816, ¾" x 818, ¾" x 820, ¾" x 822, ¾" x 824, ¾" x 826, ¾" x 828, ¾" x 830, ¾" x 832, ¾" x 834, ¾" x 836, ¾" x 838, ¾" x 840, ¾" x 842, ¾" x 844, ¾" x 846, ¾" x 848, ¾" x 850, ¾" x 852, ¾" x 854, ¾" x 856, ¾" x 858, ¾" x 860, ¾" x 862, ¾" x 864, ¾" x 866, ¾" x 868, ¾" x 870, ¾" x 872, ¾" x 874, ¾" x 876, ¾" x 878, ¾" x 880, ¾" x 882, ¾" x 884, ¾" x 886, ¾" x 888, ¾" x 890, ¾" x 892, ¾" x 894, ¾" x 896, ¾" x 898, ¾" x 900, ¾" x 902, ¾" x 904, ¾" x 906, ¾" x 908, ¾" x 910, ¾" x 912, ¾" x 914, ¾" x 916, ¾" x 918, ¾" x



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 Two Thousand Five 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 THE NORTH RIVER.	
For Pier, new 57 (south side).....	25,000 cubic yards
ON THE EAST RIVER.	
For Pier 4 (east side).....	3,750 cubic yards.
For Pier 5 (west side).....	3,750 "
For Bulkhead between Piers 4 and 5	300 "
For Bulkhead at foot of Cherry street.....	1,800 "
For Pier 55 (south side).....	2,500 "
For Pier 56 (north side).....	2,000 "
For Pier 57 (south side).....	2,000 "
For Bulkhead between Piers 56 and 57.....	1,000 "
For Pier 60 (north side).....	200 "
For Bulkhead along Rivington street.....	2,500 "
For Bulkhead between Rivington street and Pier 61.....	1,250 "
For Pier 61 (south side).....	2,500 "
Total.....	48,550 "

N. B.—Bidders are required to submit their estimates upon the following express conditions, which shall apply to and become a part of every estimate received:

(1.) Bidders must satisfy themselves, by personal examination of the location 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.

(2.) 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 this 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 30th day of December, 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 thereof 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 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 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 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.

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 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,  
J. SERGEANT CRAM,  
JAMES J. PHELAN,  
Commissioners of the Department of Docks.

Dated New York, October 7, 1891.

### 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 the opening of ONE HUNDRED AND THIRTY-SECOND STREET, from Twelfth avenue to the bulkhead-line, Hudson river, in the Twelfth Ward of the City of New York.

PURSUANT TO THE STATUTES IN SUCH cases made and provided, the Mayor, Aldermen and Commonality of the City of New York hereby give notice that the Counsel to the Corporation will apply to the Supreme Court, in the First Judicial District in the State of New York, at a Special Term thereof, to be held at Chambers of said Court, in the County Court-house, in the City of New York, on Tuesday, the 17th day of November, 1891, at 10.30 o'clock in the forenoon of that day, or as soon thereafter as counsel can be heard thereon, for the appointment of Commissioners of Estimate and Assessment in the above-entitled proceeding, in the place and stead of Sidney J. Cowen and Joseph E. Newburger, who have resigned, and Lytleton G. Garrettsen, deceased.

Dated New York, October 20, 1891.

WILLIAM H. CLARK,  
Counsel to the Corporation,  
No. 2 Tryon Row, New York City.

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 AVENUE B, from Eighty-sixth street to the marginal street, bulkhead line, Harlem river, 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 twenty-fourth day of November, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week days next after the said twenty-fourth day of November, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 12 o'clock 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 twenty-fifth day of November, 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 Ninetieth street and the bulkhead line of the Harlem river; easterly by a line parallel with and distant 100 feet easterly from the easterly line of Avenue B; southerly by the northerly line of Eighty-sixth street; and westerly by a line commencing at a point in the northerly line of Eighty-sixth street, distant 100 feet westerly from the westerly line of Avenue B, running thence northerly and parallel or nearly so with the westerly line of said Avenue B for a distance of 141 feet 4 inches, by a line commencing at a point in the southerly line of Eighty-seventh street distant 92 feet westerly from the westerly line of Avenue B, running thence southerly and parallel with the westerly line of said Avenue B for a distance of 60 feet and by a line parallel with and distant 96 feet westerly from the westerly line of Avenue B and extending from the northerly line of Eighty-seventh street to the southerly line of Ninetieth street; excepting from said area all the streets, avenues and roads, or portions thereof, heretofore legally opened, 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 eleventh day of December, 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, October 14, 1891.

LAWRENCE WELLS,  
LAMONT MCGLOUGHLIN,  
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 ALBANY ROAD (although not yet named by proper authority), from Bailey avenue to Van Cortlandt Park, in the Twenty-fourth 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.

PURSUANT TO THE STATUTES IN SUCH cases made and provided, notice is hereby given that an application will be made to the Supreme Court of the State of New York, at a Special Term of said Court, to be held at Chambers thereof, in the County Court-house, in the City of New York, on Tuesday, the 24th day of November, 1891, at the opening of the Court on that day, or as soon thereafter as counsel can be heard thereon, for the appointment of Commissioners of Estimate and Assessment in the above-entitled matter. The nature and extent of the improvement hereby intended is the acquisition of title, in the name and on behalf of the Mayor, Aldermen and Commonality of the City of New York, for the use of the public, to all the lands and premises, with the buildings thereon and the appurtenances thereto belonging, required for the opening of a certain street or avenue known as Albany road, from Bailey avenue to Van Cortlandt Park, in the Twenty-fourth 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, being the following described lots, pieces or parcels of land, viz.:

Beginning at the intersection of the western and most northern line of Bailey avenue, as the same has been legally opened:

1st. Thence southwesterly, along the western line of Bailey avenue for 49.74 feet;

2d. Thence northerly, curving to the right on the arc of a circle, whose radius, prolonged through the southern extremity of the preceding course, deflects 17° 26' 53" to the right from said course, and is 500 feet for 547.96 feet, to a point of compound curvature;

3d. Thence northeasterly, on the arc of a circle, whose radius is 1,020.57 feet for 480.23 feet, to a point of compound curvature;

4th. Thence northeasterly, on the arc of a circle, whose radius is 370.26 feet for 148.51 feet;

5th. Thence easterly, on a line, tangent to the preceding course, for 345.27 feet;

6th. Thence northeasterly, deflecting 43° 05' 30" to the left for 760.46 feet;

7th. Thence northeasterly, deflecting 1° 55' 10" to the left for 531.09 feet;

8th. Thence northeasterly, curving to the right on the arc of a circle tangent to the preceding course, whose radius is 1,370.25 feet for 450.04 feet;

9th. Thence northeasterly, on a line tangent to the preceding course for 441.88 feet;

10th. Thence easterly, curving to the right on the arc of a circle tangent to the preceding course, whose radius is 560 feet for 353.87 feet;

11th. Thence easterly, on a line tangent to the preceding course for 156.30 feet;

12th. Thence northeasterly, curving to the left on the arc of a circle tangent to the preceding course, whose radius is 35.51 feet for 46.18 feet;

13th. Thence northerly, on a line tangent to the preceding course for 112.25 feet to the line of Van Cortlandt Park.

14th. Thence easterly, along the line of Van Cortlandt Park for 140.88 feet;

15th. Thence southerly, deflecting 78° 26' to the right for 143.96 feet;

16th. Thence westerly, deflecting 79° 39' 17" to the right for 325.40 feet;

17th. Thence westerly, curving to the left on the arc of a circle tangent to the preceding course, whose radius is 500 feet for 315.05 feet;

18th. Thence southwesterly, on a line tangent to the preceding course for 441.88 feet;

19th. Thence southwesterly, curving to the left on the arc of a circle tangent to the preceding course, whose radius is 1,370.25 feet for 438.94 feet;

20th. Thence southwesterly, on a line tangent to the preceding course for 532.10 feet;

21st. Thence southwesterly, deflecting 1° 55' 10" to the right for 352.35 feet;

22d. Thence southwesterly, curving to the left on the arc of a circle tangent to the preceding course, whose radius is 100 feet for 29.42 feet, to a point of compound curvature;

23d. Thence southwesterly, on the arc of a circle, whose radius is 1,090 feet for 81.52 feet to a point of reverse curvature;

24th. Thence southwesterly, on the arc of a circle, whose radius is 560 feet for 102.71 feet;

25th. Thence southwesterly, on a line tangent to the preceding course for 100 feet;

26th. Thence southwesterly, curving to the right on the arc of a circle tangent to the preceding course, whose radius is 1,160 feet for 146.46 feet;

27th. Thence northerly, on a line deflecting 2° 52' 33" to the south from the radius of the preceding course, drawn through its southern extremity for 68.33 feet;

28th. Thence southwesterly, deflecting 47° 16' 30" to the left for 252.78 feet;

29th. Thence southwesterly, curving to the left on the arc of a circle tangent to the preceding course, whose radius is 310.26 feet for 124.44 feet to a point of compound curvature;

30th. Thence southwesterly, on the arc of a circle, whose radius is 960.57 feet for 452.0 feet to a point of compound curvature;

31st. Thence southerly, on the arc of a circle, whose radius is 440 feet for 405.06 feet;

32d. Thence southwesterly, 13.06 feet to the point of beginning.

Albany road is designated a street of the first class.

And as shown on certain maps filed by the Commissioners of the Department of Public Parks in the office of the Register of the City and County of New York, in the office of the Secretary of State of the State of New York and in the Department of Public Parks.

Dated, New York, October 15, 1891.

WILLIAM H. CLARK,  
Counsel to the Corporation,  
No. 2 Tryon Row, New York City.

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 WILLIS AVENUE (although not yet named by proper authority), extending from the Harlem river to East One Hundred and Forty-seventh 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.

PURSUANT TO THE STATUTES IN SUCH cases made and provided, the Mayor, Aldermen and Commonality of the City of New York hereby give notice that the Counsel to the Corporation will apply to the Supreme Court, in the First Judicial District in the State of New York, at a Special Term thereof, to be held at Chambers of said Court, in the County Court-house, in the City of New York, on Thursday, the 12th day of November, 1891, at 10.30 o'clock in the forenoon of that day, or as soon thereafter as counsel can be heard thereon, for the appointment of a Commissioner of Estimate and Assessment in the above-entitled proceeding, in the place and stead of John C. Williamson, deceased.

Dated New York, October 15, 1891.

WM. H. CLARK,  
Counsel to the Corporation,  
No. 2 Tryon Row, New York City.

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 BOSCOBEL AVENUE (although not yet named by proper authority), extending from the easterly approach to the bridge over the Harlem River at West One Hundred and Eighty-first street to Jerome avenue, in the Twenty-third and Twenty-fourth Wards 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 23d day of November, 1891, and that we, the said Commissioners, will hear parties so objecting within the ten week days next after the said 23d day of November, 1891, and for that purpose will be in attendance at our said office on each of said ten days at 1 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 twenty-fourth day of November, 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 parallel with, and distant 100 feet northerly from, the northerly line of Boscobel avenue, and beginning at the point of intersection of said line with the prolongation northerly of the easterly line of Aqueduct avenue and extending to Elliot street; easterly by a line beginning at a point in the northerly line of Elliot street, distant 100 feet easterly from the easterly line of Jerome avenue; running thence southerly and parallel with the easterly line of Jerome avenue to the intersection of said line with a line parallel with, and distant 100 feet easterly from, the easterly line of Mott avenue; thence southerly and parallel with Mott avenue to the intersection of said line with the prolongation northerly of a line parallel with, and distant 100 feet easterly from, the easterly line of Gerard avenue; thence southerly and along said last-mentioned line to the northerly line of Endrow place; southerly by a curved line beginning at a point in the northerly line of Endrow place, distant 100 feet easterly from the easterly line of Gerard avenue; thence westerly curving to the right on the arc of a circle whose radius is 1,000 feet and whose centre is the point of intersection of the westerly line of Boscobel avenue with the westerly line of Jerome avenue to the point of tangency between said arc and a line parallel with, and distant 1,000 feet westerly from, the westerly line of Boscobel avenue; and westerly by a broken line parallel with, and distant 1,000 feet westerly from, the westerly line of Boscobel avenue and extending from the point of tangency with the preceding course to Aqueduct avenue, the easterly line of Aqueduct avenue and the prolongation northerly of said easterly line of Aqueduct avenue to the point of beginning; 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 22d day of October, 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, August 27, 1891.

LEWIS J. CONLAN, Chairman,  
THOMAS DUNLAP,  
LEICESTER HOLME,  
Commissioners.

JOHN P. DUNN, Clerk.

and beginning at the point of intersection of said line with the prolongation northerly of the easterly line of Aqueduct avenue and extending to Elliot street; easterly by a line beginning at a point in the northerly line of Elliot street, distant 100 feet easterly from the easterly line of Jerome avenue; running thence southerly and parallel with the easterly line of Jerome avenue to the intersection of said line with a line parallel with, and distant 100 feet easterly from, the easterly line of Mott avenue; thence southerly and parallel with Mott avenue to the intersection of said line with the prolongation northerly of a line parallel with, and distant 100 feet easterly from, the easterly line of Gerard avenue; thence southerly and along said last-mentioned line to the northerly line of Endrow place; southerly by a curved line beginning at a point in the northerly line of Endrow place, distant 100 feet easterly from the easterly line of Gerard avenue; thence westerly curving to the right on the arc of a circle whose radius is 1,000 feet and whose centre is the point of intersection of the westerly line of Boscobel avenue with the westerly line of Jerome avenue to the point of tangency between said arc and a line parallel with, and distant 1,000 feet westerly from, the westerly line of Boscobel avenue; and westerly by a broken line parallel with, and distant 1,000 feet westerly from, the westerly line of Boscobel avenue and extending from the point of tangency with the preceding course to Aqueduct avenue, the easterly line of Aqueduct avenue and the prolongation northerly of said easterly line of Aqueduct avenue to the point of beginning; 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 eleventh day of December, 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, October 13, 1891.

HENRY G. CASSIDY, Chairman,  
WILLIAM E. STILLINGS,  
LAMONT MCGLOUGHLIN,  
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 CEDAR AVENUE (although not yet named by proper authority), extending from the westerly line of Sedgwick avenue, opposite to the junction of Burnside and Sedgwick avenues, to Fordham road, in the Twenty-fourth 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. 31 Chambers street, in the said city, on or before the 8th day of October, 1891, and that we, the said Commissioners, will hear parties so objecting within ten week days next after the said 8th day of October, 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 10th day of October, 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 southern line of Fordham road, easterly (1) by the centre line of the block bounded by Cedar avenue, Cammann street and Fordham road, prolonged to the centre line of a certain unnamed street south of Cammann street; thence easterly along said centre line to the centre line of the block south of said unnamed street and between Cedar avenue and Sedgwick avenue; (2) by this last-mentioned centre line to the southern boundary line of the same block; thence westerly along said southern boundary line to the eastern line of Cedar avenue; (3) by the said eastern line of Cedar avenue to the southern line of the street south of the park, between Cedar avenue and Sedgwick avenue; thence southerly along said southern line to the centre line of the block south of same park; (4) by the last-mentioned centre line to about the central point of said block; thence easterly along a line drawn from this point to the western line of Sedgwick avenue; (5) by the western line of Sedgwick avenue to the southern limit of Cedar avenue; southerly (1) by the said southern limit of Cedar avenue prolonged to the centre line of Riverview Terrace; thence northerly along the said centre line to the easterly prolongation of the centre line of the block between Powell place and a certain unnamed street to the north thereof; (2) by the said prolongation line to the centre line of the block between Cedar avenue and a certain unnamed street or avenue to the west thereof; westerly, by the centre line of the block between Cedar avenue and a certain unnamed street or avenue to the west thereof and by the centre line of the blocks between Cedar avenue and Harlem River Terrace; 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 22d day of October, 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, August 27, 1891.

LEWIS J. CONLAN, Chairman,  
THOMAS DUNLAP,  
LEICESTER HOLME,  
Commissioners.

JOHN P. DUNN, Clerk.

### THE CITY RECORD.

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W. J. K. KENNY,  
Supervisor.