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BOARD OF RAPID
TRANSIT RAILROAD
COMMISSIONERS
OF THE CITY OF NEW
YORK 1902

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CITY HALL STATION.

REPORT

OF THE

Board of Rapid Transit Railroad Commissioners

FOR AND IN

THE CITY OF NEW YORK

FOR THE YEAR ENDING

December 31, 1902

Accompanied by Reports

OF THE

Chief Engineer

AND OF THE

Auditor

NEW YORK

1903

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CONTENTS

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1. Report of the Board of Rapid Transit Railroad Commissioners....	11
2. Appendices—	
I. Commissioners and Staff.....	97
II. Opinions of Courts in Suits brought against the Board..	103
III. Certificate of Incorporation of Interborough Rapid Transit Company	143
IV. Assignment of Leasing Part of Manhattan-Bronx Contract to Interborough Rapid Transit Company.....	159
V. Certificate of the Board to the Pennsylvania, New York and Long Island Railroad Company.....	177
VI. Certificate of the Board to the New York and Jersey Railroad Company	201
3. Report of the Chief Engineer.....	219
4. Report of the Auditor.....	321
5. Index	361

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LIST OF ILLUSTRATIONS

City Hall Station.....	<i>Frontispiece</i>	
		OPPOSITE PAGE
Intersection of Fourth Avenue and 23d Street.....		220
Intersection of Fifth Avenue and 42d Street.....		222
Reinforced Concrete Construction, Lenox Avenue.....		226
Electric Cables in Duct Manhole, as deflected from vertical to horizontal position, to pass beneath Station Platform.....		230
New Building Lines on North Side of Eighth Street and West Side of Fourth Avenue, between Eighth and Ninth Streets.....		236
Concrete Retaining Wall at Hotel Belmont.....		242
Subdivision of Large Gas Mains at 66th Street.....		244
Centres for Concrete Lining of Central Park Tunnel.....		248
Harlem River Tunnel, Transverse Section.....		252
Waterproofing Invert, 149th Street.....		254
Manhattan Valley Viaduct.....		258
Manhattan Valley Viaduct Approach.....		260
Sewer, Inverted Siphon, Railroad Avenue and 149th Street.....		268
Sewer Junction, Fifth Avenue and 110th Street.....		270
Concrete Sewer Construction.....		272
Power House, Eleventh Avenue and 59th Street, December 31, 1902...		294
Maps, Profiles, Drawings and Plans.....		<i>Appended</i>

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REPORT
OF THE
COMMISSIONERS
WITH APPENDICES

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OFFICE OF THE
BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS.

No. 320 Broadway, New York,
January 1, 1903.

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TO THE MAYOR OF THE CITY OF NEW YORK:

SIR—The report of the Rapid Transit Board for the past year must be largely concerned with the definite, practical establishment of the theory and system of rapid transit administration to the promotion of which this Board has been dedicated since its organization in 1894. The year 1902 will rank as one of the most important in the rapid transit annals of the Greater New York.

At the end of 1901 the Board had made a degree of progress toward the practical accomplishment of its ultimate purpose, which, in view of the numerous difficulties and the powerful obstructions it had met, and of the financial conditions of the city during the first three years of its work, must, on the whole, be deemed highly satisfactory. But the concrete and definite results were limited to (1) the partial construction of the Manhattan-Bronx Railroad and (2) the creation of the franchise for the Brooklyn-Manhattan Railroad. The latter franchise practically illustrated the intention of the Board that the municipal rapid transit system should, as soon as financial conditions would permit, reach all the boroughs of the city. Especially was it the intention that the great Borough of Brooklyn, second in population and importance only to the Borough of Manhattan (and steadily overtaking it), should, in respect of rapid transit, receive attention no less than that accorded the Boroughs of Manhattan and The Bronx, which had had the advantage of the inauguration of municipal rapid transit within the limits of the former City of New York before its consolidation into the Greater New York. In 1902, however, the Board was able to establish the broader and farther reaching scope of its work and duty for which it had hoped since 1894, and especially since such municipal consolidation.

Early in 1902 the Board was called upon to defend the essential proposition upon which it had been constituted. This was that the use of the underground and overhead portions of the streets of New York for railroad purposes should proceed according to a harmonious and far-seeing plan, possible only if all such uses, and every such use, of the streets were to be subject to the jurisdiction of the Rapid Transit Board or of some other single like authority which should represent the interests of the entire city, and be so organized as to be able to carry out consistently and efficiently a plan requiring years, and perhaps many years, for completion. The establishment of this view followed the discussion over the so-called "Pennsylvania Railroad Bill."

The vindication which was then accorded to the position of the Board—the creation, with an overwhelming approval of public sentiment, of the Pennsylvania Terminal franchise—the very advantageous terms of the Brooklyn-Manhattan contract—the authorization by the Board of additional tunnel connection with Jersey City, and finally the order of the Board that a plan be prepared for a great and systematic extension of rapid transit facilities in the Boroughs of Manhattan, Brooklyn, The Bronx and Queens—all these were normal fruit of the rapid transit agitation which brought this Board into being in 1894, and of the program to which the Board since that time, in season and out of season, and often under circumstances of extreme adversity, has at all times deemed itself committed. The Board has never lost faith that, if the citizens and the public authorities of the city would support it in its program, its practical results would be as large and comprehensively beneficial as those now well within sight.

The whole scheme of the Brooklyn extension, for which the contract was awarded in 1902, well illustrates the idea of an unified system of rapid transit for the whole city. But the Board does not for a moment assent to the proposition that the city in order to secure such utility is shut up to a contract with any one contractor. The opportunities for municipal rapid transit still remaining are such that in cases lessees of the Manhattan-Bronx rapid transit railroad shall not find it their interest, or for any reason shall fail, to propose to the city suitable terms for their undertaking of such extensions, the city can still build other and through

lines and award them to other lessees. The policy and intention of the Board are to the very utmost that is practicable, to require every contractor for the construction and operation of a municipal railroad to stipulate to make fair operating arrangements upon the basis of a single fare for a single trip, over any or all other municipally constructed railroads.

It can hardly be doubted that, as from time to time it shall be the interest of the city to itself build any rapid transit railroad, which for public convenience and economic and efficient operation ought to be part of the system of the present Manhattan-Bronx and Brooklyn-Manhattan railroads, enlightened self-interest will dictate to their lessees a willingness or even desire to undertake them upon terms advantageous to the city.

The Board feels further bound to point out that, in the future, the terms of municipal rapid transit contracts can be, and, therefore, ought to be, more favorable to the city than was the Manhattan-Bronx contract. That contract, as was pointed out in our first report, was made at a time when there was a widespread belief among railroad and financial people that it would be a business and financial failure, and when it was with the utmost difficulty and after very considerable delay that the city was able to obtain a contractor, and then only after the principal railroad proprietors in the city had refused to take up the enterprise. The remarkably favorable character of the bid for the Brooklyn-Manhattan extension (being for one-fourth or fifth part of its estimated cost) demonstrated beyond a peradventure the very great value of the leases of its municipality constructed railroads which the city would be able to offer.

The first report of the Board gave a concise account of its important work from its appointment in 1894 until the close of the year 1901, and included the report of its Chief Engineer upon the first year and nine months of the construction of the Manhattan-Bronx Railroad. The present report includes only the year 1902, and its four principal topics will be:

1. The definite approval by the Legislature and acceptance by the city of the plan of an unified and harmonious development of all rapid transit facilities of the city, present and future,

and the inclusion within the initial jurisdiction of the Rapid Transit Board (but subject to revisory power of the municipal authorities) of all uses of the underground or overhead portions of the streets of the city for railroad purposes, whether by the city itself or by private corporations. This part of the report necessarily deals with the grants of the Pennsylvania and New Jersey trolley franchises. It must also include the request of the Mayor that the Board assume a duty with respect to the solution of the Brooklyn Bridge terminal problem which, to some extent, had, by the so-called McCarren Act of 1900, been made subject to the jurisdiction of the Board.

2. The general scheme, for the future, of municipal and other rapid transit for the Boroughs of Manhattan, Brooklyn, The Bronx and Queens.
3. The contract for the construction and operation of the Brooklyn-Manhattan Railroad and the commencement of its construction.
4. The progress upon the Manhattan-Bronx Railroad during the year 1902.

I. UNIFIED RAPID TRANSIT ADMINISTRATION.

Early in the past year the Board was called upon to consider its duty with respect to new legislation affecting underground or overhead railroad uses of the streets of the city.

On the 20th of March the President of the Board submitted to it a communication which he had previously addressed to one of its counsel with respect to a bill before the Legislature to amend section 78 of the charter of the city. The letter was as follows:

NEW YORK, March 17, 1902.

EDWARD M. SHEPARD, Esq., No. 111 Broadway, New York City:

MY DEAR MR. SHEPARD—In my individual capacity as a citizen of New York, and as President of the Rapid Transit Commission, in the work of which, as you know, since you have been one of its

counsel, I take the very deepest interest, I beg your attention to the following:

The so-called Pennsylvania Railroad Tunnel Bill and the New York Central Terminal Bill both seem to me, from what I have read of them in the newspapers and from the comments made upon one of them in your note to me a short time ago, to contain provisions bearing either directly or indirectly upon the rapid transit future of this city. I am not sure just what the duty of the Rapid Transit Board is with respect to legislation which affects or may affect the rapid transit future of the city, which, since I have been President of the Board, I have supposed was intrusted in a way to the care of the Rapid Transit Board, with some kind of obligation upon the Board to promote and protect rapid transit interests and to prevent anything which might be harmful to those interests. That seemed to me to be the underlying idea in the resistance of the Board to the so-called West Street Bridge Terminal Bill, which largely by the action of the Board was defeated before the Governor last year, and to protest against which, at the earnest solicitation of the late Mayor, I appeared before the Governor in Albany.

I do not, of course, wish to have the Board assume any jurisdiction which does not belong to it or meddle with any duty or subject which it ought not to. On the other hand, I do not wish that we should be derelict or that we should hereafter be accused of having assented by silence to legislation which in reality was within our field and as to which we were specially called upon to speak if we had any criticisms to make. I shall, therefore, have to trouble you and Mr. Boardman to take up this matter at once and advise us what, under the rapid transit authority or under the Rapid Transit Law, or by reason of the offices the members of the Board hold, is their duty in the case of pending legislation which comes to their information which affects or may affect rapid transit interests.

I quite appreciate that my inquiry may call for an answer dealing somewhat with general policy as well as with the law, but nevertheless I shall be obliged to you and Mr. Boardman if you will send me a full answer in time for our meeting on Thursday next, the 20th instant.

Yours very truly,

(Signed) A. E. ORR.

The reply of the counsel was as follows:

PARSONS, SHEPARD & OGDEN,

NEW YORK, March 20, 1902.

HON. ALEXANDER E. OUG, President:

SIR—We have your letter of the 17th instant, asking us to give the Board our opinion upon the measure of duty resting upon the Board with respect to proposed legislation affecting its jurisdiction or other rapid transit interests.

The question involves, as you anticipate, not only matters of law, but also, and even more, matters of public policy. In view of the provisions of the Rapid Transit Act and of the precedents established by other public officers, and especially by the Board itself, it is, we have no doubt, the duty of the Board to watch legislative bills which may affect rapid transit interests of the city and to oppose any bill which, in the opinion of the Board, would be injurious to such interests of the city.

The plain theory of the Rapid Transit Act is the establishment of a permanent and specially equipped Board to deal systematically with rapid transit problems as they arise from time to time. The Board was given an autonomy of its own, not subordinate to any authority except the Legislature, and to a veto by the Mayor or Board of Aldermen of any plan proposed by it which would involve the use of public streets.

To the Board was assigned the initiation and carrying out of rapid transit plans, including the negotiation with existing companies of contracts granting to them rapid transit powers. This theory of a separate and systematic treatment of rapid transit problems was approved by the practically unanimous vote of the Legislature, and, indeed, of several Legislatures and by several Governors, and in the Boroughs of Manhattan and The Bronx when they constituted the former city, by a popular vote, the operation of which has been legislatively extended to the other boroughs of the Greater New York. The act did not establish the Board for any one enterprise or for a limited term, but for all concerns of rapid transit and until the Legislature should adopt a different policy. The primary duty imposed upon it was "from time to time to consider and determine whether it is for the interest of the public and the city * * * that a rapid transit railway or railways for the conveyance and transportation of persons and property should be established therein"; to conduct the investigation necessary in the premises, and from time to time to establish routes and general

plans of construction for additional railroads. The Board was given the general powers of an independent executive department, the right to rent offices; to employ engineers, attorneys and other assistants and subordinates; upon its own authority, but in behalf of the city, to bring any action "to compel the performance within the city by any corporation or person of any duty or obligation with reference to or arising out of the construction or operation of any railroad under or by reason of any grant made or right acquired" under the act "or by reason of any contract made or authorized by any Board of Rapid Transit Commissioners; or to recover, in behalf of the city, damages for any violation of duty by any corporation or person under the provisions of the Rapid Transit Act, or any contract or stipulation made in pursuance of any of its provisions." Besides the specific grant of extensive and various powers, the act makes a general grant of "such other and necessary powers as may be requisite to the efficient performance of the duties imposed upon said Board."

Under section 32 of the act the Board is also given the important and far-reaching power "from time to time to consider and grant to existing railroad corporations additional franchises," including authority to operate a railroad "to any terminal or terminals" within the city and to transport over the same passengers or freight, or both.

In these and other provisions the act makes clear the duty of the Board to assume the general initiation and supervision of rapid transit work. The "rapid transit" mentioned in the act includes future grants or franchises of practically every character for the carriage of passengers or freight at high speed within the limits of the city, and especially any such granting to existing railroad corporations.

The theory of the act is thus plainly to be read in its text; but it is also plain from the history of its passage and amendment, as also the public policy which dictated the legislation. The people of the city needed rapid transit, and must continue to need more and more of it; its provision involved the use of the streets; there have been great waste and misuse of the street franchises of the city; the problem of intraurban transportation at high rates of speed, and especially the use of city streets for it, needed to be dealt with by a Board the majority of the members of which should have no other public function, and should, by their especial study of this subject and by long experience, secure the city a systematic and far-seeing treatment of the problem; other officers, like the members of the Board of Estimate and Apportionment and the members of the Board of Aldermen, were chosen for a limited term; they had other important and engrossing official duties; the problem how

best to use the enormously valued street facilities of New York for the purpose of intraurban transportation was a difficult, complex and technical one. It was for such reasons that the Rapid Transit Board was established. It is clear, therefore, that any legislation beyond the already somewhat inconsistent provisions of section 73 of the Greater New York Charter, and which is intended or which may limit or subordinate the function of that Board or obstruct or limit its powers to carry out general and far-reaching rapid transit plans and generally to protect the rapid transit interest of the city, involves a repeal, to some extent, of existing rapid transit laws, affects the powers and usefulness of a Board and should have its serious consideration.

Nor do we think it open to any doubt that it is the duty of the Board to urge upon the proper authorities its own views upon proposals of legislation which may affect the rapid transit interests of the city. No such duty is, indeed, specified in terms of the law. Nor was any such duty specified in the case of the Mayor of the city prior to the adoption of the constitutional amendment giving him a qualified veto of bills affecting his city. But for many years prior to that amendment it was deemed a prime duty of the Mayor to be concerned with legislation affecting his office or his city. So the head of every department is deemed bound to jealously watch legislation affecting the public interest in his charge. It is not too much to say that any important officer or head of a department would be open to severe criticism if he should not inform himself of proposed legislation affecting his office, or should fail in vigorous protest against any bill which, in his opinion, would, if enacted, be injurious to the interests which he was set to guard. So it is that the city government is regularly represented at Albany by one of the staff of the Corporation Counsel to deal with bills in Senate or Assembly. So it is that the Rapid Transit Board itself has, from time to time, proposed bills to the Legislature, and, from time to time, criticised and objected to hostile legislation. By way of illustration of the exercise of this duty of the Board to watch and criticise legislation, we refer to its action in April, 1901, upon the bill to authorize the North River Bridge Company to build an approach on West street. The Board was not mentioned in the bill; but nevertheless it felt bound to carefully consider it. It made formal protest against the bill, pointing out that, if enacted, it "would tend to oust the Board from an important part of its great duties to the city and increase the difficulties already sufficiently great in the way of the provision of large rapid transit facilities." It submitted such protest to the Governor. It attended before the Governor by a committee and by its counsel and urged him to veto the bill, as he afterwards did. So in May, 1901, when the Com-

missioner of Bridges sought legislation for the relief of the congestion at the Manhattan terminus of the Brooklyn Bridge, the municipal authorities submitted the bill to the Board for its consideration, and for the plain reason that although the Board was not technically a necessary party, nevertheless the legislation was such as might affect the future of rapid transit. The Board proposed an amendment requiring its approval whenever procedure under the bill might affect rapid transit; and the amendment was approved by the municipal authorities. So, to go further back, in February, 1895, the Board intervened with the Legislature in the case of the law requiring the cutting of stone within the limits of the city. So in 1896 the Board intervened against legislation for pneumatic tubes on the ground that such tubes, or the rights given for them, might obstruct rapid transit. So in the same year, when a bill was proposed giving certain rights in the streets to the New York Carbide and Acetylene Company. So in 1897, when the Greater New York Charter was proposed, the Board intervened, procuring the insertion of a clause maintaining intact the rapid transit acts.

So the Board has for a like purpose intervened before other authorities and the Legislature. Thus when the State Railroad Board had before it in 1900 the application of the New York-Brooklyn-Jersey City Company, the Board although not technically a party to such application, nevertheless examined the merits of the application and, having disapproved it, directed its President and counsel to present its objections to the State Railroad Board, which they did, with the result that the latter Board denied the application upon the express ground that to grant it might infringe upon the rapid transit interests committed to the Rapid Transit Board.

The attitude of the Board has been maintained consistently, and without any dissent within the Board or any disapproval without the Board, from the beginning. Indeed, it is not too much to say that, from the constitution of the present Board in 1894 until the present time and through the three city administrations presided over by Mayors Gilroy, Strong and Van Wyck, it was assumed that, under the text and policy of the Rapid Transit Act, the interests of the city required that rapid transit problems should be dealt with by the Rapid Transit Board as a permanent body especially familiar with the subject and especially equipped to deal with it,—all with the idea that those problems, instead of being dealt with by different bodies or by officers of short tenure, should be dealt with on a systematic and far-seeing plan.

We do not understand that we are called upon at present to express an opinion upon the so-called Pennsylvania Railroad Bill or the New York Central Terminal Bill. We are clear, however, that,

so far as either of those bills affects the subject of rapid transit within the limits of Greater New York, it is the duty of the Board to study them; and, if it shall appear that, in the opinion of the Board, the bills propose a reversal or radical modification of the policy of the city to the injury of its rapid transit interests, then that the Board should submit its protest to the proper authorities.

Very respectfully,
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(Signed)

PARSONS, SHEPARD & OGDEN.

BOARDMAN, PLATT & SOLEY.

The counsel later, and upon the request of the Board, expressed as follows their opinion upon the merits of the so-called Pennsylvania Bill:

"The counsel, without being yet familiar with the details of the proposed Pennsylvania plan, assume it to deserve a hearty approval. But it is clear that the undertaking can be lawfully authorized without the reversal of the wise and safe policy of the city embodied in the Rapid Transit Act, a policy which, although not yet completely established, is substantially so. If the Pennsylvania Company deem that the provisions of section 32 of the Rapid Transit Act, which were intended for precisely such a purpose as that now sought by the Pennsylvania Company, are not sufficiently full or detailed, then we have no doubt the Rapid Transit Board will gladly promote such immediate amendment of that act as would put beyond doubt its sufficiency to meet the Pennsylvania plan. In such event, if the promoters of the Pennsylvania bill and the Mayor should agree with the Board, we believe that the Governor would, upon the application of the Mayor, commend such a bill to the Legislature by emergency message so that it could be passed next week and before the adjournment of the Legislature, and also before the time shall elapse for the action of the Mayor upon the pending bill. The proposed new section 78 (to the City Charter), by its express term, overrides everything else contained in the Greater New York Charter; and by necessary implication supersedes all other legislation inconsistent with it. It grants to the Board of Aldermen the initiation and negotiation of the terms and conditions upon which may be constructed any railroad within The City of New York which is to be connected with any other railroad, whether within the State of New York or any adjoining State, so as to form a continuous line between any point within and any point without the city. The act is drawn in general terms and grants this power of initiation or

negotiation to the Board of Aldermen, not only for the Pennsylvania Railroad, but for any and every railroad with which the present Board of Aldermen or any future Board of Aldermen may hereafter see fit to conduct a negotiation. The act does not provide for a hearing by the Appellate Division of the Supreme Court in the absence of the consent of owners abutting on streets of the route. There is no provision as to the pecuniary responsibility of the railroad, nor any as to whether the connecting line shall run one mile or three thousand miles without the city. The act prescribes no time limit and no minimum of compensation. All these things are left to the determination, in the first instance, of the Board of Aldermen, subject to the subsequent approval of the Board of Estimate and Apportionment, which must say 'yes' or 'no' to the grant as originated by the Board of Aldermen. The effect of this is to reverse the policy which, after many scandals and great waste and misuse of public franchises, was in large measure established by the Rapid Transit Act. That was the policy of intrusting the initiation or negotiation of plans for rapid transit, that is to say, high-speed transportation within The City of New York, whether of passengers or of property, to this Board, subjecting the determination finally reached by this Board to the consent of the Board of Aldermen, so far as the use of the public streets might be concerned. The all-essential point of the act is the ouster of the Rapid Transit Board from the highly important part of its jurisdiction now conferred by section 32 of the act, that is to say, the right upon such terms as shall be advantageous to the city to enter into agreements with railroad corporations for extensions within the city and to substitute the Board of Aldermen for the Rapid Transit Board. It is clear that the Board of Aldermen, whose members are elected for two years and who have many other important and engrossing duties, cannot perform this duty as well as a permanent board devised to deal systematically and from time to time with the whole rapid transit situation, that is to say, with all high-speed transportation within The City of New York. The Rapid Transit Board was intended to be a highly equipped, experienced and exceptional body of men, having no other official function. The importance to the rational, orderly, economical and far-seeing use of the streets of New York for high-speed railroad purposes and, as lawyers say, to the wise marshaling of the vast street assets of the city, is obvious from a single illustration. It is clear that one lateral railroad might be so devised as to practically defeat all further north and south rapid transit. It was for this very reason that the special powers to grant extensions to railroad corporations were given by section 32. It is true that section 73 of the Greater New York Charter gives to the Board of Aldermen a power limited as to time

and with a minimum limit of compensation as to tunnel railroads. This provision was itself in a measure inconsistent with the modern and rational policy of the city of harmonizing and developing upon a system all high-speed railroads and railroad construction under or over the streets of New York. But that inconsistency ought to be regretted rather than to be greatly extended with all the danger of a return to the old scandals and incompetencies and waste of the city's opportunities and future. The Mayor and Comptroller are members ex-officio of the Rapid Transit Board and would have in that Board, as they would not have in the Board of Aldermen, a very great power in formulating the terms and details of any contract which the Rapid Transit Board might make under section 32 (of the Rapid Transit Act) with the Pennsylvania Railroad Company or any other railroad company. And then, after any such plan shall be formulated, and receive the assent of the Aldermen, so far as the use of the streets is concerned, it must go to the Mayor for his final approval. So that the Mayor would deal with the matter both at its beginning and at its close, thus exercising a wholesome power over the plan greater and far preferable to that proposed to be given him by the proposed Pennsylvania bill. It is not any disparagement of the character and abilities of the Board of Aldermen to say that the official experience, the systematic dealing with the one subject of rapid transit, and other considerations, better equip the Rapid Transit Board for so difficult and complex a business as the negotiation or initiation of railroad extensions such as that proposed by the Pennsylvania Company. The city is committed to municipal construction under the auspices of the Rapid Transit Board. And, as we understand, it is the duty of this Board from time to time in the future, as the financial condition of the city shall permit, to promote such municipal construction. But the city cannot do that without securing in each case a contractor-lessee able and willing to assume the great pecuniary burdens of the enterprise. The city must, we assume, keep moral good faith with its contractors if it hope to develop the system of municipal construction. But such systematic good faith during the years to come far beyond Mayor Low's term would be endangered if the Rapid Transit Board were, as now proposed, to be practically ousted of its present jurisdiction over the extension of railroads, and if that jurisdiction were conferred upon the Board of Aldermen. As the law now stands, after a railroad plan is devised or a railroad contract made by the Rapid Transit Board, the Aldermen are called upon to give a simple assent or dissent to the use of the streets involved and may not alter or modify the franchise. Although the Aldermen may sometimes indulge in delay, which to the public or the Rapid Transit Board seems undue,

nevertheless it is reasonably certain that the Aldermen will in every case finally and before very long yield to public sentiment in favor of a carefully devised and protected extension of railroad facilities. The policy of the city is definitely set against the grant of franchises in perpetuity. The violation of that sound principle has involved what may be justly called gigantic losses. It may, of course, be possible that to this principle there may be a sound exception; and the case of a great trunk line desiring in the metropolis a terminal for its continental business, and unable to make an enormous investment without certainty that it would not hereafter be deprived of its terminal, may very well be such an exception. The Rapid Transit Board is the only authority, under the law as it now stands, which can initiate a grant in perpetuity. The proposed bill adds other authorities which may make a perpetual grant. It is against every sound public policy that the power to make grants in perpetuity should be granted to additional authorities. The power is dangerous enough where it now rests and should not be extended."

The Legislature having passed the bill for the amendment of section 78 of the City Charter, the Board directed its President and counsel to appear before the Mayor upon his constitutional hearing on the bill and there to present the objections of the Board substantially as stated in the opinion they had so delivered to the Board. The President and counsel did so appear and present such views to the Mayor. Prior to the hearing before the Mayor, and also after it, the President of the Board and its counsel with its authority conferred with the President, Vice-President and counsel of the Pennsylvania Railroad Company, with respect to an amendment of section 32 of the Rapid Transit Act, in lieu of the proposed amendment of the City Charter. After such conference the officers of the Pennsylvania Railroad stated that the amendment of the Rapid Transit Act would be at least as satisfactory to them, for the purpose of carrying out their plans of establishing a terminal and crossing the city with their railroad, as the proposed new section 78 of the New York Charter which had come to the Mayor for his consideration. The proposed amendments to section 32 of the Rapid Transit Act were thereupon submitted to the Mayor and Corporation Counsel and received their approval. The Mayor having concluded to approve the proposed new section 78 of the City Charter, accompanied his approval with a letter to the Governor of the State as follows:

CITY OF NEW YORK,
OFFICE OF THE MAYOR.

MARCH 24, 1902.

HON. B. B. ODELL, JR., Governor:

SIR—In accepting, on behalf of the city, Assembly Bill No. 1045, entitled "An Act to amend the Greater New York Charter by adding a section in relation to franchises of tunnel railroad corporations, now or hereafter incorporated, for constructing and operating tunnel railroads to connect with other railroads and form thereby a continuous line between a point or points within, and a point or points without The City of New York," I have filed a memorandum, copy of which I have the honor to hand you herewith.

At the close of this memorandum I give my reasons for thinking that, on the whole, the Rapid Transit Commission should have at least so much oversight of new underground roads as to ensure a consistent and comprehensive system of underground tunnels in the city, and to be able to prevent disastrous interference with the development of the subway system constructed at the city's expense.

It seems to me that this result can be obtained by the passage either of the bill prepared by the Rapid Transit Commission, referred to in my memorandum, or of a supplementary bill, such as I hand you herewith, amending Assembly Bill No. 1045, just accepted by me on behalf of the city. This second method of procedure has not been the subject of conference between the different interests concerned; but I personally think that it has many advantages.

I shall be greatly obliged if you will, at your discretion, transmit one or the other of these measures, or both of them, to the Legislature, with an emergency message asking for prompt action on one or the other.

In the alternative measure submitted herewith, it is proposed to state specifically that the new section 78 of the Charter is subject to the limitations of sections 74 and 48 of the same instrument. This is not believed by the Corporation Counsel to be necessary; but as the point was raised at the public hearing on Assembly Bill 1045, there can be no harm, in case of the amendment of the section, in setting such a question definitely at rest.

I have the honor to be,

Very respectfully,

(Signed) SETH LOW, Mayor.

MARCH 24, 1902.

MEMORANDUM in connection with Assembly Bill No. 1045, entitled,

"An Act to amend the Greater New York Charter by adding a section in relation to franchises of tunnel railroad corporations, now or hereafter incorporated, for constructing and operating tunnel railroads to connect with other railroads and form thereby a continuous line between a point or points within and a point or points without The City of New York."

This bill aims to make possible the project of the Pennsylvania Railroad Company to secure terminal facilities on the island of Manhattan for the Pennsylvania and the Long Island Railroads, and incidentally to connect the Boroughs of Manhattan and Queens by tunnels under the North and East rivers with the South and West. It raises three substantial questions: First, whether it is proper to grant a perpetual franchise, even under the conditions attaching to the Pennsylvania Railroad project; second, whether the bill in its present form is a safe and proper bill; third, whether it would be better, as a matter of policy, to deal with the question by an amendment of the rapid transit law.

I.

As to the first question, the conditions affecting the Pennsylvania Railroad project are these: The company proposes to spend from thirty-five to fifty millions of dollars in tunneling the North river, in tunneling under the surface of Manhattan Island, and in tunneling under the East river to Queens Borough. The effect of this project, if consummated, would be to give to the Boroughs of Manhattan and Queens unbroken connection with the West and South, and to provide most desirable communication between the Boroughs of Manhattan and Queens. The advantages of the plan to The City of New York are beyond estimation. The Pennsylvania Railroad proposes to provide the money for this superb enterprise; but it points out that the one indispensable condition under which it can undertake it is that it secure a franchise in perpetuity. It is clear that such a tunnel road could never be built as an independent enterprise; and that it is desirable, from the railroad point of view, only as a means of connecting the Pennsylvania Railroad and the Long Island Railroad systems with Manhattan Island and with each other.

No one in this community is more averse to a perpetual franchise than am I, but candor compels me to recognize that there is a vital distinction to be drawn between such a franchise as the Pennsylvania Railroad desires and that, for example, of the Rapid Transit

Subway. If, at the end of the period for which the latter franchise is granted, the city decides to operate the railroad itself, the city takes the entire railroad. In the case of the Pennsylvania Railroad tunnel, on the other hand, were the city to assume it at the end of a limited franchise, the city would acquire what would be of comparatively little value without the outside railroad systems connecting therewith; while the railroad would lose what would be vital to it after its business had been adjusted for fifty or seventy-five years to the use of such facilities. This is why, from the point of view of the Pennsylvania Railroad, the project is absolutely dependent upon a perpetual franchise. Except upon such a basis, the Pennsylvania Railroad is, and has been from the beginning, perfectly frank in stating that the investment will not be made. On the other hand, the railroad asks for nothing which is of present value to the city, or which it has cost the city anything to create. The city is only asked to grant permission to tunnel under the surface of Manhattan Island and the East river.

While the bill therefore provides that a franchise may be granted in perpetuity for such a purpose, it carefully guards the right of the city to readjust the terms upon which the franchise shall be enjoyed, at intervals of not more than twenty-five years. The city is thus assured of the periodic opportunity to profit by any increase in the value of the franchise such as time may easily bring. The city is also assured of the right and opportunity to attach such conditions to the grant as public interests may require.

Under these circumstances, I am of the opinion that a perpetual franchise in such a case may properly be granted; for the city is not deprived of the opportunity to profit by its increase in value. It is only deprived of the opportunity of using the franchise itself at the expiration of a limited grant. Inasmuch as the project in contemplation involves a tunnel under the North river for its completion, which tunnel lies outside of the city's control entirely; and inasmuch as that portion of the enterprise which the city does control is so vital to the Pennsylvania Railroad Company that it cannot afford to enter upon the undertaking except upon the grant of a franchise in perpetuity, I am of the opinion that this is a case in which good judgment justifies an exception to the general rule.

In this connection, it may not be amiss if I say that the provisions in the Greater New York Charter of 1897, limiting the power to grant franchises to a grant for a term of years, which were the basis of the provisions in the present charter, were inserted at my suggestion when a member of the first charter commission. It is also interesting to point out that the provision for a periodic opportunity for a readjustment of the terms of any of the franchises that may be granted under section 32 of the Rapid Transit Law,

was also inserted in this section at my instance, when I was a member of the Rapid Transit Board. It will not therefore be contended, I am sure, that I have ever been careless of the city's interests in these regards. The basic principle of the ground lease which I have often urged as a model for the city in its dealings with its franchises is the opportunity which such a lease affords for a periodic adjustment of the terms between the owner and the lessee. If this privilege is retained, it becomes to a certain extent a matter of discretion as to whether a franchise should be granted in perpetuity or not. I freely admit that I prefer grants for a limited period; but even so good a rule as this may sometimes suffer an exception in the public interest.

II.

The second question is, whether the bill in its present form is a safe and proper bill. Different communities in the State of New York have in the past suffered so seriously from special grants that the Constitution requires that every bill of this kind must be general in its terms. It might be more satisfactory in this particular case to deal with the Pennsylvania Railroad project by itself; but the requirements of the Constitution make necessary a law general in its terms. The bill under consideration is in form an amendment to the charter; accordingly, any grant to be made under the terms of this bill must be made in the manner prescribed by the charter. That method of procedure is outlined in section 74 and section 48. Section 74 reads in part: "Such ordinance shall, on its introduction and first reading, be referred by the Aldermen to the Board of Estimate and Apportionment," whose duty it is to inquire into the value of the franchise and to indicate the terms upon which it would approve the proposed grant. According to section 48, when such a proposed franchise "has been approved by a resolution or vote of the Board of Estimate and Apportionment, it shall be the duty of the Board of Aldermen, upon receiving a copy of such resolution or vote, to appoint a day, not less than one week nor more than two weeks after receipt thereof, for the consideration of the subject matter." If, within six weeks, a majority of the Board do not vote against such a proposition or franchise, then it shall be deemed at the expiration of said period to have been passed by the requisite vote of the Board of Aldermen. The Greater New York Charter, therefore, provides in effect for the determination of the terms of the franchise by the Board of Estimate and Apportionment. It also provides for the adequate public knowledge, and makes provision against an indefinite delay as to a determination of the question. So much for the charter

method of procedure. It will be generally admitted that it affords to the city such security as the character and ability of its public officials can ensure under a deliberate system of procedure which gives public opinion ample opportunity for making itself felt.

It has been urged that this bill, being general in character, offers the opportunity to the city authorities to advance other schemes less meritorious than that of the Pennsylvania Railroad. To this, it may be said that the number of such schemes must be very limited from the nature of things. The bill gives authority to grant to railroads originating outside of the city only the right to tunnel under the surface of the city, with right of access at stations and a right to have the road emerged to the surface only at termini, which must be on private property. If a tunnel is to reach Manhattan Island from beyond the city limits, and if it comes from the westward, the enterprise must begin by tunneling the Hudson river; if it comes from the eastward, the tunnel must begin beyond Jamaica; if it comes from the north, the tunnel must begin at Yonkers or Mount Vernon. Such enterprises, as has been pointed out, must be few in number in the nature of things; they must be constructed solely with private funds; they are not exempt from taxation; and they cannot hope to compete for local business on even terms with the Subway Company, in which the city is interested. The Pennsylvania Railroad project is not advanced as a measure of local rapid transit. It is made possible only because it furnishes the connecting link between two friendly railroad systems, neither of which at the present time reaches the Borough of Manhattan. It is conceivable that conditions sufficiently exceptional to lead to another enterprise of the same sort may arise at some time in the future; but it is not easy to see how any great public injury can befall the city under the terms of the pending bill. Those who argue from their fears as to this aspect of the matter virtually assume that the only protection for the city in such matters is to deprive the city authorities of the power to act in the public interest. There is another agency, besides the written law, capable of protecting the city from the misuse of power in such matters, and that is public opinion. No one will dispute the fact that public opinion on the subject of the grant of franchises is more alert than it ever has been before. I am not willing to assume that legislation ought to be shaped upon the theory that neither the character of city officials nor the public opinion of the citizens can be trusted to protect the interest of the city in matters of vital importance.

III.

It has, however, been suggested, at the last moment, that it may be better, as a matter of policy, to deal with all such projects

as are contemplated by the pending bill through an amendment of the Rapid Transit Act. Section 32 of this act giving to the Rapid Transit Commission powers so nearly similar to those conferred by the pending bill as probably to enable the Commission to authorize the desired work to be done if it were conducted under the name of the Long Island Railroad Company. Under these circumstances, it is contended that the adoption of this amendment to the charter will result in creating two separate agencies capable of dealing with this question. It is pointed out, therefore, that the development of the underground railroad system of the city is much less likely to be symmetrical and comprehensive, if brought about by two different methods of procedure, than it will be if every such plan is passed upon, as most plans have to be, by the Rapid Transit Commission. It has also been urged with great earnestness that under the pending bill action might be taken which would seriously injure the city's interest in the subway now being constructed at the city's expense. These considerations seem to me to have so much weight that they demand recognition at my hands, although I am conscious that in yielding to them I am giving effect to a conception of the duty of the Rapid Transit Commission which will be new to many citizens of New York. One has to deal with fact, rather than with theory, and it seems to me, upon the whole, quite as important that the shaping of the underground railroad system of the city shall be subject to the supervision of a single body as that the laying of the water-pipes should be.

On the other hand, the proposed improvement of the Pennsylvania Railroad is too important to The City of New York to justify any course of action at this stage of the legislative session which might conceivably result in lodging power nowhere to deal with this proposition.

Under all the circumstances, therefore, and in view of the near approach of the end of the legislative session of the year, I have determined to approve the pending bill; and, at the same time, to forward a letter to the Governor, asking him to send to the Legislature, with an emergency message, either a bill amending section 32 of the Rapid Transit Act in the comparatively slight particulars which are necessary in order to give to the Rapid Transit Commission jurisdiction in the premises, or else a bill amending the measure now under consideration by providing that the route and method of construction of any proposed tunnel railroad shall be examined and approved by the Rapid Transit Commission; or, at his discretion, both of these measures, so that the Legislature may consider both. I have reason to believe that the Pennsylvania Railroad Company will not at all object to the supervision of the Rapid Transit Commission of the project now in contemplation.

It will be remembered that the Mayor and Comptroller of the city are ex-officio members of the Rapid Transit Commission; and that every franchise approved by the Commission must be accepted by the Board of Aldermen and the Mayor before it can go into effect. The question at issue, therefore, is not whether the city authorities shall or shall not be called upon to approve any given project, but whether or not the Rapid Transit Commission shall be called into consultation. In view of the large sum which the city has already invested in the subway, and in view of the still large investments that the city is likely to make in this direction in years to come, I conceive that it is on the whole desirable that the initiative in such matters shall be taken by the Rapid Transit Commission—at least, so far as the route and manner of construction are concerned.

(Signed)

SETH LOW, Mayor.

The Governor sent to the Legislature an emergency message in behalf of the immediate enactment of the bill amending section 32 of the Rapid Transit Act. This bill became a law and established beyond question the power of the Board to grant franchises such as that desired by the Pennsylvania Company.

Such new legislation and the grant of the Pennsylvania and New Jersey franchises, of which a full account is now given, must be justly deemed events of the very first consequence. They tend to establish the policy of the city that the uses of the underground and overhead portions of its streets for transportation purposes shall, in the first instance, be dealt with by the Rapid Transit Board, or by some other single body of its general character, to the end that, hereafter, the enormously valuable property of the city in its streets shall not be improvidently granted or used without a far-sighted regard to the future development and necessities of rapid transit and transportation within its limits. Whether railroad construction and operation be municipal or under control of private corporations, it is now the settled policy of the city that no railroad use of the streets shall needlessly obstruct future rapid transit or other future and profitable use of the streets for transportation purposes. Every future grant of such a street

right is to be made with the utmost practicable regard to all other municipal purposes, present and future.

The Board has also to congratulate the city that in the Pennsylvania and New Jersey franchises the policy was thus still better established, if it had not been sufficiently established before, that the city shall derive proper compensation from every railroad use of its streets, and that the terms of such compensation shall be adjusted at reasonably brief intervals, so that at all times the city shall derive from the railroad uses of its streets the maximum revenue consistent with a due and ample provision of rapid transit and other railroad facilities.

The Board deems it proper to point out that the terms of the franchise granted the Pennsylvania, New York and Long Island Railroad Company for the construction and operation of its great tunnel railroad crossing the city from the New Jersey line to a connection with the Long Island Railroad in Queens Borough and including a vast and monumental terminal between Thirty-first and Thirty-third streets, Seventh and Ninth avenues, are, without doubt, the most favorable ever secured by the city upon a railroad grant. And the terms of the latter franchise granted to the New York and Jersey Railroad Company for its tunnel under the Hudson river and its terminus at Greenwich and West Tenth streets are at the least as favorable to the city as those accorded the Pennsylvania Company.

FRANCHISE FOR PENNSYLVANIA TERMINAL.

On May 5 Mr. A. J. Cassatt, President of the Pennsylvania, New York and Long Island Railroad Company, made application in its behalf for a franchise to extend the line of the Pennsylvania Railroad by tunnels under the North river to a passenger station to be erected in New York City and thence under the East river to a connection with the Long Island Railroad. A committee of the Board appointed to carry on the preliminary negotiations with the applicant company on the 16th of June submitted the following report:

No. 320 BROADWAY, NEW YORK, June 14, 1902.

TO THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS:

Your Committee, to which was referred the application of the Pennsylvania, New York and Long Island Railroad Company, respectfully reports that, after many meetings and a somewhat laborious negotiation with the representatives of that company and of the Pennsylvania Railroad Company, in the interest of which it was incorporated, your Committee has prepared the form of franchise herewith submitted. As your Committee understands, the Railroad Company is prepared to accept the franchise so proposed; and your Committee has no hesitation in saying that its terms are, on the whole, very greatly in the interest of The City of New York.

Your Committee has received satisfactory assurance of the pecuniary responsibility of the applicant corporation, and submits herewith a letter from Mr. A. J. Cassatt, who is President of the Pennsylvania Railroad Company, in which he states that the total authorized capital stock of the applicant corporation is \$20,000,000, of which \$10,000,000 has been subscribed for and paid in full; and that, of such \$10,000,000 the Pennsylvania Railroad Company owns \$9,991,000,—the remainder of the paid capital being held by directors. In the opinion of your Committee this assurance, when taken in connection with the strict terms of the grant and the limitations of time, affords ample protection to the city.

The essential features of the proposed franchise may be thus summarized:

First.—A grant by the city in perpetuity of rights subject, however, to a periodic readjustment of payments at intervals of twenty-five years, as follows:

(a) To construct and operate a railroad of two tracks from the boundary between New York and New Jersey under the Hudson river opposite the westerly foot of Thirty-first street, Borough of Manhattan, thence running under the Hudson river and Thirty-first street to the East river and under the East river to a terminus in Queens Borough. The Company is permitted on notice within ten years to give up the right to these two tracks.

(b) A like right for a railroad or two tracks beginning near the same point under the Hudson river, thence running under Thirty-second street to the East river, and under that river to the terminus in Queens Borough, with a right for two additional tracks in Thirty-second street, west of Ninth avenue, and one additional track between Seventh and Fifth avenues in Manhattan.

(c) A like right for a railroad of two tracks beginning at the station terminal site at Thirty-third street and Seventh avenue and thence running under Thirty-third street and the East river to the terminal in Queens Borough, with a right for one additional track on Thirty-third street, between Seventh and Fifth avenues.

(d) A right to maintain a terminal station occupying the four blocks bounded by Thirty-first street, Seventh avenue, Thirty-third street and Ninth avenue, the lots on the east side of Seventh avenue between Thirty-first and Thirty-third streets, and the underground portions of Thirty-first and Thirty-third streets, between Seventh and Eighth avenues and between Eighth and Ninth avenues, the Company having itself acquired the land included in such four blocks and lots on the east side of Seventh avenue.

(e) To occupy for such terminal facilities all of Thirty-second street lying between the westerly side of Seventh avenue and the easterly side of Eighth avenue, and between the westerly side of Eighth avenue and the easterly side of Ninth avenue. As soon as the statutory right of the city authorities to make the conveyance shall be put beyond doubt the Railroad Company is obliged to buy such two portions of Thirty-second street, which will then become completely dedicated to the purposes of their station.

(f) To occupy for a subordinate station the underground portion of Thirty-third street extending from a line 400 feet west of Fourth avenue to a line 600 feet east thereof.

(g) To have along such routes the necessary facilities for the operation of passenger and freight trains, including telegraph wires and the various wires and cables for the distribution of power, heat and light.

Second.—The requirement of the consent of the Mayor, the Board of Aldermen, the Board of Estimate and Apportionment and the other authorities of the city having control of the streets.

Third.—The obligation of the Pennsylvania Company to begin construction within three months after obtaining the necessary consents and complete the railroad within five years after construction shall begin, except the route under Thirty-first street, for the completion of which the company is allowed ten years after the completion of the remainder of the railroad.

Fourth.—Payments by the Pennsylvania Company for the first twenty-five years, as follows: A rental of \$200 per annum for the right to occupy land under the Hudson and East rivers outside of pier lines. A rental for ground within pier lines and for under-

ground portions of streets in Manhattan Borough, at fifty cents per linear foot of single track per annum, for the first ten years, and during the next fifteen years one dollar per annum per linear foot. A rental for ground within pier lines and for underground portions of streets in Queens Borough at one-half the rates payable for Manhattan Borough. A rental for underground portions of Thirty-first and Thirty-third streets, between Seventh and Eighth avenues, and between Eighth and Ninth avenues (such portions extending almost up to the surface, except under the south sidewalk of Thirty-first street and north sidewalk of Thirty-third street), at \$14,000 per annum for the first ten years, and at \$28,000 per annum for the next fifteen years. A rental for the underground portion of Thirty-third street, near Fourth avenue, to be occupied for the secondary station, at \$1,140 per annum for the first ten years, and \$2,280 per annum for the next fifteen years.

For the portions of Thirty-second street, between Seventh and Eighth avenues, and between Eighth and Ninth avenues, a rental is to be paid at the rate of \$36,000 per annum; but as soon as the statutory power of the city to make a sale shall be put beyond doubt, the city is to sell and the Railroad Company is required to buy such portions for the sum of \$788,600. The rentals for river and track rights and for the station space at Thirty-third street and Fourth avenue begin at the date of operation. For the land in Thirty-second street, used for terminal facilities, and the underground spaces under Thirty-first and Thirty-third streets, used for station extension, the rentals begin at the commencement of construction, or when the company entered thereon.

Such annual payments may be summarized as follows:

	First 10 Years.	Next 15 Years.
For river rights.....	\$200 00	\$200 00
For tunnel rights in Manhattan Borough, being 44,341 feet (partly estimated) of single track.....	22,170 00	44,341 00
For tunnel rights in Queens Borough, being 8,100 feet (partly estimated) of single track.....	2,025 00	4,050 00
For street rights on Thirty-first and Thirty-third streets, north and south of terminal.....	14,000 00	28,000 00
For secondary station at Thirty-third street and Fourth avenue.....	1,140 00	2,280 00
For portions of Thirty-second street..	36,000 00	36,000 00
In all, per annum.....	\$75,535 00	\$114,871 00

If the route under Thirty-first street be availed of these amounts will be increased by \$16,652.50 for the first ten years, and by \$33,305 for the next fifteen years.

The amounts to be paid are to be readjusted at the end of twenty-five years; and thereafter at intervals of twenty-five years. If the city and the Railroad Company shall not agree upon the readjusted rates they are to be determined by the Supreme Court of this State.

Fifth.—The railroad to be entirely in tunnel except where it approaches the surface at its eastern terminal station near Thompson avenue, in Queens Borough. The uppermost part of the tunnel is to be at least nineteen feet below the surface of the street; but this limitation does not apply to the portions of Thirty-first and Thirty-third streets opposite the terminal station between Seventh and Ninth avenues, where the company may occupy the underground portions of the street under the roadway to within thirty inches of the surface, and under the sidewalks on Thirty-first and Thirty-third streets opposite to the station to within five feet of the surface, the company to properly care for sewers, water, gas and other pipes and underground structures lawfully in the street.

Sixth.—The company to make good all damage done to property of the city by its construction work or operations, and to abutting owners all damage done through any fault or negligence of the company, or of any contractor or sub-contractor engaged upon its work of construction or operation. The Tunnel Company to keep Thirty-first and Thirty-third streets opposite the station well paved with smooth pavement and in thoroughly good condition.

Seventh.—Tunnel excavations to be done without disturbing the surface of the street, except in the portions of Thirty-first and Thirty-third streets and Seventh, Eighth and Ninth avenues in front of the terminal station, and except in Queens Borough, with the power to the Rapid Transit Board, wherever conditions elsewhere make surface excavation necessary for efficient construction, to grant the right for such excavation, subject to conditions to be then prescribed by the Board. The tracks are to be constructed of the most approved plan so as to avoid noise or tremor. All plans for, and the method of doing, the work are made subject to the approval of the Rapid Transit Board.

Eighth.—The motive power to be electricity, or such other power not involving combustion as may be approved by the Board.

Ninth.—The company to have no power to carry on merely local traffic except with the approval of the Board and for additional consideration to be paid the city. Traffic is defined as local which

begins and ends in the city within five miles of the terminal station on Seventh and Ninth avenues.

Tenth.—The railroad to be diligently and skilfully operated, with due regard to the convenience of the traveling public.

Eleventh.—The city to have a lien upon the franchise and real property of the company to secure the payment of rental.

Twelfth.—The rights of the city to be enforceable by action for specific performance or mandamus or otherwise.

Thirteenth.—The company not to oppose the construction of any rapid transit railroad along or across the same routes which do not actually interfere with the authorized structures of the company.

Fourteenth.—The city to have an ample right of inspection of the railroad and to enter upon it for examination, supervision or care of city property, or for other purposes.

Fifteenth.—The company to be bound to maintain and strengthen all parts of its railways under streets or avenues so that the same shall support safely any structures superimposed or which may hereafter be superimposed thereon by the city or under public authority.

Sixteenth.—The company to have the right to convey or mortgage the franchise, but every grantee, whether directly or under a mortgage, to assume the obligations already assumed by the Railroad Company and the Railroad Company not to be relieved of such obligations by the grant.

The valuation of the portions of Thirty-second street, between Seventh and Ninth avenues, which are to be used for terminal and station purposes, was reached upon the assumption that the land in the street was worth the average of the land on both sides; and the values were taken as they were before the Pennsylvania Company began its recent purchases. It was not deemed just that the city should charge a price artificially created by the necessities of rapid purchase by the Pennsylvania Company. In this, as in other respects, your Committee believes it to be both right and the true policy of the city to treat the Pennsylvania Company with fairness.

The rental to be paid for the underground portions of Thirty-first and Thirty-third streets opposite the terminal station (those portions extending close to the surface of the streets) was fixed upon the same theory as that upon which prices are or ought to be prescribed for vault rights. The value of such rights in different parts of the city may be said generally to be in proportion to the values of the abutting properties. It seemed clearly proper that, for the first ten years of the enterprise, not more than one-half of

the full rate should be charged. Were it not for the very great improvement which the Pennsylvania Company is to make under this franchise, it is not probable that the city would for a long time, if ever, derive any material income from such underground portions of Thirty-first and Thirty-third streets.

The annual payment of \$200 for the routes under the North and East rivers outside of pier headlines is more than nominal, though it is not important. It may be said in general that anyone who bridges a navigable river or tunnels it so as to bring the opposite banks into easy communication without interference with navigation confers great benefit upon the communities upon both sides of the river. Nevertheless, it is not practicable to certainly forecast the future; and your Committee has, therefore, deemed it wise to affirm the principle of compensation, although making the rate for the first period of twenty-five years so small as not to be a material burden to the Pennsylvania Company.

The determination of the rental for the space occupied within pier lines and under streets at so great a depth as not to interfere with underground structures or future rapid transit railroads presented some difficulties. The Pennsylvania Company claimed, and not without reason, that its enterprise involved large investment and serious risk; that it would bring enormous advantage to the city; that it would promptly and greatly increase the assessed valuations within a considerable area of the city, from which, in the increase of taxes, the city would derive a large and immediate increase in revenue; that the underground portions of the streets, nowhere approaching within nineteen feet of the surface, had no present value; that the city itself made no use of such portions of its streets and might never use them; that, with unimportant exceptions, the city has never derived and may never derive a revenue from them; that in foreign cities and in other American cities like rights had been accorded without compensation; that in the city of Washington the Pennsylvania Company had itself recently received such a right without rental; that for the very enterprise now proposed the Pennsylvania Company has secured in Jersey City a right without rental. Upon these and other grounds the Pennsylvania Company claimed that the city ought not to require the payment of rental for the use of such underground portions of streets and dock property.

Nevertheless, your Committee was of opinion that the franchise sought was in itself very valuable; that although the enterprise would secure to the city highly important advantages, it was equally true that the advantages were mutual. Heretofore it has been usual in this city, as in other large American cities, to grant free of rental to railroad corporations traversing large sections of the country and which cannot be classed as urban rights of way, over, on or under

any streets. But conceding that such a liberal policy in the past has benefited cities and helped to build them up with marvelous rapidity, it is also true that the railroad corporations themselves have been benefited in equal and oftentimes in far greater measure. It would have been better for the cities and more in consonance with sound policy in dealing with public property that municipal authorities should have heretofore better appreciated the future value of their franchises. Your Committee insisted that in this case a departure from the rule heretofore too generally prevailing must be made, and that in fixing the rental it ought to be assumed that, as the franchise was valuable to the company and as it granted use of city property, the company should pay a fair rental. The Committee was without precedent in determining the precise amount, but finally concluded that the best theory to adopt was that of an annual payment for trackage, and to fix the rate at one dollar per foot—that is to say, \$5,280 per mile of track, the underground space occupied for a track being about thirteen feet wide and perhaps nineteen feet in height. The Committee has allowed a reduction of one-half the rate for the first ten years.

It is estimated that in The City of New York there are elevated, surface and steam railroads aggregating nearly fifteen hundred miles of single track. While it is not the purpose of your Committee to imply that every mile of them is equal in franchise value to each mile of the Pennsylvania tracks now to be authorized, your Committee is decidedly of the opinion that very many miles, and especially those of some of the steam railroads, have now a corresponding franchise value, and that if there had been a reasonable appreciation of the future value of all these railroad franchises (elevated, surface and steam) by the municipal authorities when they were granted the city would at the present time enjoy, and in the future continue to enjoy, a fair proportion of the pecuniary benefit which now goes wholly to the railroads, not solely as the result of their operation, but, in very great measure, of the continuous development of the city.

The proposed franchise allows five years for the completion of the work, but your Committee understands that the Pennsylvania Company expects to complete it within a much shorter time. The unknown element is the tunneling of the North and East rivers. Under the terms of the franchise the streets of the city will be but slightly disturbed by the construction. Unless in case of exceptional necessity, the tunneling is to be done without opening the surface except only upon the avenues and streets at the terminal station, where the company is to use street spaces near the surface, and except only where the tunnel approaches the surface in Queens Borough.

Your Committee feel bound to say that the representatives of the Pennsylvania Company have presented their case frankly, and that, although it was not always easy to bring them to see the interest of the city from the standpoint of those whose duty it was to represent the city, nevertheless they have been neither illiberal nor unreasonable.

Respectfully submitted,

(Signed) *www.libtool.com.cn* W. W. ORR, Chairman;

CHARLES STEWART SMITH,

EDWARD M. GROUT.

The form of certificate submitted by the Committee at that meeting was adopted by the Board and immediately transmitted to the Board of Aldermen, with the following communication:

NO. 320 BROADWAY, NEW YORK CITY.

TO THE HONORABLE THE BOARD OF ALDERMEN OF THE CITY OF
NEW YORK:

The Pennsylvania, New York and Long Island Railroad Company (hereinafter called the Tunnel Company) is a railroad corporation incorporated under the laws of the State of New York for the purpose of constructing and operating a tunnel railroad in The City of New York, to be connected with any railroad or railroads within the State of New York or any adjoining State, and thereby forming a continuous line for the carriage of passengers and property between a point or points within and a point or points without the City, and more particularly a tunnel railroad to be connected with the railroad of the Pennsylvania, New Jersey and New York Railroad Company in the State of New Jersey and the railroad of the Long Island Railroad Company, being a railroad within the State of New York, extending from within the City to points without the City, and thus forming a continuous line for the carriage of passengers and property between points on the line of the railroad of the Tunnel Company within the city and points along the line of the railroad of the Pennsylvania, New Jersey and New York Railroad Company, the Pennsylvania Railroad Company, and connections between Jersey City and Trenton, in the State of New Jersey, between Morrisville and Philadelphia, and between Philadelphia and Pittsburg, in the State of Pennsylvania, and various other points in the States of New Jersey, Pennsylvania and Ohio and other

States, and also between such points on the said line of the railroad of the Tunnel Company and points in Long Island without the City.

The Tunnel Company, pursuant to section 32 of chapter 4 of the Laws of 1891, as amended by chapter 584 of the Laws of 1902 (which entire statute, as amended by various acts, as now in force, is hereinafter called the Rapid Transit Act), made application to the Board of Rapid Transit Railroad Commissioners for The City of New York (which is hereinafter called the Board) for authority to lay railroad tracks along certain routes within the City, and to have and maintain therein a terminal station and another station, and to acquire on Thirty-second street, in Manhattan Borough and elsewhere in the City, terminal and other facilities necessary for the accommodation of the traveling public, and to construct and operate its railroad along the said routes, and under lands, streets, avenues, waters, rivers, highways and public places in the City, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, and with the right to emerge to the surface, upon private lands, at the terminus thereof in Queens Borough, as all set forth in the certificate dated June 16, 1902, hereinafter more particularly referred to, and to transport over the said railroad passengers or freight, or both.

The Board on the 16th day of June, 1902, by a concurrent vote of six of its members, as follows: Hon Seth Low, Mayor; Hon. Edward M. Grout, Comptroller; Alexander E. Orr, John H. Starin, Woodbury Langdon and Charles Stewart Smith, fixed and determined the locations and plans of construction of said railroad of the Tunnel Company upon such routes and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Tunnel Company, and also prescribed such terms, conditions and requirements as to the Board appeared to be just and proper, for the grant in question, including the terms, conditions and requirements provided by the Rapid Transit Act, and including among them a provision that the Tunnel Company shall, from the time of the commencement of the operation of such railroad, under the determination of the Board, annually pay to the City a sum of rental for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sum or rental at the expiration of such period, and at intervals thereafter of twenty-five years. The said location, plans of construction, compensation to the City, terms, conditions and requirements are fully set forth in the certificate, dated June 16, 1902, a copy of which is transmitted herewith.

A copy of a written instrument, duly executed and acknowledged by the Pennsylvania, New York and Long Island Railroad Company, accepting the said franchise, and all the terms, conditions and requirements thereof, is annexed to said certificate, and is also transmitted herewith.

The views of the Board with reference to the aforesaid application and certificate are stated in the communication to the Board dated June 14, 1902, made by a special committee of the Board composed of Alexander E. Orr, Chairman; Charles Stewart Smith and the Comptroller, a copy of which is transmitted herewith. The Board believes that it is for the interest of the public and of The City of New York that the necessary constitutional consents to the construction and operation of the said railroad of the Tunnel Company should be obtained as soon as possible.

In witness whereof, the Board of Rapid Transit Railroad Commissioners, for The City of New York, has caused its official seal to be hereto affixed, and these presents to be signed by its President and Secretary, this 25th day of June, 1902.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

[L. s.] (Signed) By A. E. ORR, President.

Attest:

BION L. BURROWS, Secretary.

Papers transmitted with the foregoing communication :

- (1) Copy of certificate dated June 16, 1902.
- (2) Copy of instrument of acceptance.
- (3) Copy of Committee's report, dated June 14, 1902.

The Board of Aldermen refused to approve the certificate thus granted. On the 29th of July, at the Mayor's invitation, a conference was held between the Mayor, representatives of the Pennsylvania, New York and Long Island Railroad Company, representatives of the Board of Aldermen, and the President, counsel and Chief Engineer of the Board, which resulted in the appointment by the Board of Aldermen and this Board, and also by the Pennsylvania Company, of conference committees. These committees met from time to time during the summer and agreed upon several minor changes in the proposed certificate, which were reported to the Board. A final public hearing was given by the Board on the 2d of October;

and on the 9th of October an amended certificate was adopted, and forwarded to the Board of Aldermen with a communication, as follows:

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS FOR THE
CITY OF NEW YORK.

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No. 320 BROADWAY, NEW YORK CITY.

TO THE HONORABLE THE BOARD OF ALDERMEN OF THE CITY OF
NEW YORK:

The Pennsylvania, New York and Long Island Railroad Company (hereinafter called the Tunnel Company) is a railroad corporation incorporated under the laws of the State of New York for the purpose of constructing and operating a tunnel railroad in The City of New York (hereinafter called the City), to be connected with any railroad or railroads within the State of New York or any adjoining State, and thereby forming a continuous line for the carriage of passengers and property between a point or points within and a point or points without the City, and more particularly a tunnel railroad to be connected with the railroad of the Pennsylvania, New Jersey and New York Railroad Company in the State of New Jersey and the railroad of the Long Island Railroad Company, being a railroad within the State of New York, extending from within the City to points without the City, and thus forming a continuous line for the carriage of passengers and property between points on the line of the railroad of the Tunnel Company within the City and points along the line of the railroad of the Pennsylvania, New Jersey and New York Railroad Company, the Pennsylvania Railroad Company, and connections between Jersey City and Trenton, in the State of New Jersey, between Morrisville and Philadelphia, and between Philadelphia and Pittsburg, in the State of Pennsylvania, and various other points in the States of New Jersey, Pennsylvania and Ohio and other States, and also between such points on the said line of the railroad of the Tunnel Company and points in Long Island without the City.

The Tunnel Company, pursuant to chapter 4 of the Laws of 1891, as amended by chapter 584 of the Laws of 1902 (which entire statute, as amended by various acts, and as now in force, is hereinafter called the Rapid Transit Act), lately made application to the Board of Rapid Transit Railroad Commissioners for The City of New York (hereinafter called this Board) for authority to lay railroad tracks along certain routes within the City, and to have and maintain therein a terminal station, and for this purpose to acquire

under Thirty-first, Thirty-second, Thirty-third streets, and under Seventh avenue, in Manhattan Borough in the City, terminal and other facilities necessary for the accommodation of the traveling public, and to occupy the underground portion of Thirty-third street extending from a line four hundred feet west of Fourth avenue to a line six hundred feet east thereof, and to construct and operate its railroad upon the said routes, and under lands, streets, avenues, waters, rivers, highways and public places in the City, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, and with the right to emerge to the surface, upon private lands, at the terminus thereof in Queens Borough, all as set forth in a certificate granted by this Board, dated June 16, 1902, and to transport over the said railroad passengers or freight, or both.

This Board, upon such application, and on the 9th day of October, 1902, did by a concurrent vote of more than six of its members, as follows: Alexander E. Orr, John Clafin, Woodbury Langdon, Charles Stewart Smith, Morris K. Jesup, Hon. Seth Low, Mayor, and Hon. Edward M. Grout, Comptroller, fix and determine the locations and plans of construction of said railroad of the Tunnel Company upon such routes and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Tunnel Company, and also prescribed such terms, conditions and requirements as to the Board appeared to be just and proper for the grant in question, including the terms, conditions and requirements provided by the Rapid Transit Act, and including among them a provision that the Tunnel Company shall, from the time of the commencement of the operation of its railroad, annually pay to the City a sum or rental for a period of twenty-five years, beginning with the commencement of such operation, and also providing for a readjustment of the amount of such sum or rental by this Board (such readjustment to be approved by your Honorable Board and His Honor the Mayor) at the expiration of such period, and at intervals thereafter of twenty-five years; and further providing that the Tunnel Company shall from the time of the commencement of the construction of its terminal facilities annually pay to the City a sum or rental to be readjusted as aforesaid, subject, however, to the terms, conditions and requirements in said certificate contained with regard to the conveyance of such property in the streets by the City to the Tunnel Company. The said locations and plans of the railroad of the tracks and facilities, the compensation to be paid to the City, the terms, conditions and requirements, subject to which the franchise was granted, are fully set forth in the certificate, dated October 9, 1902, and granted on that day, a copy of which is transmitted here-

with. The said certificate, together with the franchise therein contained, and all the terms, conditions and requirements thereof, was duly accepted by the Tunnel Company by an instrument in writing, bearing date the 5th day of November, 1902. A copy of the said instrument of acceptance is transmitted herewith, annexed to the said certificate.

This Board believes that it is for the interest of the public and of the City that the necessary constitutional consents to the construction and operation of the said railroad of the Tunnel Company should be obtained as soon as possible.

Although the terms of the franchise described in the certificate now submitted are in their broader features like those which were contained in the former certificate in favor of the same applicant which was transmitted to your Honorable Body in June last, nevertheless there are now included a number of provisions which were suggested by the committee of your Honorable Body at the conferences held in August and September last and which met the approval of the representatives of the applicant company and have been approved by this Board. The only matter in which there has been any difference has arisen over the proposition to insert in the certificate certain stipulations as to the hours of labor and the rates of compensation for labor. The applicant company, in a communication, of which a copy is hereto appended, has declined to accept a certificate containing such clauses. The Board is of opinion that their insertion would practically add nothing to the rights and advantages of those who may be employed upon the proposed work. The advantage to the City of the enterprise is so enormous, it has been approved by so overwhelming a public sentiment, and the direct advantage to the laboring men of the City of its prompt commencement and the far larger indirect advantage of its early completion are so great that this Board trusts that your Honorable Body will feel able to give it your approval. This Board transmits herewith the form of resolution to be adopted by you in case you shall approve of the franchise.

In witness whereof, the Board of Rapid Transit Railroad Commissioners for The City of New York has caused its official seal to be hereto affixed, and these presents to be signed by its President and Secretary, this 14th day of November, 1902.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

[L. s.] (Signed) A. E. ORR, President.

Attest:

BION L. BURROWS, Secretary.

[Letter of President A. J. Cassatt, dated October 8, 1902, enclosed.]

The letter of Mr. Cassatt was as follows:

THE PENNSYLVANIA RAILROAD COMPANY,
OFFICE OF THE PRESIDENT,
PHILADELPHIA, October 8, 1902.

HON. ALEXANDER E. ORR, President, Board of Rapid Transit Railroad Commissioners, 320 Broadway, New York City:

DEAR SIR: A suggestion was made at the meeting of your Board on the 2d instant that there should be a provision in the franchise which the Tunnel Company seeks for the purpose of extending the Pennsylvania Railroad system and the Long Island Railroad into The City of New York that no extension of the time fixed for the completion of the work should be granted if based on the ground that a strike has delayed its progress unless it should appear that the Tunnel Company had offered to submit to arbitration any question of hours of labor or rate of wages involved.

I beg to say that since the meeting referred to we have given very careful consideration to this suggestion, and we are satisfied that such a provision would be subject to the same grave objections that suggest themselves against the inclusion in the franchise of a provision regulating the hours of labor and the rate of wages. With every disposition to meet the views expressed by some members of your Board, we cannot see that any such provision has a proper place in the franchise. We have, we believe, agreed to every other provision that your Board has deemed necessary to protect the interests of the city, but we feel that the city cannot insist upon such a provision without going beyond its province. We fully realize that The City of New York has a direct interest in having this work go forward promptly and continuously to the earliest possible conclusion, but the Pennsylvania Railroad Company has an even greater interest in the matter; for, aside from the importance to it of securing, at the earliest day, the use of the facilities it proposes to create, the company is under the strongest possible bond to push the work, in that the loss of interest upon moneys already invested now amounts to one thousand dollars per day, which sum will be largely increased as the expenditures upon the work progress. It will, therefore, be to our interest to allot the work to contractors who will adopt all proper measures for securing the willing and hearty co-operation of the best class of labor in The City of New York, and thus, as far as possible, avoid delays to the work.

We must, therefore, stand upon the provisions of the franchise as agreed upon at the meeting of your Board on September 18 last, with the slight modification which we have asked to have made in the alignment near the East river.

Yours truly,

(Signed) A. J. CASSATT, President.

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The certificate was approved by the Board of Aldermen on the 16th day of December, and on the 23d of December it received the approval of the Mayor. The form of the certificate in full may be found in the APPENDIX.

FRANCHISE FOR NEW JERSEY TROLLEY TERMINAL.

On the 17th of May application was received from the New York and Jersey Railroad Company for a franchise to construct a tunnel railroad from the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in the Borough of Manhattan, to the boundary line between the States of New York and New Jersey underneath the North river. This company had acquired the rights and property of the old Hudson Tunnel Railroad Company, including a right acquired by deeds from the State of New York to construct a tunnel under the bed of the Hudson river. The old company had already constructed over four thousand feet of tunnel underneath the river.

The Committee of the Board on Contracts on the 1st of July made the following report :

No. 320 BROADWAY, NEW YORK, July 1, 1902.

TO THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS :

Your Committee, to which was referred the application of the New York and Jersey Railroad Company, respectfully reports that, in its opinion, the application should be granted upon proper terms. Your Committee has prepared the form of franchise herewith submitted, including what the Committee considers to be such terms. The Railroad Company is prepared to accept the franchise in such form ; and, in the opinion of your Committee, it is to the interest of the city that the franchise should be granted.

Your Committee has received satisfactory assurance of the pecuniary responsibility of the Railroad Company, and submits herewith the letter of W. G. McAdoo, Esq., its President, giving details upon that subject.

The essential features of the proposed franchise are these :

First.—A grant by the city in perpetuity, but subject to a periodic readjustment of payments at intervals of twenty-five years, of rights as follows :

(a) To construct and operate a railroad for the carriage of persons and property consisting of two tracks, and running from the boundary line between the States of New York and New Jersey under the Hudson river substantially opposite the foot of Morton street in the Borough of Manhattan, and thence running easterly under the river and dock and bulkhead property to West street at a point nearly opposite or at the foot of Morton street, thence under Morton street to Greenwich street, and thence northerly under Greenwich street to a terminal in the westerly half of the block bounded by Christopher, West Tenth, Greenwich and Hudson streets.

(b) A right to maintain a terminal and station in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in Manhattan Borough, the same being acquired at the expense of the Railroad Company, and to occupy the underground portions of Greenwich, Christopher and West Tenth streets contiguous to such terminal station, and also the portion of Greenwich street between Barrow street and such terminal station, for tracks, sidings and connections.

(c) To maintain and use along such route the necessary facilities for the transportation of persons and property, including telegraph wires and the various wires and cables for the distribution of power, heat and light.

Second.—The requirement of the consent of the Mayor and the Board of Aldermen, and also of the authorities having control of the docks, under which the route will pass.

Third.—The obligation of the company to begin construction within three months after obtaining the necessary consents and to complete the railroad within three years after construction shall begin.

Fourth.—Payments by the company for the first twenty-five years, as follows :

(a) A charge of \$100 per annum for the right to enter the city, including the approach from the west to the pier line.

(b) A charge for the right within the pier line and for underground portions of streets, at the rate of fifty cents (50c) per linear foot of single track per annum for the first ten years and of one dollar (\$1) per annum per linear foot of single track during the next fifteen years.

(c) A charge for the underground portions of Greenwich, Christopher and West Tenth streets, near the terminal station, and of Greenwich street, between the north line of Barrov street and said station, at \$3,224 per annum for the first ten years, and at \$6,448 per annum for the next fifteen years.

(d) A further annual sum for tunnel rights under the streets at three per cent. of gross receipts of the New York portion of the railroad of the company for ten years, and five per cent. for the next fifteen years. The gross receipts are estimated at \$300,000, and for the first twenty-five years are to be deemed fixed at that amount, whether they shall in fact be less or more.

Such annual payments may be summarized as follows:

SCHEDULE.

	First 10 Years.	Next 15 Years.
For entrance or river right.....	\$100 00	\$100 00
For tunnel rights under dock property and streets in Manhattan Borough, being 4,125 feet (partly estimated) of single track ..	2,062 50	4,125 00
For street (or vault) rights in Greenwich, Christopher and West Tenth streets contiguous to terminal station, being 29,311 square feet at 11 cents per square foot per annum for ten years, and at 22 cents for next fifteen years.....	3,224 00	6,448 00
Additional payment for tunnel rights under streets	9,000 00	15,000 00
In all per annum	\$14,386 50	\$25,673 00

The amounts of the charges are to be readjusted at the end of twenty-five years and thereafter at intervals of twenty-five years. If the city and the company shall not agree upon the rates at the time of readjustment, they are to be determined by the Supreme Court of this State.

Fifth.—The railroad to be entirely in tunnel, except at its terminal station, which is to be on property privately owned or controlled by the company. The uppermost part of the tunnel shall not approach nearer than nineteen (19) feet to the surface of any street, except that in Greenwich street, between Barrow street and the terminal, it may approach the surface as required by its grade, and except that in Greenwich, Christopher and West Tenth streets, opposite the terminal, it may come within not less than thirty (30) inches of the surface of the roadway or sidewalk. The company is to properly care for sewers, water, gas and other pipes and underground structures lawfully in the street. The company, at its own expense, to keep West Tenth, Greenwich and Christopher streets opposite its terminal station, and Greenwich street, between Barrow street and West Tenth street, well paved with smooth pavement and in thoroughly good condition.

Sixth.—The company to make good all damage done to property of the city by its work of construction or operation, and to abutting owners all damage done through any fault or negligence of the company or of any contractor or sub-contractor engaged upon its work of construction or operation.

Seventh.—Tunnel excavation to be done without disturbing the surface of the street, except the portions of West Tenth, Greenwich and Christopher streets adjoining the terminal station. But the Board may, wherever elsewhere local conditions make excavations from the surface necessary for efficient construction, grant the right to make such excavation from the surface, subject to such conditions as the Board may prescribe. Plans for the work and the method of doing it to be subject to the approval of the Board.

Eighth.—The motive power to be electricity or such other power not involving combustion in the tunnel as may be approved by the Board.

Ninth.—The company to have no power to carry on merely local traffic, unless with the approval of the Board and for such additional consideration to be paid to the city as the Board shall prescribe. Local traffic is defined to be traffic between the terminal station of the Tunnel Company and any point in The City of New York.

Tenth.—The railroad to be diligently and skilfully operated with due regard to the convenience of the traveling public. The tracks to be constructed of the most approved plan to avoid noise and tremor.

Eleventh.—The city to have a lien upon the franchise and real property of the company under the river and streets to secure the payment of the charges.

Twelfth.—The rights of the city to be enforceable by action for specific performance or mandamus or otherwise.

Thirteenth.—The company not to oppose the construction of any rapid transit railroad over, along or under any portion of the streets occupied by the company's railroad which shall not actually interfere with its structure as authorized by the franchise.

Fourteenth.—The city to have an ample right of inspection of the railroad and to enter upon it for examination, supervision and care of city property or for other purposes.

Fifteenth.—The company to be bound to maintain and strengthen all parts of its railroad under streets or avenues so that the same shall support safely any structure superimposed or which shall hereafter be superimposed thereon by the city or by public authority.

Sixteenth.—The company to have the right to convey or mortgage the franchise, but every grantee, whether directly or under a mortgage, to assume the obligations already assumed by the company, and the company not to be relieved from such obligations by the grant.

The reasons determining the opinion of the Committee as to most of the provisions of this franchise are the same which the Committee submitted to the Board, and which determined its action, in the case of the franchise recently granted the Pennsylvania, New York and Long Island Railroad Company. They do not, therefore, need to be repeated. In this case, as in that, it is clear that our true policy is to welcome every undertaking of responsible companies to increase the facilities for transportation of passengers or goods into the city. Although the present enterprise is not nearly as important as that promoted by the Pennsylvania Company, it nevertheless is itself of real importance, and cannot be carried out without advantage to the traveling public and the city, or without increase in assessed values of property within a considerable area of the city, and thus an increase in the city's revenue.

Your Committee deems it proper to submit some special comments as to the rates of the charges to be paid the city under the franchise now proposed.

Your Committee was aided in reaching its conclusion as to such charges by its long and careful considerations of like questions in the negotiations with the Pennsylvania Company. The present applicant has already a permanent grant by the Land Office of this State

of a right of way 160 feet wide under the Hudson river, and a considerable part of the tunnel has been actually constructed under that grant. The railroad is to be maintained and operated in the States of New Jersey and New York, and any severance of the railroad at the western boundary line of the city is impracticable. The public policy against grants in perpetuity, in which the Board believes, is obviously, therefore, not applicable to the franchise now proposed. The short right of way leading to the tunnel already owned by the applicant company in perpetuity, it is plain, would never be of use to any enterprise except that company or its successor in the ownership of the tunnel. A readjustment of rental charges at intervals of twenty-five years will in this case give the city all of the practical advantage which would be given by a limit of the life of the grant.

The company insisted that there ought to be no charge for the portion of the route under the river, inasmuch as it had already acquired from the State of New York its right of way. Nevertheless, it has seemed to your Committee that there should be an entrance charge, by way of precedent and assertion of general principle if for no other purpose. The amount, being an annual payment of one hundred dollars (\$100), is more than nominal; but it does not impose any substantial burden upon the Railroad Company.

The rate of trackage charges has been made the same as in the case of the Pennsylvania Company, but your Committee is of the opinion that the present applicant should make a payment to the city for its street rights beyond the trackage charge. The business of the present applicant is to be local. In determining the amount of the Pennsylvania charge the Board was influenced by the fact that the grant of that franchise would introduce into the city one of the great trunk lines of the country reaching to the Mississippi Valley and even the Pacific coast, and would bring an immediate and far-reaching advantage to the city. No doubt, as has been said, the introduction of any transportation line into the city is of advantage; but the measure of advantage to the city is far greater in the case of a franchise like that of the Pennsylvania Company than in the case of an applicant like the present, which brings only surface and nearby passenger traffic. The investment to be made within the city by the New Jersey Company is very much less than that to be made by the Pennsylvania Company. The increase in assessed values which the entrance of the Pennsylvania Company assures is vastly more than that which can be effected by the entrance of the New Jersey Company. Moreover, the amount of trackage availed of by the Pennsylvania Company is far larger and will produce a much greater revenue to the city. The trackage to be granted to the present applicant is less than a mile, including the portion under dock property and as far out as the pier headline.

Your Committee concluded, therefore, that in addition to the trackage charge the present applicant might properly pay to the city for the first ten years three per cent. (3%) upon an estimate of its gross receipts from traffic within The City of New York and five per cent. (5%) for the next fifteen years. The amount of such gross receipts is susceptible of rough estimate, and the franchise fixes it at \$300,000 a year for the next twenty-five years, being one-half of the total estimated gross receipts of the company from all business both ways. The annual payment for the first ten years will be \$9,000. For the next fifteen years the rate should be five per cent., making \$15,000.

The street rights of a quasi-vault character—that is to say, the rights to occupy underground space within nineteen feet of the surface—are valued on the same basis as in the case of the Pennsylvania Company, or in the case of the recent grant to the Rapid Transit Subway Realty Company at Forty-first and Forty-second streets and Park avenue. The vault spaces are assumed to vary in value as the adjoining private properties. The property at Forty-second street and Park avenue is far more valuable than the property on Christopher and West Tenth streets.

Respectfully submitted,

(Signed) A. E. ORR, Chairman;
 EDWARD M. GROUT,
 CHAS. S. SMITH,
 Committee.

The certificate was finally adopted by the Board on the 10th of July, and transmitted to the Board of Aldermen with the following communication:

No. 320 BROADWAY, NEW YORK CITY.

TO THE HONORABLE THE BOARD OF ALDERMEN OF THE CITY OF
NEW YORK:

The New York and Jersey Railroad Company (hereinafter called the Tunnel Company) is a railroad corporation incorporated under the laws of the State of New York for the purpose of owning and operating the tunnel and railroad formerly of the Hudson Tunnel

Railway Company, and of constructing and operating a tunnel railroad in The City of New York, to be connected with a railroad or railroads within the State of New Jersey, and thereby forming a continuous line for the carriage of passengers and property between a point or points within and a point or points without the city, and more particularly a tunnel railroad having its eastern terminus in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in the Borough of Manhattan, in The City of New York, and thence extending westwardly and to be connected with a railroad or railroads in the State of New Jersey, and thus forming a continuous line for the carriage of passengers and property between such easterly terminus of the railroad of the Tunnel Company within the city and points along the lines of such railroads in the State of New Jersey and other States.

The Tunnel Company, pursuant to section 32 of chapter 4 of the Laws of 1891, as amended by chapter 584 of the Laws of 1902 (which entire statute, as amended by various acts, and as now in force, is hereinafter called the Rapid Transit Act), made application to the Board of Rapid Transit Railroad Commissioners for The City of New York (which is hereinafter called the Board) for authority to lay railroad tracks along a certain route within the city, and to have and maintain therein a terminal station, and to acquire in the city terminal and other facilities necessary for the accommodation of the traveling public, and to construct and operate its railroad along the said route, and under lands, streets, avenues, waters, rivers, highways and public places in the city, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, and with the right to emerge to the surface, upon private lands, at the terminus thereof in Manhattan Borough, all as set forth in the certificate dated July 10, 1902, hereinafter more particularly referred to, and to transport over the said railroad passengers or freight, or both.

The Board, on the 10th day of July, 1902, by a concurrent vote of six of its members, as follows: Alexander E. Orr, John H. Starin, Woodbury Langdon, Charles Stewart Smith, Seth Low, Mayor, and Edward M. Grout, Comptroller, fixed and determined the locations and plans of construction of said railroad of the Tunnel Company upon such route and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the city by the Tunnel Company, and also prescribed such terms, conditions and requirements as to the Board appeared to be just and proper for the grant in question, including the terms, conditions and requirements provided by the Rapid Transit Act, and including among them a provision that the Tunnel Company shall, from the time of the commencement of

the operation of such railroad, under the determination of the Board, annually pay to the city a sum or rental for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sum or rental at the expiration of such period, and at intervals thereafter of twenty-five years. The said locations, plans of construction, compensation to the city, terms, conditions and requirements are fully set forth in the certificate dated July 10, 1902, a copy of which is transmitted herewith.

A copy of a written instrument, duly executed and acknowledged by the New York and Jersey Railroad Company, accepting the said franchise, and all the terms, conditions and requirements thereof, is annexed to said certificate, and is also transmitted herewith.

The views of the Board with reference to the aforesaid application and certificate are stated in the communication to the Board, dated July 1, 1902, made by a special committee of the Board composed of Alexander E. Orr, Chairman; Charles Stewart Smith and Edward M. Grout, Comptroller, a copy of which is transmitted herewith. The Board believes that it is for the interest of the public and of The City of New York that the necessary constitutional consents to the construction and operation of the said railroad of the Tunnel Company should be obtained as soon as possible.

In witness whereof, the Board of Rapid Transit Railroad Commissioners for The City of New York has caused its official seal to be herefo affixed, and these presents to be signed by its President and Secretary, this 15th day of July, 1902.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

(Signed) A. E. ORR, President.

BION L. BURROWS, Secretary.

Papers transmitted with the foregoing communication :

- (1) Copy of certificate dated July 10, 1902.
- (2) Copy of instrument of acceptance.
- (3) Copy of Committee's report, dated July 1, 1902.

The certificate was approved by the Board of Aldermen on the 16th of December, and by the Mayor on the 22d of December, 1902.

The complete form of this certificate will be found in the APPENDIX.

BROOKLYN BRIDGE TERMINAL.

At the meeting of the Board on the 24th of April, the Mayor asked its co-operation in the solution of the problem of the congestion at the Manhattan terminal of the New York and Brooklyn Bridge. Public hearings were had by the Board, at the first of which, held on May 1, Mr. Gustav Lindenthal, Commissioner of Bridges, very thoroughly presented his views. At a later hearing, on May 8, a large number of citizens appeared and expressed their views. Still later, upon the direction of the Board, a report was made on this subject by the Chief Engineer, as follows:

JULY 1, 1902.

HON. A. E. ORR, President, Rapid Transit Board:

SIR—His Honor the Mayor having requested the Board to investigate the increased terminal facilities at the Manhattan end of the Brooklyn Bridge, and also the possibility of connecting the Brooklyn Bridge with the other bridges now under construction, the Board held several public meetings. At these meetings there were laid before the Board a report by a Board of Engineers composed of Messrs. Boller, Prout and Whinery, appointed by the previous Bridge Commissioner; a plan and report prepared by Mr. C. C. Martin, Superintendent of the Brooklyn Bridge; a plan and report prepared by the present Bridge Commissioner, Mr. Lindenthal, and a great number of suggestions made by various other persons. The Board, having received this information, directed me by resolution to carefully examine the same and to make a report to the Board.

As the plan prepared by Mr. Martin is a modification of the plan prepared by the Board of Engineers, the former can be taken as superseding the latter, and as the suggestions made by those other than Mr. Lindenthal and Mr. Martin were for the most part in regard to details of the above plans, it may be considered that there were but two plans laid before the Board.

There are at present crossing the Brooklyn Bridge four tracks, on two of which are run the elevated trains of the Brooklyn Rapid Transit system, operated by electricity, and during certain hours of the day the bridge trains of the bridge itself, drawn by cable. These trains are carried on the central part of the bridge, sep-

arated from both the roadway and promenade. On the roadways on each side of the bridge there is also a single track for the surface trolley cars of the Brooklyn Rapid Transit system, the cars to Manhattan running on the north roadway, and from Manhattan on the south roadway. The elevated and bridge trains run into an upper story of the bridge terminal, access to the platforms being had by stairways. The trolley tracks at the Manhattan end of the bridge are divided into four loops, crossing the promenade at grade. The trolley cars discharge and take on the passengers on these loops.

Mr. Martin's plan proposes to carry the elevated tracks over Park Row to Centre street, thence with four tracks along Centre street to Walker street, and thence with two tracks along Centre street to Grand, along Grand to Essex, and Essex to Delancey, and thus to the terminus of Bridge No. 2. In connection with this line there is projected a Y branch, whose arms, one of which diverges at White street and the other near Howard street, converge into Canal street, and thence pass along Canal street to Chrystie street, where connection would be made with Bridge No. 3 on its completion. Stations were to be located on this line on Centre street, between Worth and Thomas, and at Howard; and on Grand street at Bowery and Allen street, connecting with the Third and Second avenue divisions of the Manhattan Railway. In regard to the trolley cars on the bridge, Mr. Martin states: "There is no possible temporary arrangement that has yet been suggested that will relieve the congestion at the New York terminal."

Bridge Commissioner Lindenthal disapproved of this plan on the ground that "a four-track elevated railroad on Centre street for the connection of the three suspension bridges would needlessly ruin the costly and architecturally monumental city property on that street." He therefore proposed to rearrange the elevated track construction at the bridge so as to give four tracks in the station, with proper platform accommodation, making these platforms "through" instead of "end" platforms as at present, and to carry the four tracks over Park Row and private property to be acquired, converging into two tracks located over the present Manhattan elevated structure along Park Row and the Bowery to Delancey street, and thence along Delancey street to the Williamsburg Bridge, or Bridge No. 2. Another elevated railroad was projected to run from Bridge No. 3, officially known as Manhattan Bridge, along and crossing Canal street to the Hudson river at West street. This elevated railway was planned to cross overhead all the elevated lines on the Manhattan system, transferring passengers to them as well as to the Rapid Transit Subway.

The main objects sought to be obtained by both of these plans are:

1st. To reduce the congestion at the Manhattan terminus of the bridge by providing other stations so as to do away with the necessity that now compels all the passengers for Brooklyn to take cars at the bridge itself.

2d. To make a suitable through railroad in Manhattan between the termini of the Brooklyn, Manhattan and Williamsburg Bridges, so that trains could be run from bridge to bridge without any delay by switching.

The special advantage presented by Mr. Martin's plan is that the best route has been selected to gain the first result. A line along Centre street would undoubtedly gather more passengers, and so serve the public better than a line along any other street. But Mr. Lindenthal's objection to the destruction of the property by building such an elevated structure is unquestionably well taken. The city has already invested several million dollars in the construction of the new Court House and the new City Prison, and is now investing some million dollars more in the construction of the new Hall of Records. When these buildings are finished an architectural character will undoubtedly be given to Centre street which will be repeated in private structures, and in like manner, when the work of building the subway has been finished at the south end of Centre street a rapid and extensive development of this thoroughfare can be expected. If a four-track elevated structure were built as proposed, the sides of the cars would be within ten feet of the windows of the Hall of Records; and at the station at Worth street, allowing but fifteen feet for island platforms, the sides of the cars would be within two feet of the building line of private property at that point. These distances mean practical destruction, so far as any beauty is concerned, of the buildings that the city has and is erecting at great cost; and the darkening of the street that would ensue from a four-track elevated structure spanning the street from building line to building line would forever destroy any other use of Centre street than as a railroad yard. I desire, therefore, to go on record with the Bridge Commissioner, that such a misuse of the street would be a desecration, a destruction of the city's property and a depreciation of the abutting property, resulting in a lowering of the tax receipts to the city for all time to come.

Although the general proposition of the Martin plan apparently contemplates the building of but one elevated line, it must be distinctly understood that a principle of much broader import is involved. When the first line is constructed, branches and exten-

sions will at once be projected; in fact, plans are already in existence looking to at least two elevated lines traversing the city from east to west, necessitating at least two crossings of Broadway. Property owners of streets other than Centre and Grand streets are, therefore, interested in the action now to be taken, for whatever general plan of construction is adopted for the initial line will of necessity dominate the construction of all other connections. The general question before the Board and the public is, therefore, whether there shall be constructed a new system of elevated railways ramifying through the lower part of Manhattan.

I believe, on the other hand, that it is possible to secure the benefit of the Centre street route, to make provision for desired extension, and yet to meet the contention of the Bridge Commissioner that an elevated railroad should not be permitted on streets already not so burdened. These results can be had, I believe, by taking the bridge cars into subways, and at no greater cost than is necessitated by elevated structures when abutment damages are taken into account.

The present bridge tracks descend from the bridge on a gradient whose maximum rate is 3.77 per cent. to a point near Vandewater street, where the tracks ascend into the elevated station above described. By beginning at the anchorage, and by making the necessary changes in the masonry arch structure forming the approach to the bridge, and by depressing the bridge tracks on a continuous descending gradient to Park Row, it is possible to bring the tracks under Park Row at a level that will permit a subway to be begun at that point. A gradient so obtained is at the rate of 4.5 per cent. It will be seen that this gradient is but a slight increase over the existing gradient, increasing the total resistance of gradient and friction by not exceeding 5 per cent. In view of the development of electrical traction, this is a gradient that offers no serious obstacle to operation; in fact, it is considerably less than the gradient on the Boston Elevated, where the tracks rise from subway to elevated. It is possible, when the plans are studied in detail, that it may be found that some other gradient than this will, all things considered, be more economical. For the moment it is merely necessary to point out that the gradient that can be obtained is one that can be readily operated, is within the reach of the motive power equipment on the Brooklyn Elevated system, is less than that overcome on the Boston Elevated, and is but slightly in excess of the one now existing. Once under Park Row the line can be made to curve to the north under private property between Park Row and Centre street, and thence with four tracks under Centre street to such point as may be desired, when two or any other number of tracks may be carried under Grand

or Delancey or other street to the Williamsburg Bridge. In the case of the Williamsburg Bridge the necessary arrangements to bring the cars from bridge to subway are easier and simpler than at the Brooklyn Bridge. The station near the Brooklyn Bridge should be located, not upon the bridge itself, but under the private property between Park Row and Centre street, and on substantially the same level as the station of the Rapid Transit Subway now being constructed. Approach to this station can be had from several points, and the portion of the travel that now seeks the bridge trains at the bridge would be taken care of before the bridge is reached. Additional stations could be located on Centre street and elsewhere, according to Mr. Martin's plan, or upon such other plan as may be approved by the Bridge Commissioner.

The depressing of these bridge tracks would involve the closing of North William street. This, however, is a short street, only one block long, running from Park Row to an archway beneath the bridge, and the travel over it can be diverted, or, if desired, North William street can be connected at small expense with William street by a roadway running parallel to the bridge on the northern side. It would also involve a change in William street itself, lowering the same by some few feet to an extent dependent upon the rate of gradient adopted on the bridge approach. William street, between the bridge and Duane street, is now occupied by two warehouses and a number of old houses that were originally used as residences, but are now used as junk shops. The warehouses could be adapted at moderate expense to a change of grade.

In Mr. Martin's report an estimate is given by him as to the cost of constructing the elevated railway between the Brooklyn and Williamsburg Bridges, the total figures being as follows:

For construction, including station . . .	\$757,000 00
Property, damages, etc.	1,405,300 00
Total	\$2,162,300 00

In the above estimate it will be seen what a large proportion of the cost is absorbed by abutting damages. The structural estimate made by Mr. Martin is, for the usual style of structure, correct, but the abutting damage estimate is necessarily an indeterminate figure, depending upon an award by jury. Personally, I believe that a considerably larger amount than this would be granted. The actual value of the property along the proposed four-track section is at least \$5,000,000, and the actual value of the property along the two-track section is at least \$12,500,000, amounting together to

\$17,500,000, exclusive of any allowance for the city's own property. It will be noticed that Mr. Martin's estimate is only about eight per cent. of the above amount. When it is remembered how close the cars would run to the abutting buildings, I am forced to the conclusion that the damages would be considerably in excess of the above estimate. Taking the same route and the same stations between the same points, I have computed the quantities that will be required for underground construction. Using the same unit prices that we are now paying on the Rapid Transit Subway for similar work, and making a generous allowance for contingencies and extras, I place the cost of the underground construction at \$2,750,000. This figure is somewhat in excess of Mr. Martin's estimate, but I do not believe it will be in excess of what the actual cost of the proposed elevated structure and damage allowance together would amount to. The abutting property would, in the case of the subway, be benefited and not depreciated, and the city would receive an increase and not a decreased revenue from taxation.

As to the trolley cars upon the Brooklyn Bridge, Mr. Lindenthal recommends for the present the construction of additional loops at the Manhattan end of the Brooklyn Bridge in order to provide more facilities for passengers to reach the cars, and suggests that on completion of the two bridges now under construction the operation of trolley cars should be limited to the Brooklyn side and that passengers be carried across the present bridge by a movable platform. Additional loops or some similar re-arrangement of the tracks at the Manhattan end is the only suggestion that I can see to provide for immediate relief. Such relief, however, would be temporary only. A movable platform undoubtedly possesses great merit and is capable of moving more people than any other device. As to whether it is better to withdraw the trolley cars entirely and substitute therefor the movable platform and so carry all the people away from Manhattan as fast as they arrive at the end of the bridge and arrange for their distribution in Brooklyn, where there is more space, is a matter which I do not enter into, as I deem it beyond the scope of my investigation. If, however, the trolley cars are to remain, I beg leave to call the Board's attention to the fact that these trolley lines can be treated in a manner similar to what I have suggested for the elevated lines, namely, they too can be depressed, be brought under Park Row and carried in a subway south under Nassau street to, say, Maiden Lane, and thence in a tunnel under Maiden Lane and the East river to Brooklyn, rising to the surface at some desired point in the neighborhood of Borough Hall. The Board of Engineers in their report recommended the construction of an elevated line south from the bridge and across the city, in

order to supply facilities for passengers going to and coming from points below the bridge. This suggestion was most valuable, as such a line would intercept a large volume of traffic before it reaches the bridge. Mr. Martin, however, disapproved of it on account of difficulties of construction. By means of a subway for the trolley cars it is possible of accomplishment, and I have therefore included it.

Transfluvial facilities are being provided by the city by the building of three bridges across the East river above the Brooklyn Bridge, and by building the Rapid Transit Subway from South Ferry to Joralemon street. No provision has as yet been seriously projected to furnish continuous rail communication at any point between the existing bridge and the south end of Manhattan Island in order to connect the financial district with Brooklyn. The Board has directed me to prepare a general plan of extending the rapid transit facilities throughout the city. One of the features of such a plan will be a tunnel from Brooklyn to the vicinity of Maiden Lane and then crossing Manhattan to the Hudson river. Such a tunnel would more than double the facilities for trolley cars now offered by the bridge, and do so in the cheapest possible manner. By connecting this tunnel with the bridge there would be gained a relief to congestion by trolley car passengers in the same way as the Centre street extension will relieve congestion by passengers at the train platforms. The two improvements are, however, quite distinct, neither depending of necessity upon the other.

The improvements above outlined can be completed, so far as the bridge is concerned, without any serious interference with the operation of either its elevated or the surface tracks.

The Bridge Commissioner has pointed out that the Second avenue elevated line could effectively be brought over the tracks of the City Hall branch on Park Row, so as to make a double station at Park Row for both the east side elevated systems. This is a most admirable suggestion, and one that I cordially indorse. Work is now in progress on the Blackwell's Island Bridge. If the Second avenue line be brought to City Hall, additional express trains could be run, not only to Harlem and The Bronx, but also by constructing suitable connections across the new bridge to the Borough of Queens, and thus bring that borough into direct and rapid communication with the City Hall. If this improvement were made, there would be a joint station of the Second and Third avenue lines on one level, and directly beneath them another joint station of the subway, the Brooklyn elevated and surface cars. Connection between the upper and lower levels could be made by moving stairways.

When these improvements are finished both cars and trains will have disappeared from the surface of the bridge from Rose street to Park Row, and the present terminal station with the bridge across Park Row can be removed. This station building is unspeakably unsightly, and in every sense unworthy to constitute the approach to what is now the greatest bridge in the world. Aesthetic considerations would demand that when these buildings are removed the space be reserved to afford an uninterrupted view of the massive masonry towers and the graceful curve of the cables.

There is, however, a very general demand, both on the score of economy and convenience, for the construction of a great public building in which can be located the various department bureaus, for which building no suitable site seems available. With the disappearance of trains from the Manhattan entrance of the bridge and the abandoning of the bridge approach as a station, for which it was never intended, the area covered by the present station, together with such private property as can be readily acquired to the north, forms an exceptional site for such a public building. This building, by proper architectural treatment, could be made a fitting approach for the bridge itself by piercing the building with a large arched way to form a spacious entrance to the bridge, which arch would afford a fine vista of the bridge from City Hall Park. Such a building would afford accommodation for all the city offices beneath a single roof. It would be near the City Hall and the General Court House; it would face the City Hall Park, and, moreover, would have light and air on the other three sides. If a similar amount of land had to be purchased nearby, the cost of the land would probably be nearly equal to the cost of the whole construction above proposed; whereas, by depressing the tracks as above suggested, this land becomes available practically without expense, as an incident to such construction.

I append to this report a map and plan, which, however, are not intended to be any more than an outline suggestion; no details are proposed, especially in regard to the bridge itself, as that does not lie within my province.

Yours respectfully,

(Signed) WM. BARCLAY PARSONS, Chief Engineer.

This report was transmitted to the Mayor on July 1, 1902.

This Board has, of course, no control over the Bridge or its terminals.

II. FUTURE RAPID TRANSIT.

A result of the exceptionally favorable bid which was accepted for the Brooklyn extension (being for one-fourth or fifth part of

its estimated cost) was that the Board was enabled immediately to take up the consideration of the construction of an additional tunnel to Brooklyn, the plans of which are now being worked out by the Chief Engineer.

At the meeting of the Board on the 24th of July, after the passage of the resolution awarding the contract for the Brooklyn-Manhattan Railroad, the President made the following statement:

It was my earnest hope that the Brooklyn-Manhattan contract should include connections on a single five-cent fare basis, covering all of the Borough of Brooklyn which will be tributary to the proposed tunnel. It is impossible not to congratulate the city upon the exceedingly favorable terms included in the bid of the Rapid Transit Subway Construction Company. The price of \$2,000,000 is only one-fourth or one-fifth the estimated cost over and above the cost of terminals, for which an additional and separate \$1,000,000 is bid. It is plain, besides, that the proposed contract with the Rapid Transit Subway Construction Company will of and by itself be exceedingly advantageous to Brooklyn. If it had been possible for the Brooklyn Rapid Transit Railroad to have made a bid measurably near the very low bid of Mr. Belmont's company, the Board, I am sure, would have approved giving the preference to the Brooklyn bid because of the most advantageous system of connections which it has proposed. In my opinion, the Board, having very properly awarded the contract to the Manhattan Company because of its exceptional advantages, is now under every obligation to at once consider the interests of Brooklyn. The city, including the Borough of Brooklyn, is bearing the burden of an expenditure of upward of \$36,750,000 upon the Manhattan-Bronx Railroad. The Board had intended that the next \$8,000,000 or \$10,000,000 of rapid transit expenditure should go to Brooklyn. Under the terms of the bid which the Board has now accepted there is available, after providing Brooklyn with a substantial measure of rapid transit, a balance for rapid transit purposes of approximately \$6,000,000. In my opinion, that sum should be at once dedicated to Brooklyn. I therefore propose a resolution to the effect that before the Board proceed to lay out any other rapid transit route involving municipal expenditure, it shall lay out a direct route between the neighborhood of the City Hall, in Manhattan, and Borough Hall Park or other satisfactory point of distribution in Brooklyn. Such tunnel can be much shorter and much less expensive than the tunnel now contracted for. I therefore offer this resolution with the idea that the Board shall do its utmost to procure a contractor who is able and willing, upon reasonable terms, to

provide, on the basis of a single fare of five cents, connection facilities of the general character of those which the Brooklyn Rapid Transit system is able to offer.

The President then moved the following resolution, which was seconded by the Comptroller and carried :

Whereas, It has been the hope of this Board that it might be able to execute a contract for the construction of the Manhattan Brooklyn Rapid Transit Railroad with a contractor who could and would for a single five-cent fare provide extensive connections in the Borough of Brooklyn of the character in general of those controlled by the Brooklyn Rapid Transit Company; and

Whereas, The Board has felt constrained, by reason of the far more favorable terms to the City offered by the Rapid Transit Subway Construction Company, to reject the bid made by John L. Wells, acting in the interest of the Brooklyn Rapid Transit Railroad Company; and

Whereas, It is the intention and desire of the Board that the amount of money for municipal rapid transit construction which has been saved to the city by the bid of the Rapid Transit Subway Construction Company for \$2,000,000, instead of for the estimated actual cost of such construction, being the sum of about \$8,000,000, shall, if practicable upon reasonable terms, be applied to some rapid transit connection between the Boroughs of Brooklyn and Manhattan which shall secure to the majority of citizens of Brooklyn who do business in Manhattan, and are not adequately served by other rapid transit facilities, rapid transit service between their homes in Brooklyn and the business section of Manhattan for a single fare per entire trip not exceeding five cents; now, therefore, it is

Resolved, That the Chief Engineer be directed to prepare and submit to this Board routes and general plan of a rapid transit railroad which shall, as directly as practicable, connect the general region of the City Hall Park, in the Borough of Manhattan, with the general region of Borough Hall Park or some other equally convenient passenger transportation centre in the Borough of Brooklyn.

EAST SIDE LINE.

Early in the year the Board took up the important question of an east side line in Manhattan Borough, meaning by this an extension of the present Manhattan-Bronx line northward to the Bronx Borough, from the corner of Park avenue and Forty-second

street, where the line turns to the westward. An adequate line of this general description had been a part of the Routes and Plan adopted by the Board in 1895, and to its great regret, and, as it believes, to the serious injury of the city's interests, had been disapproved by the Appellate Division of the Supreme Court. In adopting the plans under which the Manhattan-Bronx Railroad is being constructed, an east side line had been eliminated, by reason of the limitation,—practically imposed by the Appellate Division,—that the railroad must extend from one end of the city, as it then was, to the other, and must cost much less than \$50,000,000. It has always since been in the mind of the Board, that as soon as the city could set aside a sufficient amount of its credit to provide for such a line the work should begin. Early in 1902 the residents of that large section of the city roughly included between Forty-second street, Fifth avenue, the Harlem river and the East river began earnestly to insist that a rapid transit railroad was being speedily constructed which would provide rapid transit for nearly all other parts of the Boroughs of Manhattan and The Bronx but their own. On April 24 the Board took the first step looking toward an east side line by directing the Chief Engineer, in a formal resolution, to prepare and submit to the Board a plan for such a line.

JEROME AVENUE EXTENSION.

Another extension which the Board has considered will, when built, provide transit facilities for that large area of Bronx Borough between the New York and Harlem Railroad on the east and the Harlem river on the west, which is now almost destitute of such facilities. It seemed to be the consensus of opinion of those who addressed the Board on this subject that such a line should occupy Jerome avenue. On September 11 the Board, by resolution, directed the Chief Engineer to prepare and submit plans for the construction of an extension northward on Jerome avenue.

GENERAL PLAN FOR THE FUTURE.

On May 9 the President of the Board addressed to the Chief Engineer the following communication, requesting him to prepare and submit to the Board a comprehensive scheme or plan of rapid transit for the whole city:

WM. BARCLAY PARSONS, Esq., Chief Engineer, 320 Broadway, City:

MY DEAR SIR—The public has come to fully recognize the wisdom of development of the rapid transit facilities of Greater New York and of the use of its street property for rapid transit purposes upon a general and far-seeing plan. Rapid transit franchises, it is now believed, ought to be granted with reference to a systematic treatment of the subject under the guidance or initiatory control of a single body like this Board, with a tenure sufficiently long to assure not only the adoption of a comprehensive programme, but also, at least in part, its execution. This idea was embodied in the present rapid transit act, providing, as it did, not only for municipal construction of new rapid transit railroads, but also for the grant of rapid transit franchises to companies operating existing lines. The idea has been more clearly impressed upon the public mind by recent legislation. The amendment of section 32 (the so-called "Pennsylvania Railroad" Act, recently approved by the Mayor and the Governor) has made clearer the power and, as I think, the duty of the Board, to prepare for the city a sound and liberal programme of rapid transit extension. The great public favor with which the veto by the Governor, upon the recommendation of the Mayor, of the so-called New York Central Terminal Bill, has been received has rendered it still more improbable that the city will abandon the general theory of the Rapid Transit Act.

When the present Board took up the study of the problem its jurisdiction was confined to the present Boroughs of Manhattan and The Bronx, and it then proposed a general plan with a central route along Broadway to Fourteenth street, and from that point with direct extensions toward the northern limits of the city, one on the east side, along Fourth and Park avenues, and the other on the west side, along Broadway and the Boulevard. That plan was disapproved by the Appellate Division of the Supreme Court chiefly upon considerations of expense; and the maximum limit of \$35,000,000, which it was understood that the court might approve, compelled the Board to place the point of departure of the east side line from the main line as far uptown as One Hundred and Fourth street. When the plan now under construction was adopted the Board was careful to announce that because of the constraint thus placed upon its action it formed only a part of a more comprehensive system which the Board intended to lay out as soon as the financial condition of the city should permit. In the hope that such financial ability is not far distant, the Board instructed you at its meeting held on the 1st instant to submit plans for an east side line connecting with the present rapid transit route at Forty-second street and Park avenue. This instruction did not imply a

determination of the Board as to what should be the next rapid transit route adopted, but only that the necessities of the upper east side would have to be studied and considered, as would also the further claims of Brooklyn and the claims of other boroughs.

The Board is almost ready to advertise the contract for the Brooklyn-Manhattan extension already adopted. It has, at the request of the Mayor, begun the consideration of a comprehensive terminal system intended to include the present Brooklyn Bridge and the bridges, Nos. 2 and 3, now under construction. It has received from the Pennsylvania Railroad Company and is now considering an application for the grant of a franchise for a tunnel railroad under the Hudson river, across the Borough of Manhattan, under the East river and connecting in the Borough of Queens with the Long Island Railroad system. Under the amendment to section 32 of the Rapid Transit Act and without further legislation, as I am advised, it will also be possible, with a co-operation of the city authorities, upon which, I believe, we may count, for the Board, upon the application of the New York Central and Hudson River Railroad Company, to authorize an enlargement of the terminal facilities of that company so as to permit it to make the peremptorily needed change of motive power in the Park avenue tunnel. I earnestly hope that such an application will presently be before the Board.

It is, therefore, clear that the public now has a right to expect from this Board the preparation of a general and far-reaching system of rapid transit covering the whole City of New York in all its five boroughs. It was in anticipation of that work that the Board in January last asked the Mayor and Comptroller for early information as to the extent to which the debt limit and other necessities of the city would permit rapid transit extension in addition to the Manhattan-Bronx and Brooklyn-Manhattan roads. When that information shall be received the Board will be better able to decide where the next rapid transit expenditure shall be placed.

The far-reaching plan I have suggested could not, of course, be carried out at once, or, perhaps, completely carried out for many years. But if such a plan be now wisely prepared and the streets of New York be dedicated to tunnel railroad purposes with a proper regard to the long and, no doubt, splendid future of the city, two things may reasonably be expected. First, that rapid transit construction will proceed upon the lines so laid down as rapidly as the means of the city and the amount of private capital ready for rapid investment will permit. And, second, that relatively unimportant franchises will not be granted in such way or

special routes be so devised as to prevent or obstruct a permanent and sufficient programme.

It is my conclusion from all this that, in laying out the east side line, you should study the whole rapid transit situation of all five boroughs, and that your report should aid the Board to prepare and submit to the local authorities the comprehensive plan for the entire city which I have suggested, the same to be carried out in sections or instalments, as financial conditions shall from time to time permit.

Yours respectfully,

(Signed)

A. E. ORR, President.

III. THE BROOKLYN-MANHATTAN RAILROAD.

The Routes and General Plan of the Brooklyn-Manhattan Railroad, as was stated in the first report of the Board, was taken up in 1900 and immediately after the contract was awarded for the Manhattan-Bronx railroad. They were approved by the Board on January 24, 1901. The approval of the Board of Aldermen was secured on May 21, 1901, and of Mayor Van Wyck on June 1, 1901. A sufficient consent of abutting property owners not having been secured, application for such consent had to be made to the Appellate Divisions of the Supreme Court in the First and Second Judicial Departments.

On December 26, 1901, the Commissioners appointed for the First Department to hear and determine whether the railroad ought to be constructed and operated made their report to the court that the said railroad ought to be so constructed and operated; and on the 30th day of January, 1902, the court duly confirmed this report. On the 27th of December, 1901, the Commissioners appointed for the Second Department also submitted a favorable report, which was confirmed by the court on the 17th day of January, 1902.

The Board then proceeded to prepare a form of contract, the preliminary work of preparation being referred to a committee.

In preparing the form of the Brooklyn-Manhattan contract, the Board was deeply impressed with the idea that the public service required the Board to secure, if possible, not only a ride upon the Brooklyn-Manhattan railroad for the fare, whatever it shall be, but

to provide, without additional fares, the most extensive system of connections. And in providing for connections it was necessary to consider the relative merits, on the one hand, of extensive connections in the Borough of Brooklyn, and, on the other hand, of an extensive system of connections in the Borough of Manhattan. It was clear that the convenience of the Brooklyn traveling public was first to be considered, since the extension would be used by residents of Brooklyn to a vastly greater extent than by residents of the Borough of Manhattan. Nevertheless, it might be open to real doubt whether the convenience of Brooklyn would be better promoted by additional convenience of distribution of Brooklyn travelers over the Borough of Manhattan when they should reach it, or, on the other hand, additional convenience of access to the Brooklyn terminus of the road, with less convenience of distribution in the Borough of Manhattan. The Committee of the Board entrusted with the preparation of the draft of the contract dealt with this question by making the extent of the connections one element of the bid. On May 23, 1902, the Committee submitted to the Board a draft of the contract with the following report:

TO THE BOARD:

The Committee upon the contract for the Brooklyn-Manhattan Rapid Transit Railroad herewith submit a form for the consideration of the Board. It is complete with all the appurtenant papers except only the technical specifications and drawings to be provided by the Chief Engineer. It is desirable that he shall have until the latest practicable moment to complete his work, which, as he advises us, will be ready by the time the Board shall have determined upon the remainder of the contract as now submitted.

In conformity with the practice established by the Board when the Manhattan-Bronx contract was proposed, your Committee recommend that this proposed form be made public for some time before final action by the Board and its legal publication. We also suggest that the draft now under consideration be forthwith sent to the Corporation Counsel. His approval of form will be finally necessary; and it will be convenient that any suggestions of his shall be received and passed upon in the final action of the Board. Your Committee recommend, therefore, the adoption of the following resolution:

"Resolved, That the proposed form of contract for the construction and operation of the Brooklyn-Manhattan rapid transit railroad now submitted by the committee be received and that the final action of the Board thereon be had at its meeting to be held on the day of June, 1902; that meantime the Secretary give public notice that such form is open for public inspection at the office of the Board; and that the form be transmitted by the Secretary to the Corporation Counsel with the respectful request that he give it his preliminary consideration and make any suggestions with reference to it that he shall deem proper in order that, when the final form shall be adopted by the Board, there may be as little delay as possible in securing his formal approval."

Your Committee assume that the Board will not take action even upon such a resolution which we have proposed, unless the Board shall approve the form now submitted on its general lines, and that any important changes will be made before the draft is thus submitted for criticism by the public and by the Corporation Counsel. The Committee deem it proper, therefore, in this report, to briefly state the character of the proposed contract and particularly to draw attention to the more important differences between it and the Manhattan-Bronx contract. It is not practicable, and it would hardly be useful, for the Committee to deal with every provision of the contract. But its salient and important features may be mentioned. The routes and general plan are, of course, understood.

The draft follows in general the form of the Manhattan-Bronx contract. We have, however, felt justified in inserting some provisions more favorable to the city than were inserted in the Manhattan-Bronx contract. That was prepared at a time when there was no general confidence in the success of municipal rapid transit construction, when the efforts of the Board to interest the important transportation lines and men who were important in the ownership or control of capital and who were familiar with transportation problems, had been almost completely defeated. At that time no company or man having sufficient means and sufficient experience in dealing with such problems to undertake the contract had yet been found to favorably, or perhaps seriously, consider it. The Appellate Division of the Supreme Court had unmistakably indicated its belief that the idea was chimerical, that the construction would involve enormous loss to the contractor, and that the city must be protected from loss by requiring from the contractor enormous security. It was with difficulty, and only with the cooperation of the Mayor and Comptroller, that the Board late in 1899 secured from the court a modification of its really prohibitive requirement.

The Manhattan-Bronx contract was, in fact, so drawn as to be of very great advantage to the city if it were made at all; and such an agreement the Board secured when the contract was signed. Dark as the prospect of municipal rapid transit then seemed, the Board did not feel justified in proposing any contract or according to the contractor any terms which, if carried out, would not, taken as a whole, secure vast benefits to the city. But the Board did feel justified, and, indeed, felt bound, in order to increase the slender probability it then saw of securing a bidder to go further than would now be justifiable in relieving the contractor from onerous conditions, always provided, of course, that the bidder meet, as the Manhattan-Bronx contractor did meet, the requirements of the law. Practical experience has now established the soundness of the view which, prior to the making of the Manhattan-Bronx contract, the Board—its members then apparently in a small minority of the citizens of New York familiar with transportation problems—held, that not only would such a contract be advantageous to the city, but that it would be profitable to the contractor. The success of this view has now rendered other like contracts so attractive to capital that the Board can, with less risk of a failure of the competition, insert some provisions less favorable to the contractor.

The principal provisions of the draft now proposed, or those to which, for the convenience of the Board or the public, it may be well to call special attention, are the following:

I. The contractor must undertake two obligations: first, the temporary one of constructing the entire railroad with its appurtenances and providing the original equipment, the same to be performed within two years, and, second, the obligation of hiring the railroad upon a lease for fifty years, with a privilege to the contractor of a renewal for twenty-five years.

II. Every bidder must state in his bid what he is able to furnish in the way of connections with other rapid transit or surface lines. That is to say, his bid must specify the connecting lines upon which he can assure to passengers over the Brooklyn-Manhattan Railroad continuous trips without change of cars for a single fare not exceeding five cents, or, continuous trips with or without change of cars for such a single fare, or continuous trips with or without change of cars at rates prescribed in his bid which may exceed five cents. Performance of the obligation to furnish such facilities beyond the line of the Manhattan-Brooklyn Railroad is to be assured by agreements properly executed by the owners of such lines to be tendered by the contractor at the time the contract is signed. The bidder is at liberty in his bid, as he pleases, to tender impor-

tant or unimportant connections of this kind or to tender none at all. But the award will be determined by the Board upon this element of the competition as well as upon the amount of the bid for construction work, and the two other elements of the competition to be next stated. This provision is new to the Brooklyn-Manhattan contract.

III. The bidder must state the maximum fare to be charged by him upon the railroad within the limits of five cents. The amount of the fare becomes, therefore, an additional element of the competition. This provision also is new.

IV. It is also made optional with any bidder to offer to subject himself or not, as an element in the competition, to a provision for future operating agreements inserted in the contract. This provision, if any competitor should tender it and thereupon secure the contract, would give the Rapid Transit Board the right hereafter to require him to enter into operating agreements with other railroads than the Brooklyn-Manhattan Railroad and the connecting lines with which such binding traffic agreements should have been tendered as part of the original bid. The provision looks to the future, even the distant future, and is intended to secure to the city the right, as traffic increases or local conditions change, to compel reasonable provisions for continuous service within the city at reasonable fares. The city would not, however, by this provision, if inserted, secure the right to compel the contractor to assume any obligation unless upon the certificate of the Rapid Transit Board that, in its opinion, performance would not involve loss to the contractor. The maximum ride for a five-cent fare under such a provision would be limited to _____ miles in addition to the mileage of the Brooklyn-Manhattan Railroad and of the connecting lines, if any, over which the contractor, by the contract, should have originally assured continuous rides at a five-cent fare. Neither would the city be given any right to compel the contractor to provide for each one cent of fare in addition to five cents a ride of more than _____ miles in excess of _____ miles beyond the ride upon the Brooklyn-Manhattan Railroad and such connecting lines. This provision is also new.

V. The successful contractor must give security as follows:

1. By a deposit of \$1,000,000 in cash or in value of securities of the character in which savings banks are authorized by law to invest their moneys, such \$1,000,000 to be security that the contractor will completely construct the road and provide complete equipment, subjecting it to the first lien of the city.

2. Further security in the sum of \$1,000,000 by a bond or by the deposit of such savings bank securities, such second \$1,000,000 to be a deposit continuing for the whole term of the lease and securing the payment of rental and the performance of every other obligation under the contract.

3. By the provision at his own expense of such complete equipment for the railroad. The equipment will cost several millions of dollars. The temporary deposit of \$1,000,000 and the continuing deposit of \$1,000,000 are both securities assuring the provision of the equipment.

4. By deposit with the Board of bonds to be given by sub-contractors. This security will, of course, expire upon the complete construction of the road.

After the construction shall be complete, the city will thus hold as security for the payment of the rent the continuing deposit of \$1,000,000 and a first lien upon the equipment, which must, as already mentioned, be worth several millions of dollars.

VI. The city assures to the contractor the right to construct and operate the railroad "free of all right, claim or other interference whether by injunction suit for damages or otherwise on the part of any abutting owner or other person."

VII. The railroad and its equipment are declared to "constitute great public works which must be designed, constructed and maintained with a view to the beauty of their appearance as well as to their efficiency."

VIII. The contractor is, pursuant to the statute, exempted from taxation under the laws of New York "in respect to its interest in the railroad under the contract and in respect to the rolling stock and all other equipment of the railroad, except that real estate for power houses or otherwise forming part of the equipment shall not be exempted and that no property of the contractor not provided under and remaining subject to the contract by the city shall be exempted."

IX. The contract contains the eight-hour provision with respect to laborers, workmen or mechanics. It also incorporates the provisions of the Labor Law, chapter 415 of the Laws of 1897; but, as portions of this law have been declared unconstitutional, the contract provides that only so much of it shall be deemed to be effective in the contract as is constitutional.

X. The bid of the contractor is to include \$1,000,000 for terminals and for real estate otherwise required for the construction of the railroad. But this amount is subject to increase to an amount

not exceeding \$1,500,000. If the total cost of terminals and real estate exceed \$1,500,000, the contractor will have to provide it at his own cost.

XI. The entire railroad is to be completed, constructed and equipped and ready for operation within two years from the date of the contract. Work is to begin within sixty days after its execution. At a date not later than the time of the completion of two-thirds of the work of construction of the railroad, the provision of the equipment is to be begun and the same subjected to the lien of the city.

XII. The rental will be the amount of interest which the city must pay upon the bonds issued to provide the cost of construction, and a further annual sum of not less than one per cent. upon the whole of the bonds. The contractor must pay rental upon the amount paid by the city to acquire rights of way even when not acquired in fee. The last provision is new.

XIII. As there are but two tracks there cannot be a distinction between express and local service. The trains are to be run on the average, stops at stations included, of not less than 14 miles per hour. There is a compulsory provision for night service.

XIV. No advertisements are, without the special permission of the Board, to be allowed at stations except where necessary for operating purposes. This provision is new.

XV. The contractor "shall at all times provide, in quantities amply sufficient for the travel to the full capacity of the railroad, cars, rolling stock and other parts of the equipment of the best character known at the time to the art of intraurban railway operation."

XVI. The contractor may use the railroad for freight or express matter, provided that such use shall not to any extent interfere with its use to its fullest capacity for all passengers who shall desire to be carried upon it. Upon the expiration of the lease the city shall have the right to purchase the equipment, such right being protected by its lien.

The Committee desires to remind the Board that, although its success with the Manhattan-Bronx contract has made rapid transit prospects far better than they were, nevertheless it is the true interest of the city not only to secure the lowest possible bid, but to establish the reputation of the city for wise and fair dealing upon the highest possible plane. The contractor should be treated with such scrupulous fairness that the city shall secure the very best

and most loyal service, and that whenever in the future the city has a contract to award for a municipal rapid transit railroad it shall have a choice from among the very best and most competent contractors. The Committee has, in this view, followed the general provisions of the Manhattan-Bronx contract, according to the contractor, in precise and intelligible form, proper and efficient protection of his rights as well as securing to the city a full protection of municipal rights and as far as reasonable protecting the contractor from caprice or uncertainty in the interpretation of his contract obligation. The Committee is clear that, whatever may be the rule or the interest of the city with respect to other contracts, this is the only true theory with respect to a rapid transit contract.

(Signed) A. E. ORR.

CHAS. STEWART SMITH.

DEPARTMENT OF FINANCE—CITY OF NEW YORK, MAY 23, 1902.

TO THE BOARD OF RAPID TRANSIT COMMISSIONERS, No. 320 BROADWAY, NEW YORK CITY.

GENTLEMEN—For the purpose of bringing the contract for the Brooklyn-Manhattan Rapid Transit Railroad before you and before the public for discussion, I concur in the presentation of the draft. There are various provisions of the contract, however, as to which I am not prepared to come to a final conclusion until after public discussion of the matter.

1. The draft contract provides as one of the terms of competition that the bidder must state the maximum fare to be charged by him upon the railroad within the limit of five cents. This extension is slightly longer than the Brooklyn Bridge, upon which it has always been the practice both of the city, when the city operated the bridge railroad, and now of the railroad company upon the old bridge cars, to charge three cents for a single fare, with two tickets for five cents. I am disposed to believe that the contract should prescribe similar terms for this extension of the tunnel. An additional reason is found in the fact that there are but two probable competitors for this tunnel who will not apparently be upon an equality as to fares now collected by them. For instance, the Brooklyn Rapid Transit Company, it is stated, receives an average fare of only four cents a passenger, because of its extensive system of transfers. The Subway Company, which will operate the Manhattan-Bronx tunnel, is free, however, from any transfer arrangements, and will get

the full five-cent fare for each passenger, long or short haul. Three cents for the short ride in this new tunnel is adequate compensation for any railroad company, and as the prospective bidders stand upon a different footing as to their present rates, it would seem to me to be probably wiser to remove this question from the competition and to specifically declare the maximum fare upon the extension at three cents.

2. The reference to the Labor Law, making it a part of the contract "so far as constitutional," is not, I think, a proper provision. I think that, apart from any reference to the law at all, the Board should provide for the eight-hour law and the prevailing rate of wages and impose them upon the contractor, in pursuance of a wise public policy.

3. The draft proposes to allow the contractor a sum which may run from one million to a million and a half dollars for terminals and for real estate. This, I understand, will be additional to the sum which he bids for the construction of the railroad. I believe that this provision should be stricken out and that the contractor should be called upon to bid not only the sum which he will charge for the construction of the railroad, but the sum which he will charge for the necessary terminals and real estate.

Yours very truly,

(Signed) EDWARD M. GROUT, Comptroller.

After such report of the Contract Committee a public hearing upon the form of the contract was held, and thereafter and on June 12, 1902, the form of contract was approved unanimously by the Board. The modifications in the draft originally proposed were as follows:

That the contract price be increased by one per cent. for each month less than three years occupied in its construction; and that the price be reduced one per cent. for each month in excess of four years occupied in such construction.

That the time limit for the completion of the work of construction in the Brooklyn-Manhattan contract be fixed at three years, reserving to the Board the right to extend the time to four years if necessary.

That the length of the franchise conferred by the contract be thirty-five years, with one privilege of renewal for twenty-five years, it being understood that that renewal involves the power to readjust the terms.

That the provision as to payments for the Sinking Fund be the same as those already provided for in the Manhattan-Bronx contract with John B. McDonald.

That the provision as to liability of the contractor for damages to persons and property, other than to the city, be the same as in the Manhattan-Bronx contract with John B. McDonald.

That the words "at the time" be added after the words "highest known standard of railway operation" at the end of second paragraph, page 165 of chapter III. of the contract, making the paragraph read, as follows:

The contractor covenants to and with the city that the contractor will, during the term of the lease, operate the railroad carefully and skilfully according to the highest known standards of railway operation at the time.

The Board convened on July 21 for the opening of bids. Three were received: One from the Brooklyn Rapid Transit Company, in the name of John L. Wells, Esq., an attorney of that company. This bid was \$7,000,000 for construction and \$1,000,000 for terminals. In addition, Mr. Wells offered, pursuant to the form of bid required by the Board, the following system of connecting service and transfer:

LIST "A."

[Forming part of the proposal submitted by John L. Wells.]

"Connecting lines over which the contractor will assure to any passenger a continuous trip for a single fare not exceeding five cents without change of cars."

1. Over the Third and Fifth avenue lines of the Brooklyn Union Elevated Railroad Company from and to Sixty-fifth street, Brooklyn, provided all necessary authority and consents for the construction of proper connection between the said elevated lines and the railroad at the eastern terminus of said railroad in the Borough of Brooklyn are furnished to the contractor without expense to the contractor for such authority and consents.

2. Over the lines of the Nassau Electric Railroad Company, the Prospect Park and Coney Island Railroad Company and the Brooklyn Union Elevated Railroad Company from and to Twenty-fifth avenue, Borough of Brooklyn, via Bath avenue, New Utrecht avenue, Fifth avenue elevated and private rights of way, provided same consent for connection is given as is described in paragraph 1 above.

3. From and to Kings Highway, Borough of Brooklyn, via the Prospect Park and Coney Island Railroad and the Fifth avenue line of the Brooklyn Union Elevated Railroad Company, provided same consent for connection is given as is described in paragraph 1 above.

4. From and to Kings Highway and via the so-called Brighton Beach line of the Brooklyn Union Elevated Railroad Company to Flatbush avenue and Malbone street, thence via tunnel railroad under or near Flatbush avenue connecting with the eastern terminus of the railroad at Flatbush and Atlantic avenues, provided that all necessary authority and consents for the construction of the aforesaid tunnel connection between Malbone street and the junction of Flatbush and Atlantic avenues are furnished to the contractor without expense to the contractor for such authority and consents.

LIST "B."

[Forming part of the proposal submitted by John L. Wells.]

"Connecting lines over which the contractor will assure to any passenger a continuous trip for a single fare not exceeding five cents, but with or without change of cars at the option of the contractor."

1. From and to Fort Hamilton via the Third avenue surface line of the Brooklyn City Railroad Company and the line described in No. 1 of List "A," with free transfer at Sixty-fifth street and Third avenue, between surface and elevated lines.

2. From and to Fort Hamilton via the Fifth avenue surface line of the Nassau Electric Railroad Company and the through line described in No. 1 of List "A," with free transfer to and from the Fifth avenue elevated line at Thirty-sixth street and Fifth avenue.

3. From and to Ulmer Park (Twenty-fifth avenue), Borough of Brooklyn, via the surface line of the Nassau Electric Railroad Company on Bath avenue, Eighty-sixth street and Fifth avenue, and the through line described in No. 1 of List "A," with free transfer to and from Fifth avenue elevated line at Thirty-sixth street and Fifth avenue.

4. From and to Twenty-fifth avenue (Ulmer Park), Borough of Brooklyn, via surface lines of the Brooklyn City Railroad Company on Twenty-fifth avenue, Eighty-sixth street, Thirteenth avenue and Bay Ridge avenue, and of the Nassau Electric Railroad Company on Fifth avenue, between Bay Ridge avenue and Thirty-sixth street,

and the through line described in No. 1 of List "A," with free transfer to and from Fifth avenue elevated line at Thirty-sixth street and Fifth avenue; or, at the option of the contractor.

4A. From and to Twenty-fifth avenue (Ulmer Park), Borough of Brooklyn, via the surface line of the Brooklyn City Railroad Company on Twenty-fifth avenue, Eighty-sixth street, Thirteenth avenue, Bay Ridge avenue, and Third avenue to Sixty-fifth street, and the through line described in No. 1 of List "A," with free transfer between surface and elevated lines at Sixty-fifth street and Third avenue.

5. From and to Kings Highway via line of the Sea Beach Railway Company to Third avenue and Sixty-fifth street, and the through line described in No. 1 of List "A," with free transfer at Sixty-fifth street and Third avenue, between Sea Beach and elevated lines.

6. From and to Bergen Beach via surface line of the Brooklyn City Railroad Company on Avenue N and Flatbush avenue to Malbone street, and thence by through line described in No. 4 of List "A," with free transfer between surface and tunnel line at Malbone street and Flatbush avenue.

7. From and to Rockaway avenue via the surface line of the Nassau Electric Railroad Company on Church avenue to the Brighton Beach line of the Brooklyn Union Elevated Railroad Company and thence via the through line described in No. 4 of List "A," with free transfer at Church avenue and Brighton Beach line between surface and through tunnel lines.

8. From and to Kensington Junction via the Prospect Park and Coney Island Railroad and the Ninth avenue surface line of the Nassau Electric Railroad Company to Flatbush avenue, and thence via the through line described in No. 4 of List "A," with free transfer at Ninth and Flatbush avenues between surface and through tunnel lines.

9. From and to Enfield street, Borough of Brooklyn, over the tracks of the Nassau Electric Railroad Company on Liberty avenue, East New York avenue, Douglass street, Buffalo avenue and Bergen street to junction of Bergen street and Flatbush avenue, and thence via the tunnel route described in No. 4 of List "A," with free transfer at Flatbush avenue and Bergen street, between surface and through tunnel lines; or, at the option of the contractor.

9A. From and to Enfield street, Borough of Brooklyn, over the tracks of the Nassau Electric Railroad Company on Liberty avenue, Rockaway avenue and Bergen street to the junction of Flatbush

avenue and Bergen street, and thence via the through tunnel route described in No. 4 of List "A," with free transfer at Bergen street and Flatbush avenue between surface and through tunnel lines; or, at the option of the contractor.

9B. From and to Enfield street, Borough of Brooklyn, over the tracks of the Nassau Electric Railroad Company on Liberty avenue, East New York avenue, Douglas street, Rogers avenue, Sterling place, Washington avenue and Atlantic avenue to the eastern terminus of the railroad, with free transfer at this junction between the surface line and the railroad.

10. From and to Flatbush avenue, Borough of Brooklyn, over the tracks of the Nassau Electric Railroad Company on Bergen street between Flatbush avenue and Boerum Place, and on Boerum Place between Bergen street and Fulton street to Borough Hall station of the railroad, with free transfer between surface line and railroad at Borough Hall.

11. From and to Greenwood Cemetery over the tracks of the Nassau Electric Railroad Company on Seventh avenue between Twentieth street and Flatbush avenue, and on Flatbush avenue over the tracks of the Brooklyn City Railroad Company between Seventh avenue and Bergen street, and thence via the through line described in No. 4 of List "A," with free transfer at Bergen street and Flatbush avenue between surface and through tunnel lines.

12. From and to Sixty-fifth street, Borough of Brooklyn, over the tracks of the surface railroad of the Brooklyn City Railroad Company on Third avenue and Flatbush avenue to the station of the railroad at Flatbush avenue and Fulton street, and thence via the railroad, with free transfer between surface line and railroad at Flatbush avenue and Fulton street.

13. From and to Hamilton avenue, Borough of Brooklyn, over the tracks of the Brooklyn City Railroad Company on Court street to the Borough Hall, and thence via the railroad, with free transfer at Borough Hall station between surface line and the railroad.

14. From and to Van Dyke street (Erie Basin) over the tracks of the Brooklyn City Railroad Company on Richards street, Woodhull street, Columbia street and Court street and over the tracks of the Nassau Electric Railroad Company on Atlantic avenue between Columbia street and Court street to the Borough Hall, and thence via the railroad, with free transfer at Borough Hall station between the surface line and the railroad.

15. From and to Hamilton avenue, Borough of Brooklyn, over the tracks of the Nassau Electric Railroad Company on Hicks street, Atlantic avenue and Boerum Place; or, at the option of the contractor.

15A. Over the tracks of the Nassau Electric Railroad Company on Hicks street, Sackett street, Hoyt street, Bergen street and Boerum Place; or, at the option of the contractor.

15B. Over the tracks of the Nassau Electric Railroad Company on Hicks street and Sackett street, and on the tracks of the Brooklyn City Railroad Company on Court street to the Borough Hall, and thence via the railroad, with free transfer at Borough Hall station between the surface line and the railroad.

16. From and to the junction of Crescent and Jamaica avenues, in the Borough of Brooklyn, over the tracks of the Brooklyn Union Elevated Railroad Company to the junction of Flatbush avenue and Fulton street, and thence via the railroad, with free transfer at that junction between the elevated line and the railroad.

17. From and to East New York (Vesta avenue) over the tracks of the Brooklyn City Railroad Company on Fulton street to the railroad at the junction of Fulton street and Flatbush avenue, with free transfer at that junction between the surface line and the railroad.

18. From and to Enfield street, Borough of Brooklyn, over the tracks of the Brooklyn Union Elevated Railroad Company to the junction of Fulton street and Flatbush avenue, and thence via the railroad, with free transfer at that junction between the elevated line and the railroad.

19. From and to the junction of Myrtle and Wyckoff avenues (Ridgewood), Borough of Brooklyn, over the tracks of the Brooklyn City Railroad Company on Myrtle avenue, Gates avenue, Franklin avenue, Greene avenue and Fulton street to the junction of Fulton street and Flatbush avenue, thence via the railroad, with free transfer at said junction between the surface line and the railroad.

20. From and to the junction of Halsey street and Wyckoff avenue (Ridgewood), Borough of Brooklyn, via the tracks of the Brooklyn City Railroad Company on Halsey street, Nostrand avenue, Putnam avenue and Fulton street to the junction of Fulton street and Flatbush avenue, and thence via the railroad, with free transfer at said junction between the surface line and the railroad.

21. From and to Newtown creek via the tracks of the Brooklyn City Railroad Company on Manhattan avenue, Driggs avenue, Bedford avenue, Franklin street, Kent avenue, Classon avenue, Washington avenue, Park avenue, Myrtle avenue, Raymond and Navy streets and Willoughby street, including use of the tracks of the Brooklyn, Queens County and Suburban Railroad Company on Broadway, to the Borough Hall (following the so-called Crosstown and Greenpoint routes), and thence via the railroad with free transfer at the Borough Hall station between the surface line and the railroad.

LIST "C."

[Forming part of the proposal submitted by John L. Wells.]

"Connecting lines over which the contractor will assure to any passenger a continuous trip, with or without change of cars, at the option of the contractor, for fares exceeding five cents per trip, but within limitations in this list specified."

1. From and to Coney Island, over the tracks of the Nassau Electric Railroad Company, between Coney Island and Twenty-fifth avenue, Borough of Brooklyn, and thence via the route described in No. 2 of List "A," for a fare of ten cents per trip.

2. From and to Coney Island, over the tracks of the Sea Beach Railway Company, between Coney Island and Kings Highway, and thence via the route described in No. 5 of List "B," for a fare of ten cents per trip.

3. From and to Coney Island, over the tracks of the Prospect Park and Coney Island Railroad Company, between Coney Island and Kings Highway, and thence via the route described in No. 3 of List "A," for a fare of ten cents per trip.

4. From and to Brighton Beach, over the tracks of the Brooklyn Union Elevated Railroad Company, between Brighton Beach and Kings Highway, and thence over the route described in No. 4 of List "A," for a fare of ten cents per trip.

5. From and to Jamaica, Borough of Queens, over the tracks of the Brooklyn, Queens County and Suburban Railroad Company on Jamaica avenue, between Jamaica and Crescent avenues, and the tracks of the Brooklyn Union Elevated Railroad Company to the junction of Fulton street and Flatbush avenue, and thence via the railroad, with free transfer at said junction between the elevated line and the railroad, for a fare of ten cents per trip.

The other two bids were by the Rapid Transit Subway Construction Company, one for \$3,000,000 for construction and \$1,000,000 for terminals, the other for \$2,000,000 for construction and \$1,000,000 for terminals. That company was engaged with John B. McDonald in the construction of the Manhattan-Bronx Railroad. Each of its bids was accompanied, pursuant to the form of bid required by the Board, by an offer of the following system of connecting service and transfer:

LIST A: Connecting lines over which the contractor will assure to any passenger a continuous trip for a single fare not exceeding five cents without change of cars:

The lines operated or to be operated by Interborough Rapid Transit Company, in the Boroughs of Manhattan and The Bronx as now authorized, excepting in the case where the contractor shall have entered into an agreement with a connecting line to carry a passenger for less than five cents, the Interborough Company will not agree in such case to carry such passenger beyond Fifty-ninth street for the less fare.

The two bids of the Subway Company were identical in all respects, except amount and except that the larger bid was accompanied by a letter of Mr. John B. McDonald in which he stated that, if the Board accepted that bid, he would contract to construct an extension of the Manhattan-Bronx system from Forty-second street on Broadway south to Union Square for \$100,000, provided such contract was awarded to him before the 1st of July, 1903. The Board accepted the lowest bid,—awarding the contract to the Rapid Transit Subway Construction Company on the 24th day of July, 1902, for \$2,000,000 for construction and \$1,000,000 for terminals, which contract was executed on the 11th of September.

The work of construction under this contract was formally begun in front of No. 17 State street, Manhattan Borough, on Saturday, November 8.

In the opinion of the Board two most important advantages will accrue to the city as the result of this most favorable contract. The estimated cost of construction of the proposed road is from \$8,000,000 to \$10,000,000. By obtaining a responsible company, willing to use in large part its own money, so that it could build the road for only \$2,000,000 of the city's funds, the city was saved the

necessity of using more than \$6,000,000 of bonds. Again, by awarding the contract to a company which could and did deliver, in accordance with the terms of its bid, a contract for connections and through service with the Manhattan-Bronx Railroad, it was assured that these two roads would always be maintained and operated as parts of one great system. By that auxiliary contract, the question of a single fare was solved, as to both of the municipal railroads. One fare of five cents will carry a passenger to all parts of the Brooklyn-Manhattan and Manhattan-Bronx systems.

IV. PROGRESS ON MANHATTAN-BRONX RAILROAD DURING 1902.

The work of construction of the Manhattan-Bronx Railroad has proceeded rapidly throughout the year. Twelve monthly requisitions were made by the contractor for work done and materials furnished during this period. The amount so expended up to the first of the year 1902 was.....\$12,028,000
The amount so expended during the year was..... 11,436,000

making a total expenditure to date of.....\$23,464,000

As these payments have been made only as work has been actually completed or materials furnished, the figures, in comparison with the total amount of the contract, i. e., \$35,000,000, give, roughly, the proportionate amount of work done. The details of this important work of construction are included in the report of the Chief Engineer, which will be found elsewhere in this volume.

The Lenox avenue extension of the Manhattan-Bronx Railroad from 142d street along Lenox avenue to 150th street, where Lenox avenue is terminated by the Harlem river, the plans for which the Board had forwarded to the Board of Aldermen in 1901, was adopted by that body on the 28th of April, 1902, and on the same day approved by you. An agreement with the contractor, covering this change of route, provides for the construction of the extension as far as 148th street as an extra under the contract, and from that point to the terminus of the extension, at 150th street, the cost of construction is to be borne by the contractor and deducted from the amount allowed under the contract for terminals. The

formal consent of the Metropolitan Street Railway Company and the Sixth Avenue Railroad Company, the sole owners of the abutting property affected by this change, will probably soon be obtained, so that the work of constructing the extension may be begun without delay.* The value of this addition to the Rapid Transit Railroad can scarcely be overestimated, inasmuch as it will provide largely increased transit facilities for that already thickly populated section of the city lying between Central Park and the Harlem river. The provision of ample terminal facilities at the north end of Lenox avenue will enable the operating company to start empty trains from that point for the heavy, morning, downtown travel, thus affording comfortable accommodations for the Harlem section, which could not otherwise be had.

Another change of route authorized was at 149th street and Third avenue. Emerging from underneath the Harlem river, the tunnel railroad was originally planned to ascend to an elevated structure by an open cut beginning just east of Third avenue, in Westchester avenue. It was found that this open cut would work great damage to Westchester avenue, which is an important thoroughfare, and would destroy a large amount of abutting property values. On this account the Board, on June 25, adopted a resolution authorizing a change of route, so that the road should continue under East 149th street and Bergen avenue, and through a cut on private property into Westchester avenue. This change of route was approved by the Board of Aldermen on November 11, and by the Mayor on November 17.

Another important change of the Manhattan-Bronx plans is the authorization of the construction throughout the length of the viaduct structure in the Bronx Borough of an additional third track. This will extend from the junction of Westchester and Brook avenues to the northern terminus of the east side line at Bronx Park. This change was authorized by the Board on July 24, the work to be done by the contractor as an extra under his contract. The result of this addition will be to give largely increased facilities to this important section of the city, as an adequate morning and evening express service may now by its means be provided.

*These consents were received on January 15, 1903, and were dated October 14, 1902.

As the result of the efforts of the Board, begun in 1900, an important improvement in the street arrangement has been at last decided upon at Eighth and Ninth streets and Fourth avenue. At this point converge Eighth street, Fourth avenue, Lafayette Place and Astor Place. The congestion of traffic here is great, because of the incessant travel on the surface lines on all of these thoroughfares, except Lafayette Place. It was thought that inasmuch as the location of the rapid transit station at this point would tend greatly to increase this congestion, so as to make the locality a dangerous one, and as the plans for the subway necessitated the construction of the road underneath private property between Eighth and Ninth streets, the city should take advantage of the necessity to condemn the easements for the right of way, and acquire this property in fee, as well as the additional property between the right of way and the corner of Fourth avenue and Eighth street, and in this manner create a plaza there. This recommendation was made to the Board of Public Improvements by the President in a communication dated November 19, 1900. The matter was revived by this Board upon the incoming of the present municipal administration. Early this year it received the approval of the Local Board, but it was subsequently rejected by the Board of Aldermen. Afterwards the Board of Aldermen approved it, but not until after the Board had instituted condemnation proceedings, which was done on July 10, for the acquisition of the easements through the private property. Additional proceedings have been begun by the Corporation Counsel for the taking of the fee of this property, so that the establishment of the plaza is assured. The destruction of the buildings covering its site has been commenced.

On the 15th day of October the contractor requested from the Board authority to construct an extra third track from the north portal of the west side line of the Manhattan-Bronx road near Fort George to the northern terminus at Kingsbridge. He also at the same time, requested authority to construct a three-track viaduct extension of the west side line from the present proposed terminus at Kingsbridge to about 246th street, near Van Courtlandt Park. The Chief Engineer has reported in favor of the construction of the extra third track and the contractor has been requested to furnish

the Board with an estimate of its cost. Action on the proposed west side extension was deferred.

On July 10 the Board authorized the assignment of the leasing part of the contract between the city, acting by the Board, and John B. McDonald, dated February 21, 1900, to Interborough Rapid Transit Company. By the terms of the assignment the city secures a company of large resources as the operator of the Rapid Transit Railroad; that company becomes bound to the city for the entire rental and lease obligations, and, in addition, guarantees the completion of the construction of the railroad in accordance with the undertaking of the original contractor. The articles of incorporation of Interborough Rapid Transit Company and a copy of the assignment to it will be found in the APPENDIX.

The work of construction was remarkably free from serious accidents, except on one section, known as No. 4. Here two accidents occurred early in the year. On January 27 a severe explosion of dynamite near the corner of Forty-first street and Park avenue resulted in loss of life and injuries to many persons, and in not a little damage to adjacent property. Details of this will be found in the Chief Engineer's report. As a result of the accident the Chief Engineer suggested the appointment of a commission to examine into the ordinances of the city governing the use of explosives. He addressed the Board on February 13 a communication on this subject, as follows:

NEW YORK, February 13, 1902.

HON. A. E. ORR, President, Rapid Transit Board:

MY DEAR SIR—Investigations that I have been conducting in regard to the recent explosion at Park avenue have brought to my attention certain features in regard to the use of explosives in The City of New York that are so important as to warrant most serious consideration.

There are at present being used in The City of New York about sixty tons of dynamite per month. Of this amount, although the rapid transit work is the largest single consumer, nevertheless the amount used in ordinary blasting is a considerable percentage. As Manhattan Island north of Twelfth street is geologically a hard rock

formation, nearly all building operations north of that point involve the use of explosives, and with the growing tendency to make basements and cellars deeper and deeper we must expect a steady increase in the use of explosives.

There are certain regulations imposed by the Charter and by the Fire Commissioner relating to the use of explosives, but these regulations are wholly inadequate, and are the result of old laws and old regulations which have never been subjected to modern scientific analysis. As illustrating the archaic character of some of these provisions, the charter of the city refers to explosives in "quarter casks," an evident inheritance of the days of gunpowder; while the old regulations of the Fire Department require the packing of explosives in manure which, when dry, possess no more virtue than an equivalent amount of sawdust, and is equally inflammable. All of these regulations, it can be seen, aim not so much at preventing explosions, but, by limiting the quantity on hand, to keep down the effect of an explosion after the same has occurred. It is evident, of course, that the reverse should be the case, and that prevention in the first instance should be the thing aimed at.

It seems to me that this matter of the delivery, storage and use of explosives is quite parallel to the construction and maintenance of steam boilers. An ordinary boiler has stored within it more explosive energy than the ordinary magazine allowed by the regulations of the Fire Department, and a battery of boilers such as is to be found in any one of the large buildings in New York contains far more explosive energy than was in the powder house at Forty-first street and Park avenue at the time of its explosion; and yet so well regulated are the construction and maintenance of steam boilers that the citizens of this and other cities feel no timidity in walking about the streets, although beneath the pavement on every block the possibility of a terrible explosion is always present. Some few years ago the regulation of boilers were on somewhat similar lines to those at present existing for explosives, namely, that it was considered essential that the pressure should be limited so as to diminish the effect of the explosion when it occurred. By drawing up proper regulations and enforcing the same so as to cover the design and the material with which the boilers are constructed, and also covering the maintenance of boilers by requiring that the attendants should be licensed, all thought as to the limit of pressure has been dropped, and although the use of boilers has enormously increased serious explosions have almost entirely ceased. Dynamite in itself, if properly taken care of, is no more dangerous than a steam boiler, and I believe it is perfectly possible to regulate its use so as to prevent explosions.

I would therefore suggest to the Board that a commission of five experts be appointed by the proper authorities to study this question of explosives, and to draw up the proper regulations of the same. On such a commission the Fire Department, and both manufacturers and users, could be represented; and it also might be well that one of these five be a lawyer, possibly a representative of the office of the Corporation Counsel—so that the regulations when drawn would be in the form of ordinances, or, if necessary, in the form of a bill to be presented at this session of the Legislature.

Very truly yours,

(Signed) WM. BARCLAY PARSONS,

Chief Engineer.

The Board immediately adopted a resolution referring to the Mayor the communication of the Chief Engineer, and a committee of experts was thereupon appointed by the Mayor, which was known as the Mayor's Commission on Explosives. The Chief Engineer of the Board was one of this Commission and the Secretary of the Board acted as its Secretary. Many meetings were held in the office of the Board and a large number of experts were examined. Important ordinances governing the use of explosives within the city limits were suggested, and, on the Mayor's recommendation, adopted by the Board of Aldermen, under a Charter provision, giving the Board of Aldermen power to deal with that subject. As a result, a permanent Municipal Explosives Commission has been appointed by the Mayor, to which body all questions bearing on these matters are now referred.

On March 21 a large section of the rock above the roof of the easterly tunnel under Park avenue caved into the subway excavation, seriously damaging the front foundations and walls of several adjacent buildings. Details of this are given in the Chief Engineer's report. This accident, fortunately, cost no lives.

V. LITIGATION.

March Suit: In June, 1901, James E. March commenced in the Supreme Court an action against the city, the Rapid Transit Board, the contractors, and the Rapid Transit Subway Construction Company, to enjoin the construction and operation of the railroad

in front of his premises, at the corner of New Elm and Spring streets, on the ground that the construction and operation of the railroad, although according to law, would deprive him of alleged rights in the streets without compensation. Mr. Justice Bischoff, at Special Term, denied an application for a temporary injunction, and later Mr. Justice Truax, also at Special Term, denied, without opinion, an application to renew the motion for an injunction, and also denied a motion to enjoin the contractors from entering upon the premises to shore up the building, as it was in danger of falling into the street. The plaintiff appealed to the Appellate Division from these three orders, but the decisions of the lower Court were unanimously affirmed. The action is still pending, the plaintiff not having brought it on for trial. Copies of the opinions of Mr. Justice Bischoff and of the Appellate Division are printed in the APPENDIX. (69 App. Div. 1.)

Underground Road Co. Suit: In July, 1901, a suit was commenced in the United States Circuit Court for the Southern District of New York by the Underground Railroad of the City of New York and the Rapid Transit Underground Railroad Company against the city, The Rapid Transit Board and its members, the contractor, and the Rapid Transit Subway Construction Company, to enjoin the construction and operation of the railroad, and to enjoin the city from making payments to the contractor, on the ground, among others, that to the complainant companies had been earlier granted the exclusive franchise for constructing and operating a railroad along portions of the route. A demurrer was interposed to this complaint on behalf of the Board and the Commissioners, and separate demurrers were interposed on behalf of the other defendants. The demurrers were argued before Judge Hazel, who dismissed the bill of complaint. The complainant companies appealed from this decision to the Supreme Court of the United States, and applied to that Court to advance the appeal for oral argument at an early date. The application was opposed by counsel for the Board and was denied by the court. The appeal has not yet been argued. Judge Hazel's opinion is printed in the APPENDIX. (116 Fed. Rep. 952.)

Barney Taxpayers' Suit: In June an action was commenced in the Supreme Court by Charles T. Barney, the owner of the premises on the northeast corner of Thirty-eighth street and Park avenue, suing as a taxpayer, to enjoin the construction and operation of the railroad under Park avenue from Thirty-second street to Forty-second street, on the ground that its construction and operation as at present located was not within the authority of the Routes and General Plan. Mr. Justice Giegerich, at Special Term, after an elaborate and extended argument by counsel, denied a motion for a temporary injunction, and although denying the motion on other grounds, expressed it to be his opinion that the construction was not within the Routes and General Plan. From this decision no appeal was taken, and the action has not yet been brought on for trial. The opinion of Mr. Justice Giegerich is printed in the APPENDIX. (38 Misc. R. 549.)

Huntington Suit in United States Court: Early in August Mrs. Arabella D. Huntington, the owner of the premises on the southeast corner of Thirty-eighth street and Park avenue, began, in the United States Circuit Court for the Southern District of New York, a suit to enjoin the construction and operation of the railroad in front of her premises, and obtained *ex parte* from Judge Lacombe an order restraining the construction of the railroad at this point. This suit was brought on the theory that Mrs. Huntington was not only an owner abutting on Park avenue, but that she was also the owner in fee of the bed of the avenue, and that as such owner she was being deprived of her property without compensation. After a hearing before Judge Lacombe shortly afterwards a motion for a temporary injunction was denied and the restraining order was vacated. Judge Lacombe also expressed it to be his opinion that the construction was not in accordance with the Routes and General Plan. Before Judge Lacombe's decision, Mr. Barney brought in the same Court a suit similar to that brought by Mrs. Huntington, except that he did not claim to own the bed of Park avenue. Later Judge Lacombe dismissed both these suits on the ground that the Court had no jurisdiction, which enabled the complainants to appeal directly from Judge Lacombe's decision to the Supreme Court of the United

States. Appeals were taken in each case, and in Mr. Barney's case an application was made to the Court to advance the appeal for an oral argument at an early date. This application was denied by the Court; and neither of the appeals have been reached in their order upon the calendar of the Court. Judge Lacombe's opinion is printed in the APPENDIX. (118 Fed. Rep. 683.)

Huntington Taxpayer's Suit: Later in August, Mrs. Huntington brought in the State Supreme Court a second action similar to the first action brought by Mr. Barney. No motion for a temporary injunction was made, and the action has not yet been brought on for trial.

Huntington Abutter's Suit: In October, a third suit was brought by Mrs. Huntington, in the State Supreme Court, for the same relief, on the ground that the construction of the railroad was a nuisance, as it had been done without proper authority. No application was made for a temporary injunction, and the case has not yet been tried.

Barney Abutter's Suit: Early in December, Mr. Barney brought in the State Supreme Court a third action, similar to the third action brought by Mrs. Huntington. Mr. Justice Leventritt denied a motion for a temporary injunction and stated it to be his opinion that the present construction of the railroad is illegal. His opinion is printed in the APPENDIX. (39 Misc. R. 719.)

Fowler "bi-transit" Patent Suit: On January 6, 1900, Charles N. Fowler filed in the Circuit Court of the United States for the Southern District of New York a bill in equity against the Board of Rapid Transit Railroad Commissioners and the City of New York, alleging threatened infringement in the construction of the rapid transit railway of a patent granted November 3, 1896, to Benjamin F. Carpenter, on a so-called Bi-Transit Railway System, and praying for an injunction and damages. The defence of this suit on behalf of the Rapid Transit Commission was conducted by Mr. Timothy D. Merwin, of the firm of Boardman, Platt & Soley—John R. Bennett, Esq., acting as counsel for the City of New York.

The enormous public interests involved made it of vital necessity that the Commission should be authoritatively advised as to its rights at the earliest possible day, so as to avoid interference with the construction of the rapid transit railway system. Inasmuch as this suit, if contested on its merits, would necessarily consume years of time and involve the Commission in the expenditure of many thousands of dollars, even if the claim should ultimately be defeated, counsel for the Commission deemed it his duty to endeavor to dispose of the suit by a demurrer. The counsel for the City of New York concurred in this view, and a joint demurrer was therefore filed against the bill, on the ground of the manifest invalidity of the patent sued upon. This demurrer was argued by Messrs. Merwin and Bennett before Judge Lacombe on May 29, 1901, and the demurrer was sustained in an opinion handed down August 1, 1901, and an order was entered dismissing the bill. The complainant appealed from this decision on March 21, 1902, to the United States Circuit Court of Appeals. The appeal was argued in that Court on January 21, 1903, and Judge Lacombe's decision affirmed in an opinion handed down February 25, 1903. His opinion is printed in the APPENDIX.

This finally disposes of the suit and relieves the Commission of any uncertainty as to its rights, without the long delay and enormous expense which a trial on the merits of the case would have involved. (110 Fed. Rep. 749.)

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS.

A. E. ORR, President.

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APPENDIX I

RAPID TRANSIT COMMISSIONERS

AND

STAFF

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RAPID TRANSIT COMMISSIONERS

NAME	DATE OF ELECTION OR APPOINTMENT	REMARKS
Alexander E. Orr,	Appointed by Act of May 22, 1894. President N. Y. Chamber of Commerce, June 8, 1894. Elected President of the Board, June 8, 1894. Elected member of Board May 11, 1899. Re-elected President May 23, 1899.	Resigned June 8, 1894. Term of office expired May 5, 1899. Now in office.
John H. Starin,	Appointed by Act of May 22, 1894. Elected Vice-President, May 28, 1895.	Now in office.
William Steinway,	Appointed by Act of May 22, 1894.	Died Nov. 30, 1896.
Seth Low,	Appointed by Act of May 22, 1894. Mayor, Jan. 1, 1902.	Resigned June 11, 1896. Now in office.
John Claffin,	Appointed by Act of May 22, 1894. Elected Treasurer May 28, 1895. Elected member of Board Dec. 27, 1901.	Resigned May 11, 1899. Now in office.

RAPID TRANSIT COMMISSIONERS—*Continued*

NAME	DATE OF ELECTION OR APPOINTMENT	REMARKS
Thomas F. Gilroy,	Mayor, June 8, 1894.	Term of office expired Dec. 31, 1894.
Ashbel P. Fitch,	Comptroller, June 8, 1894.	Term of office expired Dec. 31, 1897.
John H. Inman,	Elected June 8, 1894.	Died Nov. 5, 1896.
William L. Strong,	Mayor, January 1, 1896.	Term of office expired Dec. 31, 1897.
Woodbury Langdon,	Elected November 19, 1896.	Now in office.
George L. Rives,	Elected November 19, 1896.	Resigned Dec. 27, 1901.
Charles Stewart Smith,	Elected Dec. 10, 1896.	Now in office.
Robert A. VanWyck,	Mayor, Jan. 1, 1898.	Term of office expired Dec. 31, 1901.
Bird S. Coler,	Comptroller, Jan. 1, 1898.	Term of office expired Dec. 31, 1901.
Morris K. Jesup.	President N. Y. Chamber of Commerce, May 5, 1899.	Now in office.
Edward M. Grout,	Comptroller, Jan. 1, 1902.	Now in office.

STAFF OF THE COMMISSION

NAME	DATE OF ELECTION	REMARKS
Wm. Barclay Parsons,	Chief Engineer, June 18, 1894.	
Henry R. Beckman,	Counsel, June 18, 1894.	Resigned Jan. 1, 1895.
Albert B. Boardman	Counsel, June 18, 1894.	
Messrs. Tracy, Boardman & Platt (Now Messrs. Boardman, Platt & Soley),	Counsel, Jan. 1, 1895.	
Edward M. Shepard,	Counsel, Oct. 1, 1902.	Succeeding Messrs. Parsons, Shepard & Ogden.
Lewis L. Delafield,	Secretary, June 18, 1894.	Resigned June 1, 1899.
Bion L. Burrows,	Secretary, June 1, 1899.	
H. A. D. Hollmann,	Auditor, May 10, 1900.	
James Dolan,	Messenger, June 28, 1894.	

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APPENDIX II

OPINIONS OF COURTS IN SUITS BROUGHT
AGAINST THE BOARD

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SUPREME COURT,

COUNTY OF NEW YORK.

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JAMES E. MARCH,
Plaintiff,

v.

THE CITY OF NEW YORK and others,
Defendants.

SPECIAL TERM.

BISCHOFF, JR., J.—From the allegations of the complaint it is apparent that the work of excavation adjacent to plaintiff's premises, for the purposes of the underground railway, is performed in purported compliance with the statute whereby the construction of the railway was authorized, and no departure from the lawful authority thus given is suggested sufficiently to call for answering averments upon the part of the defendants. So far, therefore, as injury is asserted to arise from the loss of the customary means of access over the street, or from a polluted condition of the air, due to the presence of the excavation, no ground for an injunction is presented, the injury being traced merely to the proper performance of work entailing temporary inconvenience, but prosecuted in the interest of the public under due legislative and municipal authority (*Appington v. City of New York*, 165 N. Y. 222; *Atwater v. Trustees, etc.*, 124 N. Y. 602; *Bates v. Holbrook*, 35 Misc. Rep. 342). The papers afford no basis for the conclusion that the maintenance of this railway under the street, when completed, will, or necessarily should, amount to a use inconsistent with street purposes, and I cannot hold as matter of law that the prosecution of

the work will ultimately impose a burden upon the property owners such as would amount to an unconstitutional encroachment upon their right of property. As to the claim of a right to lateral or subadjacent support, it does not appear that the plaintiff's land, apart from the building, is endangered, and no right to support for the building from adjacent land exists, at least in the absence of some express grant (*Radeloff's Executors v. Mayor*, 4 N. Y. 195), or possibly by prescription under special circumstances (*Dorrity v. Rapp*, 72 N. Y. 309). The allegation of the complaint that the plaintiff is entitled to such support amounts to a conclusion of law not borne out by the facts pleaded, and is unsubstantiated by any matter contained in the moving affidavits. Therefore no right is set forth which can properly call for the issuance of an injunction upon this head. It being alleged that the fee of the street is in the defendant the City of New York, and the work complained of being in pursuance of such authority as the City had it in its power to give, under the contract, no trespass is disclosed in the destruction of the vault maintained, presumptively, by virtue of a license from the City. As matter of law the plaintiff could have no right to possession of this portion of the street, as against the City, and as matter of fact the only reasonable inference from the averment is that any existing license for the use of the vault was revoked by the municipal authorities when the contract for this work was entered into. It is alleged directly, however, that the defendants threaten to enter upon plaintiff's premises for the purposes of underpinning his building, and to the extent that an intended trespass is thus disclosed a case for an injunction is presented, *prima facie*, should the plaintiff insist upon obtaining an order which cannot, under the circumstances, be of apparent benefit to him. In accordance with the understanding at the argument, leave will be given to defendants to submit answering affidavits upon the question of this threatened trespass, the motion in other respects being denied, or, should the plaintiff so elect, an order denying the motion may be presented with a recital of the withdrawal of the claim to an injunction as to the threatened entry for the purpose of protecting the building.

SUPREME COURT, APPELLATE DIVISION,

FIRST DEPARTMENT.

CHAS. H. VAN BRUNT, P. J.

MORGAN J. O'BRIEN,

GEORGE L. INGRAHAM,

EDWARD W. HATCH,

} JJ.

JAMES E. MARCH,

Appellant,

v.

THE CITY OF NEW YORK et al.,

Respondents.

JANUARY, 1902.

Appeal from orders denying motions for injunction *pendente lite*.

Mr. WILLIAM P. BURR, for appellant; THEODORE CONNOLY, for the City; EDWARD M. SHEPARD, for Commissioners; DELANCEY NICOLL, for Contractors.

PER CURIAM.—The action was brought to restrain the defendants from entering upon plaintiff's premises, on the northeast corner of Elm and Spring streets, and underpinning his buildings, and from making excavations in the streets in front thereof for their underground rapid transit railroad tunnel and station. It is conceded that the City owns the fee in the streets, that the Board of Rapid Transit Railroad Commissioners was empowered by the Legislature to enter into the contract under which the work is

being done for and on behalf of the City, and that the Rapid Transit Act (Laws of 1891, chap. 4 as amended) authorized the Board to acquire any real estate or appurtenant easements necessary to be acquired for the purpose of constructing the railroad. Furthermore, no complaint is made that the contractors engaged in the work are doing it improperly or carelessly; but the plaintiff stands squarely on the position that as an abutting property owner he has certain easements in the street which are being interfered with and destroyed. He insists that the failure of the Rapid Transit Act to provide compensation to him for the taking of these easements renders it unconstitutional, and that there is nothing in the act which, without making compensation, entitled the defendants to invade his premises and remove the soil from under his buildings and foundation walls for the purpose of underpinning the same, thereby endangering them and destroying his cellars and subcellars.

We desire to add nothing to what was stated in the opinion of Judge Bischoff on the original motion, who decided these various contentions against the plaintiff except with regard to the right of the defendants to enter the premises for the purpose of underpinning the buildings, and who said that to that extent "a case for an injunction is presented *prima facie*." Leave was then given to the defendants, however, to submit affidavits upon this matter, and the subject was thereafter considered by another judge, when it appeared that if underpinning were not provided, it was probable that the buildings would tumble into the excavation, thus causing not only the destruction of the buildings but danger to the public. Considering the depth to which the defendants had to excavate, they were bound under the law to ask the consent of the plaintiff and at their own expense to shore up his buildings. The plaintiff, however, resting on his strict legal rights, refused such consent and, therefore, it was evident that without injury to the property and danger to the public the work could not proceed unless the defendants placed underpinning beneath the buildings.

Upon these facts we think that they were justified in resorting to that course in order to prevent the consequences that would otherwise ensue; and if to accomplish this object they have made an unauthorized entry on plaintiff's premises and have damaged his cellars and sub-cellars, they are liable therefor in damages. As

the plaintiff may thus recover compensation to the extent he can show he has been damaged, we do not think, under the peculiar circumstances presented, though there may be a technical trespass (which we do not decide, but leave to be determined on the trial), that the defendants should be enjoined in the meantime from carrying on what is conceded to be an important public work.

The order accordingly should be affirmed with costs. (69 App. Div. 1.)

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CIRCUIT COURT OF THE UNITED STATES,

FOR THE SOUTHERN DISTRICT OF NEW YORK.

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THE UNDERGROUND RAILROAD OF THE
CITY OF NEW YORK and the Rapid
Transit Underground Railroad
Company,

Complainants,

against

THE CITY OF NEW YORK and others,

Defendants.

IN EQUITY.

JAMES M. FISK, for complainants.

ROGER FOSTER, of counsel.

STRONG & CADWALADER, for Rapid Transit Subway Construction
Company.

GEORGE W. WICKERSHAM, Esq., for defendants.

NICOLL, ANABLE & LINDSAY, for John B. McDonald.

BOARDMAN, PLATT & SOLEY.

PARSONS, SHEPARD & OGDEN, for defendants Alexander E. Orr
et al.

EDWARD M. SHEPARD, of counsel.

HAZEL, D. J.—By this suit the complainants, domestic corporations organized under the laws of the State of New York, seek relief from alleged unauthorized acts of the defendants, the City of New York, certain municipal officers, rapid transit commissioners and contractors engaged in the construction of an underground railway, and subway in the City of New York. For the purpose of convenience and brevity, the defendants are hereafter designated as

municipal authorities, commissioners and contractors. The bill in form seeks to enjoin municipal officers and commissioners from issuing bonds of the City of New York to pay for the work done in the construction of the subway or underground railway now in course of completion, from paying any money to the contractors under color of authority of the Rapid Transit Act, so-called, Chapter 4, Laws 1891, as subsequently amended, and to restrain the contractors from continuing the construction of the road upon the route specified on maps filed by complainants and their predecessors. The defendants demur separately to the bill of complaint on the ground, First, That the subject matter in dispute does not arise under the constitution and laws of the United States, and, therefore, the court is without jurisdiction; Second, That the court is also without jurisdiction because of the citizenship of the parties; Third, Want of equity appearing on the face of the bill; Fourth, Multifariousness and laches. The demurrants admit the following facts, to wit: The Central Tunnel Railway Company was organized on March 26, 1881, under the General Railroad Law of the State of New York (Laws 1850, C. 140; Laws 1880, C. 583), for the purpose of constructing and maintaining a railroad for the use of the public in the conveyance of persons in the City of New York. The articles of association specifically state the length of the railroad and the streets to and under which it was intended to construct said road. On March 28, 1882, a map and profile of the route adopted was filed as required by law. This company failed to obtain the consent of the municipal authorities and of the necessary property owners, and, therefore, on February 2, 1883, an application was made in its behalf to the general term of the supreme court for the First department, for the appointment of commissioners, pursuant to the Tunnel Law of 1880, Chapter 582, to determine whether and in what manner such railroad ought to be built. Commissioners were appointed. Two vacancies in the commission occurred by resignation and declination to act. Other commissioners were appointed, one of whom also declined. Another application was made to the court to fill such vacancy, which application, however, was never granted. It does not appear when the last application was made, but it may be assumed from the general allegations of the bill that it was very soon after the ap-

pointment of the commissioners following the first application. Neither the general term nor its successor, the appellate division of the supreme court, First department, has ever acted upon the latter application. No renewal of such application has been made to the Appellate Division, and nothing further was done by this corporation or its successors toward the appointment of commissioners. The New York and New Jersey Tunnel Railway Company and the Terminal Underground Railway Company were organized on January 2, 1883, and March 25, 1886, respectively, under the General Railroad Law of 1850, as amended by Chapter 583 of the Laws of 1880. Subsequently on August 21, 1896, these three railroad companies were merged and consolidated into the Underground Railroad of the City of New York, one of complainants, which was organized and incorporated on October 2, 1896. The latter corporation paid a percentage tax of \$181.00 on its capital stock, as required by law upon filing its certificate of incorporation. A map and profile of its route were duly filed June 10, 1897, and it is claimed that it succeeded to all the rights and privileges of its predecessors. The complainant Rapid Transit Underground Railroad Company was incorporated on April 9, 1897, pursuant to Chapter 39 of the General Laws, to construct an underground railway in the City of New York. On October 11, 1897, it filed a map and profile of the route over and under which it was intended to operate. On April 29, 1897, this corporation, which is a taxpayer, entered into an agreement with the Underground Railroad by which it obtained a leasehold right to the rights and franchises of the underground railroad. The bill avers broadly that by these proceedings the Rapid Transit Underground Railway acquired the exclusive franchises to build and operate a railroad and tunnel over the route described by the map and profiles theretofore filed. By an act of the legislature, passed in 1891, amended by Chapter 752, Laws of 1894, and already mentioned as the rapid transit act, it is provided that a board of rapid transit railroad commissioners shall be created, who among other things are empowered to fill vacancies among their number and to construct an underground railroad in the City of New York, provided the qualified electors of that city shall favor such construction. The act further empowers the commissioners to determine the route and general plan of construction,

and provides that their plans and conclusions shall be submitted to the common council for its consent and approval; that in case consents of the property owners along the line of route upon which the approval of the municipal authorities had been given cannot be obtained, an application shall be made by the commissioners to the appellate division of the supreme court for authority to construct along the proposed route. Such an application was made and authority obtained. Subsequently on February 24, 1900, the defendants, the City of New York, municipal authorities and commissioners, entered into a contract with the defendants, contractors, to construct a road over the route described by the maps and profiles heretofore filed by the complainants and their predecessors. The bill, which is very lengthy, then proceeds to recite in detail the proceedings by which defendants claim to obtain the right to construct an underground railroad in the City of New York pursuant to the authority of the rapid transit act. It is averred that the rapid transit act is an infringement of the fourteenth amendment to the constitution of the United States, because it takes the property of the complainants for private use without due process of law, and is, therefore, unconstitutional. It is also averred in the bill that the determination of the commissioners appointed under the rapid transit act to construct an underground railroad upon the routes over which it is claimed complainants have the right to construct a road, together with the consent of the local authorities and the action of the appellate division of the supreme court, in lieu of the consent of property owners bounded upon such route, in effect gave consent to complainants to construct such road, and the legal effect of such acts must be construed as a confirmation of complainants' franchise rights and inure wholly to their benefit.

Does the bill disclose from the foregoing statement of facts a cause of action which is cognizable by this tribunal? All parties are residents of the State of New York. To give the Court jurisdiction there must, therefore, be involved a federal question besides the necessary jurisdictional amount. How does the federal question arise? Have the complainants by virtue of the various acts of incorporation set forth in the bill together with the steps which have been taken by their predecessors, as well as themselves, acquired any rights as against the defendants which bring them within the

protection of the federal constitution or other national enactments? How could such privileges and immunities accrue to the complainants as would entitle them here to equitable relief? Clearly, the complainants must be vested with some contract rights which have been impaired by legislative action on the part of the State of New York, thus bringing them within the protection of article 1, §10 of the federal constitution, or they must have been deprived by the State of New York of some property right without due process of law, or be denied equal protection of the laws, and, therefore, may invoke the fourteenth amendment of the constitution to their assistance. As was said in *City of New Orleans v. New Orleans Water Works Co.*, 142 U. S. 88, 12 Sup. Ct. 146. 35 L. Ed. 943:

“Before we can be asked to determine whether a statute has impaired the obligation of a contract, it should appear that there was a legal contract subject to impairment, and some ground to believe that it has been impaired; and that to constitute a violation of the provision against depriving any person of his property without due process of law, it should appear that such person has a property in the particular thing of which he is alleged to have been deprived.”

The complainants cannot by mere allegation that such questions are before the Court for decision vest the court with jurisdiction over a controversy when it clearly appears that no federal question is involved. *McCain v. City of Des Moines*, 174 U. S. 168, 19 Sup. Ct. 644, 43 L. Ed. 936. Complainants claim that by statutory enactment they obtained an exclusive franchise to construct an underground railroad and that fixed and positive contractual relations were established which have been impaired by subsequent legislative and corporate action; that there is danger that complainants will be deprived of vested property rights without due process of law. When a question arising under the constitution or laws of the United States is necessarily involved, the jurisdiction of the federal courts may be properly invoked to redress the wrong and afford such reparable aid as equity and good conscience require. The averments of the bill are framed to that end. No citation of authorities is needed declarative of the principle that a franchise right obtained from a sovereign power for the purpose

of constructing a railroad or to acquire lands for use by a corporation for the purpose for which it is created is property or its equivalent, a grant of privileges or immunities. Such property rights when obtained may be exercised undisturbed or may be converted into tangible benefits at the option of the owner. The object and purpose attained by the formation of an association often lead to liberal concessions by the sovereignty from motives of public policy. It is presumed that the general public will receive substantial benefits by the state's munificence. From the very nature of the contemplated project the public is expected to receive the benefit either in health, convenience or welfare and the gratuitous generosity of the sovereign power is invoked to encourage the exploitation of vast commercial enterprises for the general good. It must follow that any legislative grant or procurement within the scope and power of the legislative authority when consummated becomes authoritatively a vested property right. The state after the contract is completed may do no act in restraint or impairment of the contract rights and immunities which it gave. To restrict, vary or violate any such contractual rights and obligations which may have arisen is forbidden, as we have already seen, by article 1, §10, subd. 1, of the constitution of the United States, which prohibits the enactment of any law by a state impairing the obligations of contracts. *Adirondack Ry. Co. v. People of State New York*, 176 U. S. 335, 20 Sup. Ct. 460, 44 L. Ed. 492. The fourteenth amendment forbids a state to deprive any person of life, liberty or property without due process of law. Are any property rights shown by the bill to have been improperly divested from complainant without respect to this constitutional provision? It must be ascertained at the outset whether the complainants obtained any vested property rights pursuant to a legal contract with the state. If contractual obligations became vested by the completed acts of the parties, their subsequent impairment by the respondent may be shown as a basis for claiming jurisdiction in the federal courts. *Cooley Const. Lim.* p. 54. It is contended for the demurrants that the allegations of the bill clearly show that the complainants had no contract with the state whatever which has been or could be impaired by the acts complained of. I have carefully examined the authorities upon which complainants rely to establish the existence of such contract-

ual relations between it and the state, and as a result thereof I am of opinion that the demurrants' contention must prevail. It is based on sound logic, good sense and substantive law. The incorporation of the Central Tunnel Railway Company, a predecessor of complainant, under General Laws of 1850, was authorized by the constitution of the State of New York, which vested the state legislature with power to pass general laws for the formation of corporations to construct street railroads. The provision of the constitution authorizes the legislature to enact general laws for the formation of corporations to lay down railroad tracks upon the condition, among others, that the consent of the local authorities be first obtained. In the case of *People v. O'Brien*, 111 N. Y. 30, 18 N. E. 693, 2 L. R. A. 255, 7 Am. St. Rep. 684, Chief Justice Ruger says:

"This right under the constitution could be acquired only from the city authorities, and they could grant or refuse it at their pleasure. The constitution not only made the consent of the municipal authorities indispensable to the creation of such a right, but, by implication, conferred authority upon them to grant the consent, upon such terms and conditions as they chose to impose, and upon the corporation the right to acquire it by purchase."

The constitution of the state further provided that when the required consents of property owners cannot be obtained, the general term of the supreme court might, upon application, appoint three commissioners who shall determine after hearing of all parties interested whether such road ought to be constructed. This right under the constitution, therefore, could only be acquired by strictly complying with the provisions referred to. No greater right was imparted to the corporation by its articles of association, and subsequent filing of maps and profiles, than the permissive right to obtain consents of property owners and of the municipality affected. To affect a substantive contract between the state and a corporation organized for the purpose of constructing a railroad requires a meeting of minds of the interested and essential parties of the contract. The constitution and the statutes of the state in unequivocal language have indicated who must be regarded as inter-

ested in such contractual obligations. The mere act of filing maps and profiles creates no lien in favor of a street surface railway as against the owner of adjacent property,—at least not until the legal authorities whose consent is essential have signified their complete acquiescence and assent to the construction of the railroad. Filing of maps is simply notice of intention as to the route and property which the road proposes to take. *People v. Adirondack Ry. Co.*, 160 N. Y. 225, 54 N. E. 689. In the case at bar, the attempt to obtain the consents of owners of property along the proposed route, as well as the assent of the municipal authorities, was ineffectual. This, I think, must be regarded as equivalent to a refusal by the authorities to bargain or to assent to the immunities and property rights which otherwise would have been acquired. The consent of the municipal authorities and the approval by the appellate division of the determination of the commissioners to construct a road pursuant to the rapid transit act cannot inure to the benefit of complainants. It was decided by the general term of the supreme court, First department, in *Re New York Dist. Ry. Co.*, 42 Hun 621, that section 1, C. 582, Laws 1880, amendment to the Laws of 1850, which provided that the determination of commissioners confirmed by the court may be taken in lieu of the consent both of municipal authorities and property owners, is unconstitutional; that the consent of the municipality must be obtained in any event. This case was affirmed by the state court of appeals, 107 N. Y. 42, 14 N. E. 187. This decision leads to the conclusion that because of it, and for no other reason, the general term failed to act upon the application of complainants' predecessor, that the vacancy upon the commission theretofore appointed be filled by the court. The complainants cannot, therefore, claim that any rights remain to them because of delay caused by inaction of judicial authority. Neither the complainants nor their predecessors had obtained either the consent of the municipal authorities or of property owners abutting upon the line of route. The consents required by the constitution and laws of the state are conditions precedent to a valid contract, and no right of franchise or immunities may be granted or obtained until such conditions are complied with. Filing of plans and profiles by any of the complainants or their predecessors resulted in the acquisition of no vested rights that could be impaired by the acts

admitted by the demurrers. Complainants had merely taken preliminary steps in the effort to obtain such vested rights. In *re Rochester Electric Ry. Co.*, 123 N. Y. 351, 25 N. E. 381; In *re Thirty-fourth St. R. Co.*, 102 N. Y. 343, 7 N. E. 172. The language of Justice Gray in the opinion of the court rendered in the case first cited may with propriety be applied. He says:

“Sufficient vitality and strength to go on with and to construct a railroad do not exist in the newly-formed corporation, until infused by the consents of the local authorities and property owners. Until that moment, when the company can assert that the statutory conditions of its right to be and to do are fulfilled, it cannot strictly, nor justly, be said that it is in a position legally to deprive the land owner of his property. By organization under the act it has become a corporation, but with no authority as yet to construct and operate a railroad upon a street or highway. Its right to the exercise of that franchise is still inchoate and does not become a vested right, until after the consents specified by the statute have been obtained. It may be a corporation, but it has no power to take a step in the direction of occupying the street or highway, because it is, in effect, inhibited by the condition of its charter from doing so, while the consents to the appropriation of the street or highway to railroad uses are lacking.”

In the latter case the right of the railroad company was subject to three precedent conditions. First, the consent of the local authorities; second, consent of property owners, or in lieu thereof the determination and approval of the commissioners in its favor; third, the consent of the companies having coincident routes. The court held that these conditions must be performed before any right to proceed with the construction of the road could be exercised. It is, therefore, clear that the municipal authorities have the determining power to grant the right to tear up the streets and to take the property of the city for the construction of a street railroad. The choice of responsible parties is with the municipality. Obviously in no sense can the consents of municipal authorities obtained under the rapid transit act of 1891, and amendments of 1894, inure to complainants' benefit. The authorities cited by counsel for com-

plainants do not apply. They refer for most part to railroads constructed without the limits of a municipality, and where the preliminary steps to secure vested rights differ from those required in a case like the present. He asserts with great zeal and earnestness that complainants and their predecessors in good faith filed maps and profiles, necessarily expended \$100,000 towards the construction of the road, and applied to the general term for the appointment of commissioners, and having begun construction of the road thereby upon the subsequent consent of the municipal authorities under the rapid transit act acquired vested property rights; that in legal effect such action was a consummation of complainants' contract. I am unable to subscribe to that theory. It is a fallacious assertion in the light of the statutes of the state and of the authorities construing them. The determination of the commissioners appointed under the rapid transit act, and the rights acquired by individuals thereunder, can in no manner be viewed as an act in completion of what complainants' predecessors undertook to accomplish 20 years prior to that determination and failed. The application to the general term for the appointment of commissioners on February 2, 1883, was without force. It was prematurely made. None of the conditions, as we have seen, upon which the right to apply was based had been performed. The consent of the local authorities, which was an essential element, could not be shown upon the application. *People v. Newton*, 58 N. Y. Super. Ct. 439, 11 N. Y. Supp. 782; *In re Long Island R. Co.*, 45 N. Y. 364; *Schaper v. Railway Co.*, 4 N. Y. St. Rep. 860; *In re Rochester Electric Ry. Co.*, 123 N. Y. 351, 25 N. E. 381; *Suburban Rapid Transit Company v. City of New York*, 128 N. Y. 510, 28 N. E. 525. Moreover, the rights of complainants' predecessors obtained by their charters lapsed and were abrogated by their failure to comply with the provisions of section 47 of the act of 1850, as amended by chapter 775 of the Laws of 1867. Such failure has uniformly been held to operate as a self-executory forfeiture of the charter of a corporation. *In re Brooklyn W. & N. Ry. Co.*, 72 N. Y. 245; *Brooklyn Steam Transit Co. v. City of Brooklyn*, 78 N. Y. 524. These cases seem to be authoritative of the abandonment of the project by the companies which had obtained the permissive right to construct an underground railroad. No contract with the state has

been established which is threatened with impairment. Never having had a franchise, never having availed themselves of any permissive rights flowing from their incorporation, they cannot now be heard to complain. The permissive right of complainant Rapid Transit Underground Railway Company, which, as already stated, was incorporated April 9, 1897, to construct an underground road in the City of New York, has not expired. The acts of defendants, commissioners, under the rapid transit act, cannot be construed to confer upon complainant any right or authority to construct an underground railroad specifically mentioned in the act. By the provisions of the rapid transit act, the privilege and franchise is to be sold at public auction to a corporation organized and existing under that act. The averred unconstitutionality of the rapid transit act and the invalidity of the contract entered into by the defendants for the many reasons assigned in the bill seem to be sufficiently answered by the decision of the court of appeals of the state of New York in *Sun Printing & Publishing Assn. v. City of New York*, 152 N. Y. 257, 46 N. E. 499, 37 L. R. A. 788. The constitutionality of the rapid transit act is there established. The decision being that of the highest tribunal of the state is controlling upon this court. *Adams Express Co. v. Ohio*, 165 U. S. 219, 17 Sup. Ct. 305, 41 L. Ed. 683. It falls within the general rule that the construction of the state courts of last resort, of state constitutions, and statutes will ordinarily be accepted by the courts of the United States as controlling. Innumerable reasons are assigned by the bill to show that the municipality and the commissioners improperly contracted for the construction of the road. Their good faith is attacked. None of these reasons, however, justify federal interference by virtue of the fourteenth amendment to the constitution. *French v. Paving Co.*, 181 U. S. 324, 21 Sup. Ct. 625, 45 L. Ed. 879. A tax of one-eighth per cent. upon the amount of capital required upon organization (Laws 1886, C. 143, as amended by Laws 1892, C. 668) can have no bearing upon the question at issue. That was a tax for the privilege of organizing a corporation for purposes specified in its charter. Payment of the tax can be given no other effect.

A further point is made by complainants that the unconstitutionality of the rapid transit act is attested by reason of provisions

which are claimed to be a denial to the complainant of the equal protection of the laws. (Const. U. S. 14th Amend.) The rapid transit act does not arbitrarily authorize the commissioners to contract with the contractors to the exclusion of others. As before stated the act in terms authorizes the rapid transit board to contract

“with any person, firm or corporation which in the opinion of the board shall be best qualified to fulfill and carry out such contract, for the construction of such road or roads upon the routes and in accordance with the plans and specifications so adopted, for such sum or sums of money, to be raised and paid out of the treasury of said city, as hereinafter provided, and on such terms and conditions not inconsistent with the aforesaid plans and specifications as said board shall determine to be best for the public interest.” (Section 34.)

No particular person, class of persons or corporations is excluded from the privilege of contracting for the construction and operation of the proposed railroad. All may compete. Therefore, the state has not denied to complainant the equal protection of the laws under the fourteenth amendment. *Kentucky R. R. Tax Case*, 115 U. S. 321, 6 Sup. Ct. 57, 29 L. Ed. 414; *Tinsley v. Anderson*, 171 U. S. 101, 18 Sup. Ct. 805, 43 L. Ed. 91. Other more extended discussion of questions presented would serve no beneficial purpose. In the view taken no federal question is involved which entitles the complainants to redress in the courts of the United States. The demurrers of the defendants on the ground of want of jurisdiction are sustained. The complaint is dismissed without costs. (116 Fed. Rep. 952.)

CIRCUIT COURT OF THE UNITED STATES,

FOR THE SOUTHERN DISTRICT OF NEW YORK.

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CHARLES N. FOWLER,

Complainant,

against

THE CITY OF NEW YORK and others,

Defendants.

IN EQUITY.

Suit for infringement of letters patent No. 570,451, issued November 3, 1896, to Benjamin F. Carpenter, for what is called a "Bitransit Railway System." On demurrer to bill.

TIMOTHY D. MERWIN and JOHN R. BENNETT, for demurrer.

WILLIAM W. DODGE, opposed.

LACOMBE, Circuit Judge.—The patentee points out in the specifications that when in any system of transit there is but one track with turnouts, or two tracks only in one or adjacent streets,—one track for cars running in one direction, the other for cars running in an opposite or returning direction,—but one kind of traffic can be maintained, either rapid trains, stopping at long intervals, or slow trains, stopping at shorter intervals. A mixed service on such a road is secured by running the slow trains on sidings, and thus clearing the tracks for an occasional fast train, which is unsatisfactory and dangerous. The remedy he suggests is to use four tracks, two for express trains running in opposite directions, and two for local trains running in opposite directions, with local stations at frequent intervals and transfer stations at less frequent intervals, where the express trains can receive and deliver passengers from or to the local trains; the transfer stations to be located between the express and local tracks, being thus "island stations," which the

specification asserts to be an old variety of station. The patentee further explains that if there is a full ten-car train at one side of the platform, and a two-car train at the other, and all of the passengers of the first wish to get on the second, there will be a rush, and only one-fifth of the passengers can be accommodated. This he suggests correcting by using partitions on the platforms, thus dividing them into sections appropriate for the travel to be handled. Further subdivisions of these sections are also suggested, if required, the use of siding gates and of staircases is recommended, and "loops" connecting up and down tracks, so as to avoid running trains over the whole length of the road when there is greater congestion in part of it. The complaint is in the usual form, and contains the phrase, "which said letters patent, or exemplified copy thereof, your orator will produce, as your honors shall direct." Defendants demur. Upon the question whether on a bill thus phrased the court will on demurrer look into the patent, to see if it is valid on its face, there are conflicting decisions in this circuit. Warner Bros. Co. v. Warren-Featherbone Co. (C. C.), 97 Fed. 604; Lumber Co. v. Maurer (C. C.), 44 Fed. 618. It seems to be the better practice, as certainly it is the simpler, more expeditious, and more economical, to consider the patent as if it were set forth in the bill.

Upon investigation, and after several attempts to write an opinion which would express more compactly than does the patent itself its utter lack of patentable invention, it seems better to leave that document to speak for itself. The patentee has prepared a most elaborate and careful specification, which sets forth with great clearness precisely what it is which he contends he has contributed to the art. No opinion could fairly state the case presented without embodying everything which goes to make up what the patentee calls his "Bitransit Railway System"; and when that is done, really there is nothing left to say. The demurrer is sustained, with costs. (110 Fed. Rep. 749.)

SUPREME COURT,

COUNTY OF NEW YORK.

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CHARLES T. BARNEY,
Plaintiff,

v.

THE BOARD OF RAPID TRANSIT RAILROAD
COMMISSIONERS and others,
Defendants.

SPECIAL TERM.

By GIEGERICH, J.—Motion for an injunction *pendente lite* to restrain the further construction of the rapid transit tunnel under Park avenue, in the Borough of Manhattan, New York City, in an action brought by the plaintiff as a taxpayer within the provisions of chapter 531 of the Laws of 1881 and amendatory acts.

The gravamen of the action is the alleged unlawful act of the defendants in so directing the construction of the rapid transit tunnel under Park avenue, between Thirty-fourth and Forty-second streets, that the easterly wall of the tunnel is made to follow a line distant only seven feet from the building or house line of the street, it being claimed that in the plan of construction adopted there is a substantial departure from the maps and descriptions prepared by the board of rapid transit commissioners, in accordance with the statute which created their powers, the legality of their acts in causing the building of the tunnel being dependent upon their following the scheme of construction outlined or described in these maps and descriptions, styled for the purposes of the case "routes and general plan." It appears that the tunnel at this point was delineated by the drawings, which formed a part of the routes and general plan as under the centre of the street with its easterly wall distant some thirty-seven

feet from the building or house line. If these drawings with their attendant description were to control the method of construction, then the present method is unlawful, because of the very substantial divergence in plan which has resulted. The statute has provided the means for legalizing any change of plan which involves a substantial divergence from the original scheme of construction (Rapid Transit Act, Laws of 1895, chap. 519, §33), and if the present structure is unlawful the illegality exists simply because the proper steps have not been taken, not because the defendants' acts are in any way condemned by public policy. It may be that before this action is brought to trial any illegality which exists will be removed and, for other reasons to be stated, the right of the plaintiff to a preliminary injunction does not depend upon the mere fact that there has been a substantial departure from the authorized plan in the building of this tunnel. Upon the question of the present legality of the structure, it is contended by the defendants that the construction, as practically undertaken, is in accordance with the "routes and general plan," the argument being that the proposed line of the tunnel under Park avenue at this point was necessarily subject to such modification as might be found essential for making "suitable tracks and connections from the portion of the route near the corner of Park avenue and Forty-second street to the yard and tracks of the Grand Central Station," as set forth in the "routes and general plan." It has been proven by the affidavits of experts that, as a matter of engineering science, the curve and depression of the tracks for the making of suitable connections with the tracks of the Grand Central Station call for a construction of the tunnel from Thirty-second street or Thirty-fourth street to Forty-second street, as at present in process, and the claim is that the delineation of a different line of the route, as found in the drawings, must give way to whatever was involved in the making of these "suitable connections." I do not think that such extreme flexibility of interpretation of the "routes and general plan" can be resorted to. The purpose of the statute, in calling for a proposed plan, is expressed quite clearly, to wit: "Such general plan shall show the general mode of operation and contain such details as to manner of construction as may be necessary to show the extent to which any street, avenue or other public place is to be encroached upon and the property abutting

thereon affected." These necessary details the "routes and general plan" undertook to show for the advisement of all persons interested, and in order that intelligent action might be taken by them to conserve their best interests in the subsequent proceedings for the confirmation and approval of the plan. Taking the words used in the "routes and general plan" with the plans or drawings to which they referred, no person could be expected to apprehend that the fixed position of the tunnel, as under the central portion of the street was subject to such a change as would bring it for about ten blocks to a point thirty feet nearer the building or house line than was indicated, merely because "suitable connections" were to be made near Forty-second street. A civil engineer might have found that something was omitted or that there was a variance between the plan, which showed no means of making connections, and the specifications which mentioned the proposed connections, but a layman, for whose advisement the "routes and general plan" had been prepared under the statute, could properly assume that, in some way best known to engineering science, these "suitable connections" were to be made from a tunnel under the middle of the street. Certainly he could rely upon the general proposition that the scientific construction of a railway, with the necessary curves for the approach toward a given point, does not depend upon guesswork or chance, and I think, therefore, that no reasonable interpretation of the "routes and general plan" could afford room for justifying the extraordinary change in the position of the tunnel, as constructed, from the line described in the lawfully approved plan of construction as to this particular locality. The fact being found that the work of building the tunnel at the point in question is prosecuted without legal authority, there is, technically, support for the plaintiff's action which is directed against the expenditure of public funds for an unlawful purpose, but upon the facts disclosed it is perfectly clear that the remedy sought by way of an injunction is no remedy and that to grant so-called "relief" in this form would be preposterous. The work of construction has advanced so far that the cost of completing it will about equal the necessary expense which must be incurred in properly refilling it, if abandoned. To enjoin the further construction must involve the requirement, by mandatory injunction, that the part excavated be restored for the safety of the

public, and this condition of safety, according to the proof and without actual dispute, may as readily be secured by completing the work as it stands. Abandonment of the tunnel in question, the easterly one, carries with it the city's obligation to incur the vast expense of the construction of another tunnel farther west, and the actual result of the injunction, founded upon this technical cause of action in behalf of a taxpayer, would be to put the city, and so its taxpayers, to an enormous aggregate loss. In the case of *Rogers v. O'Brien*, 153 N. Y., 357, the Court of Appeals construed the Taxpayer's Act adversely to the contention that a threatened illegal act of the municipality was alone sufficient to support an injunction at the suit of a taxpayer where an inequity would result if the relief was granted, and I find in this authority ample support for the proposition that in such a case as is presented by the papers before me, where the right to relief is founded upon a literal construction of the statute, and is contrary to the justice of the case as well as to the interest of all persons whom the decision could affect, the injunction should be withheld. Motion denied, with \$10 costs to each of the defendants separately appearing. (38 Misc. Rep. 549.)

CIRCUIT COURT OF THE UNITED STATES,

FOR THE SOUTHERN DISTRICT OF NEW YORK.

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ARABELLA D. HUNTINGTON,

Plaintiff,

v.

CITY OF NEW YORK et al.,

Defendants.

IN EQUITY.

On motion for preliminary injunction.

ARTHUR H. MASTEN and MAXWELL EVARTS, for the motion.

EDWARD M. SHEPARD and DELANCEY NICOLL, opposed.

LACOMBE, Circuit Judge.—This suit is brought to enjoin the defendants from proceeding with the construction of the so-called "Rapid Transit Railroad" in front of complainant's premises on Park avenue, southeast corner of Thirty-eighth street, "until such time as the city shall have obtained the fee in said avenue;" and, in the event of the city's obtaining such fee, then from constructing such railroad otherwise than in accordance with the route and general plan heretofore approved by the local authorities and by the state court, undertaking under the statute to give consent in lieu of the consent of abutting owners.

The rapid transit act (chapter 4, Laws N. Y. 1891, as amended Laws N. Y. 1895, c. 519) provides that the general plan, which, with a statement of the route or routes, is to be submitted for approval, shall show not only the general mode of operation, but also "such details as to the manner of construction as may be necessary to show the extent to which any street, avenue, or other public place is to be encroached upon, and the property abutting thereon af-

fectcd." Once approved, no change is to be made in the plans without the further consent and authorization of the local authorities and of the abutting owners, or, in lieu thereof, of the state court.

The complainant's brief thus epitomizes the "route and general plan," which was duly approved, and under which alone, under the statute, the commissioners have authority to construct:

"They provided that the proposed railroad should consist of four parallel tracks and should run under Park avenue; that, with certain exceptions, not now material, the tracks should in all cases be placed in tunnels, and that the said tracks, wherever passing over or under the street, should be placed over or under the central part of the street; that under Park avenue the width of the tunnel should be fifty feet, with a permissible width of sixty-five feet; that the roof of the tunnel should be as near to the surface of the street as street conditions and grades would permit. Certain drawings, known as 'Drawings 1-60,' illustrative of said 'details of construction,' were incorporated into the said general plan as a part thereof. According to the drawings so adopted, it appeared that under Park avenue at the point in question there was to be a single tunnel containing four tracks, that the center line of the said tunnel was to be under the center line of Park avenue, and that the extreme width of excavation required was to be 65 feet or thereabouts, thus bringing the exterior surface of the easterly wall of such tunnel to about 37 feet 6 inches from the building line of the houses on the east side of Park avenue."

Inspection of the record shows that below the existing tunnel of the existing street railroad there were to be three tunnels, the central one holding two tracks, and the eastern and western tunnels one track each. They were to be located centrally, and within the space of 65 feet, above indicated. The general plan further provided as follows:

"The route should include suitable tracks and connections from the portion of the route near the corner of Park avenue and Forty-second street to the yard and tracks of the Grand Central Station. All of the tracks and connections last mentioned shall be under Park avenue and Forty-second street and private property to be acquired. * * * The tracks wherever passing over or under the street shall be placed over or under the central part of the street, except that no tunnel or viaduct, or any wall or part thereof, under

or along a street, shall, except at the stations, station approaches, curves, and at places of access to subsurface structures, as hereinafter provided, be within a distance of five feet of the exterior line or side of the street. * * * Adjacent tracks shall be connected by necessary and suitable switches and connections, and an additional track for siding accommodation may be constructed, not to exceed in length one-quarter of a mile for each mile of roadway, but provided always that the side of the tunnel shall not, by the enlargement of the tunnel for that purpose, be brought within five feet of the exterior line or side of the street."

The work now being prosecuted at the place in question consists of two tunnels beneath the existing street railroad tunnel. The westerly tunnel is substantially in accord with the general plan as to encroachment upon the avenue and effect upon abutting property. Its westerly line is but 5 feet west of the westerly line shown in the drawing. The easterly tunnel is wholly outside of the 65-foot central strip there shown. Its westerly line lies east of the easterly line of the original strip, and its easterly line is about 7 feet from the building line of the houses on the east side of Park avenue. It encroaches on Park avenue to an extent not shown in the "details as to manner of construction," which the statute provided should be shown to local authorities and to property owners, and the court in advance of adoption. That it affects abutting property to an extent greater than was shown is conclusively established by the collapse of the front walls of buildings nearly adjoining complainant's.

All parties are citizens of New York, and the complainant contends that this court has jurisdiction because—

"The board of rapid transit commissioners has been clothed with authority by the rapid transit act to build a subway, and that, acting under such authority and in the course of constructing the tunnel, it is depriving her of property without due process of law, in contravention of the fourteenth amendment, which provides that no state shall deprive any person of life, liberty, or property, without due process of law."

The illegal acts complained of are stated to be:

"(1) By constructing a railroad under a street, the fee in which is owned by complainant; and (2) * * * by constructing a railroad in accordance with an unauthorized route and general plan

of construction, and thus wrongfully depriving the complainant of her easements as an abutting property owner, and usurping her consent to this unauthorized mode of construction."

It is quite correctly contended by complainant that the question of jurisdiction will not be summarily disposed of here. It is properly to be presented by a plea, and thus decided under conditions which will permit of its review on appeal. Nevertheless, upon a motion for preliminary injunction, the burden is upon the complainant to satisfy the court that there is at least a reasonable probability of ultimate success upon the question of jurisdiction as well as upon the merits of the controversy.

As to the ownership of the fee of Park avenue at the place in question, complainant's contention is based upon the proposition that the city never acquired the fee, because a proceeding duly instituted to open the avenue was never completed by entry of final order. The question thus presented need not be discussed, because, upon the papers now before the court, it is not shown that complainant owns the fee, and, that being so, it is immaterial who does own it. Long after the lines of Park avenue were established on the city map, long after proceedings to open it were instituted and apparently terminated, long after it had been regulated, graded, and paved and used for years as a public thoroughfare, the complainant bought her property at the corner of Thirty-eighth street. The deed conveyed to her two lots, Nos. 63 and 65 Park avenue, described as bounded upon the west by "the easterly line of Park (or Fourth) avenue," and running 80 feet in depth along Thirty-eighth street, easterly from said line. Upon her rights as abutting owner only can the complainant rely to press this application.

It is understood that no complaint is made or relief asked for against the centrally located triple tunnel of the general plan as affecting her rights. If it were, the long delay in applying would preclude the granting of preliminary injunctive relief.

The substantial questions here presented are as to the extent of abutting owner's rights or easements, how far they are property within the meaning of the constitution, to what extent they are affected, and, if invaded, what is the appropriate remedy. These points have been exhaustively discussed by both sides, but they are not to be considered unless the court is reasonably satisfied that the

alleged interference with complainant's rights is an interference by the state. The inhibition of the fourteenth amendment is against action by a state depriving an individual of his property. The amendment is to be liberally construed. It is not to be confined to a legislative act specifically appropriating the property of A. or B. to some public use. A state acts by agents, and the inhibition runs against all who are in fact such agents, acting within the scope of an authority conferred upon them by the state. In *Chicago, B. & Q. R. Co. v. City of Chicago*, 166 U. S. 226, 17 Sup. Ct. 581, 41 L. Ed. 979, it is said:

"But it must be observed that the prohibitions of the amendment refer to all the instrumentalities of the state, to its legislative, executive, and judicial authorities, and, therefore, whoever, by virtue of public position under a state government, deprives another of any right protected by that amendment against deprivation by the state, 'violates the constitutional inhibition, and as he acts in the name and for the state, and is clothed with the state's power, his act is that of the state.' This must be so, or, as we have often said, the constitutional prohibition has no meaning, and 'the state has clothed one of its agents with power to annul or evade it.'"

A final judgment of a state court construing a state statute so as to make it, although apparently innocuous, actually an interference with property rights, has been held to be the act of a state. So, too, a state law, as it leaves the legislative hands, may not be obnoxious to any challenge, and yet the officers charged with the administration of that valid law may so act under it as to work an illegal trespass upon the rights of individuals. *Reagan v. Trust Co.*, 154 U. S. 390, 14 Sup. Ct. 1047, 38 L. Ed. 1014. But in all such cases—and many have been cited in argument—the officers have acted under authority actually conferred upon them by the statute, there has been some measure of discretion confided to them, and they have abused such discretion.

Now, in the case at bar, the first question to be considered is whether the state, through its legislature, has given or undertaken to give authority to the rapid transit commissioners to construct this eastern tunnel, which is the thing complained of. If the legislature had merely selected the streets and avenues, and left it to the commissioners to determine whereabouts therein the tunnel

should be located, the action of the commissioners would be the action of the state. But it did no such thing. It carefully provided for notice and hearing and consents, for the various steps which make up what is understood to be "due process of law," all to be carried on to a conclusion which should determine upon a route and general plan sufficiently detailed to show the "extent to which any avenue is to be encroached upon and the property abutting thereon affected." Upon such route only, and under such plan only, is any authority to construct conferred by the state on the defendants or any of them. When they depart from such plan, whatever trespass they may commit upon private rights is one which the state has not only not authorized them to commit, but under any fair interpretation of the rapid transit act has forbidden them to commit.

If this court were persuaded to assent to the contention of defendants that this easterly tunnel is within the description in the approved route and general plan, as a mere "connection" or "siding" or what not, then it would take jurisdiction, because the action of commissioners, engineer, and contractors being in conformity to the general plan, which the legislature had provided for and sanctioned, would be action by persons acting under state authority, and thus constituted agents of the state to contravene the provisions of the constitutional amendment. But a different conclusion has been reached. It seems unnecessary to discuss this branch of the case at length, for the reason that the precise point has been considered in a decision handed down this week in a similar cause pending in the state court. This court entirely concurs in the reasoning and in the conclusion most tersely and forcibly expressed in the following excerpt from the opinion in *Barney v. Board*, 77 N. Y. Supp. 1085:

"These necessary details the 'routes and general plan' undertook to show for the advisement of all persons interested, and in order that intelligent action might be taken by them to conserve their best interests in the subsequent proceedings for the confirmation and approval of the plan. Taking the words used in the 'routes and general plan' with the plans or drawings to which they referred, no person could be expected to apprehend that the fixed position of the tunnel, as under the central portion of the street, was subject to such a change as would bring it for about ten blocks to a point thirty feet

nearer the building or house line than was indicated, merely because 'suitable connections' were to be made near Forty-second street. A civil engineer might have found that something was omitted, or that there was a variance between the plan, which showed the means of making connections, and the specifications, which mentioned the proposed connections; but a layman, for whose advisement the 'routes and general plan' had been prepared, under the statute, could properly assume that, in some way best known to engineering science, these 'suitable connections' were to be made from a tunnel under the middle of the street. Certainly he could rely upon the general proposition that the scientific construction of a railway, with the necessary curves for the approach toward a given point, does not depend upon guesswork or chance; and I think, therefore, that no reasonable interpretation of the 'routes and general plan' would afford room for justifying the extraordinary change in the position of the tunnel, as constructed, from the line described in the lawfully approved plan of construction as to this particular locality. * * * The work of building the tunnel at the point in question is prosecuted without legal authority."

The complainant, therefore, has failed to persuade this court that there is reasonable probability that she will be able upon the trial to show that the state of New York, by any of its instrumentalities or agents, has deprived, or is threatening to deprive, her of her easements as an abutting property owner; and for that reason, without examining into the extent of such easements, her application for preliminary injunction is denied.

The stay in this case is vacated, and the filing of this opinion shall be sufficient evidence of such vacation. (118 Fed. Rep. 683.)

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SUPREME COURT,

COUNTY OF NEW YORK.

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CHARLES T. BARNEY,
Plaintiff,

v.

THE CITY OF NEW YORK and others,
Defendants.

SPECIAL TERM.

Action for an injunction.

MASTEN & NICHOLS, for plaintiff.

GEORGE L. RIVES, Corporation Counsel, for defendant City of New York.

EDWARD M. SHEPARD, BOARDMAN, PLATT & SOLEY, for defendant Board of Rapid Transit Commissioners.

NICOLL, ANABLE & LINDSAY, for defendant John B. McDonald.

LEVENTRITT, J.—Two public considerations have controlled my disposition of this application—that of the public safety and that of the public interest. The first has regard to the present; the latter to the immediate future. It is not to be gainsaid that there has been in this section of Park avenue a substantial and as yet unauthorized deviation from the established plan. It is unnecessary to review the reasoning leading to this conclusion, as I find myself in accord with its sequence as contained in *Barney v. City of New York* (38 Misc. Rep. 549). If anything, the plaintiff builds a stronger case in this action which he brings to protect his property rights by way of injunction than in the former suit which he brought under the statute as a taxpayer.

The plaintiff seeks in this action to enjoin the further construction of the rapid transit tunnel in front of his premises on Park avenue. The present easterly wall of the tunnel follows a line only seven feet distant from his house line, whereas the original plan, as filed and adopted, shows the easterly extremity between twenty-seven and twenty-eight feet farther west. The plaintiff claims that the present construction, with its blasting and steam-drilling and attendant noises, violates the peaceful enjoyment of his property and its appurtenant easements, while the prospective operation of the road threatens serious permanent injury. The complaint is framed on the theory of public nuisance with allegations of special damage to the plaintiff. The injunctive relief prayed for is that not only the further construction of the tunnel along the present line be enjoined, but that the excavation so far made be filled in and the subsurface restored so near as may be to its previous condition.

That the present construction is unauthorized must be conceded; so, too, it may be admitted that the plaintiff shows resulting damage special to himself; but yet, after careful consideration, I am satisfied that the injunction asked should not issue.

Were the entire construction on or under Park avenue wherever placed illegal and unauthorized there could be no question in any case of the plaintiff's right to the relief asked. That, however, is not the situation here. Were the easterly tunnel about twenty-eight feet farther west, its lawfulness would be beyond attack. The damage, therefore, on which the plaintiff can predicate his prayer is not the damage for the entire tunnel construction, but only for the excess resulting from the more easterly construction. Or, to speak in mathematical terms, it is the total damage resulting from the authorized westerly construction subtracted from that resulting from the unauthorized more easterly construction which gives the amount of special injury to the plaintiff on the basis of which he can come into a court of equity with the form of action he has adopted. While the difference of damage is appreciable and measurable, I am not satisfied that it is large. The plaintiff does not claim that his foundation walls are impaired. The chief complaint is due to the blasting and drilling, present and prospective vibration, and to some extent the impeded approach to his building by the presence of various temporary structures in the streets. So far

as the blasting and drilling are concerned, together with their attendant noises and vibrations, there is this to be said: The affidavits satisfy me that this portion of the work is nearly completed, and that the increased noise, if any, is minimal. With reduced charges of dynamite as the house line is approached, it by no means follows that the noise and vibration of detonation are necessarily greater. So far as the temporary structures are concerned, they are sufficiently accounted for by the concededly legal part of the structure—the westerly tunnel.

Were this merely an action between private individuals, or even an ordinary action against the municipality, the extent of the plaintiff's special damage might be immaterial. Slight damage would be sufficient to enjoin the continuance of the nuisance (*Beckman v. Third Ave. R. R. Co.*, 153 N. Y. 144; *Adler v. Metropolitan El. R. Co.*, 138 N. Y. 173). But this is not the ordinary case, and it is one which, in my opinion, justifies the application of the rule that where the damage resulting from the allowance of the injunction to the defendant far exceeds that resulting to the plaintiff from its disallowance, the equitable arm of the court should not be raised in restraint (*Gray v. Manhattan R. Co.*, 128 N. Y. 509; *Riedeman v. The Mount Morris Electric Light Co.*, 56 App. Div. 23). It is here that the minimal excess of damage suffered by the plaintiff by the present structure, over that he would have suffered had the road been constructed according to the original plan, becomes most material.

In *McElroy v. Kansas City* (21 Fed. Rep. 261), Mr. Justice Brewer well states the recognized rule thus: "A Chancellor in determining an application for an injunction must regard, not only the rights of the complainant, which are sought to be protected, but the injuries which may result to the defendant or to others from the granting of the injunction. If the complainant's rights are of a trifling character, if the injury which he would sustain from the act sought to be enjoined can be fully and easily compensated, while on the other hand, the defendant would suffer great damage, and especially if the public would suffer a large inconvenience if the contemplated act was restrained, the lesser right must yield to the larger benefit; the injunction should be refused and the complainant remitted to his action for damages. * * * If the improvement

was one of great public importance, the court would justly regard that as a reason for not lightly interfering with the work, while if the improvement was more of a personal speculation and for private gain, the prior protection of the complainant would be most rigorously insisted on. Thus, if in the centre of a large and thriving city like the defendant some improvement was contemplated which the necessities of business proclaimed to be urgent, the court on no slight consideration should interfere to delay or restrain it; while on the other hand, if it was some matter in the outskirts of the city, having obviously principal reference to the private speculation of the individual, and of no earnest or urgent demand of public good, the attention of the court would be properly directed to the full protection of the complainant's prior right."

It is unnecessary at this late day to descant on the great public importance or the urgency of the improvement it is sought to enjoin. Our own Appellate Division has characterized it as an "imperious necessity" (Matter of Rapid Transit Commissioners, 23 App. Div. 472). This was five years ago. If it was imperious then, it is difficult to find an adjective that will adequately express the crying need of the present hour. A traffic-congested city awaits the opening of the underground railroad like a deliverance and the fulfillment of prophecy. The court should not lightly interfere to postpone the opening of the road by even a single day. The slight injury to the plaintiff is quite lost in the magnitude of the public improvement and the large public need.

Quite a different question might be presented if the illegality complained of were incurable. If the entire construction were unauthorized and could never be validated, the plaintiff upon adequately showing irreparable damage peculiar to himself might see his rights rise paramount even in this form of action. But the deviation from the established plan can be made legal. Rapid Transit Act, §38. Failing to obtain consent of the property owners, application may be made to the Appellate Division to sanction the departure from the original plan. The preliminary steps to this end have been taken, and the affidavits contain the assurance that the proper form of application is about to be made. While the court will ordinarily concern itself only with existing facts, I believe I am justified, in view of the public interests involved, of tak-

ing the ultimate and probable correction of the unsanctioned step into consideration. In any event, this should be considered on the application for the preliminary injunction, and the parties should be left to establish their final status on the trial.

Lastly, considerations of the public safety compel the denial of the broad relief asked by the plaintiff. It has already been shown that the tunnel in front of his premises is well-nigh completed; the blasting and drilling are almost over; the side-walls are constructed and are prepared to receive the mason-work arch which will support the overlying surface of the street. The present support is of timber; this must be replaced by the arch, necessitating the removal of some of the roof-rock. I am quite satisfied by the expert affidavits submitted that the rock is of a shaly, treacherous character, liable to rapid disintegration by the chemical action of the air and the percolation of water. There has already been one dangerous subsidence in this locality, and to avoid its repetition or similar accidents considerations of safety require that this section of the tunnel be brought to a stable condition with the least delay. That done all other questions may be left to the trial. Before the running of the first train the issues herein will be reached for trial, and the application to legalize the construction be passed upon by the Appellate Division. To direct, at this stage, the filling in with concrete of the present excavation and the building a new tunnel farther west at a total expense of perhaps \$700,000 and a delay of several years—as appears from the affidavits—when the ultimate result may be the removal of the filling and the authorized use of the present excavation, would hardly be consonant with the public interest.

The plaintiff, however, should have a bond to indemnify him against all possible loss. Any directions in the order, not inconsistent with the prosecution of the work as here sanctioned, which he deems necessary for his protection, I am disposed to give him, and I will hear counsel on this point on the settlement of the order. (39 Misc. Rep. 719.)

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APPENDIX III

CERTIFICATE OF INCORPORATION
OF
INTERBOROUGH RAPID TRANSIT COMPANY

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CERTIFICATE OF INCORPORATION
OF
INTERBOROUGH RAPID TRANSIT COMPANY.

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STATE OF NEW YORK, }
County of New York, } ss. :

We the undersigned, all of whom are of full age and at least two-thirds of whom are citizens of the United States, and more than one of whom are residents of this State, desiring to become a corporation under and in pursuance of Chapter 565 of the Laws of 1890, known as the Railroad Law, and the acts amendatory thereof and supplemental thereto, and pursuant to the provisions of Chapter 544 of the Laws of 1902, being an act entitled "An Act to Amend Chapter Four of the Laws of eighteen hundred and ninety-one, entitled 'An Act to provide for rapid transit railways in cities of over one million inhabitants,'" for the purpose of undertaking the construction and operation (including the equipment thereof), of the railway hereinafter described, and for the purpose of maintaining and operating a railroad already built not owned by a railroad corporation, viz.: the railway already constructed or in process of construction under the contract made between the City of New York (acting by its Board of Rapid Transit Railroad Commissioners) and John B. McDonald, dated February 21, 1900, pursuant to the provisions of the said chapter four of the laws of eighteen hundred and ninety-one and amendments thereof, and the agreements amendatory to said contract, DO HEREBY CERTIFY :

FIRST. The name of the corporation shall be
INTERBOROUGH RAPID TRANSIT COMPANY.

SECOND. The duration of said corporation is to be perpetual.

THIRD. The kind of road to be built and operated is a rapid transit railway or railways for the conveyance and transportation of persons and property.

FOURTH. The length and termini of the said roads are as follows:

One route or line is about fourteen miles in length. Its termini are (1) a point at or near the intersection of Broadway with Park Row in the Borough of Manhattan, City of New York, and (2) a point at or near the present Kingsbridge Station of the New York and Putnam Railroad in the Borough of Bronx, City of New York. The said route or line is to be constructed under and over the intersection of Broadway with Park Row in the said Borough of Manhattan, City of New York; thence under Park Row and Centre Street to a point at or near its intersection with New Elm Street, as proposed; thence under New Elm Street, as proposed, to Lafayette Place; thence under Lafayette Place to Eighth Street; thence across and under Eighth Street and thence under private property lying between Eighth and Ninth Streets and east of the westerly side or line of Lafayette Place, produced, to Fourth Avenue; thence under Fourth Avenue and Park Avenue to Forty-second Street; thence turning from Park Avenue into Forty-second Street, and taking for the purposes of the curve if necessary or convenient private property at the southwest corner of Park Avenue and Forty-second Street; thence under Forty-second Street to Broadway, thence under Broadway to Fifty-ninth Street; thence under the Boulevard to a point at or near One Hundred and Twenty-fourth Street; thence by a viaduct along and over the Boulevard to a point at or near One Hundred and Thirty-fourth Street; thence under the Boulevard and Eleventh Avenue to a point on the centre line of Eleventh Avenue, produced, one thousand one hundred and five feet north of the centre line of One Hundred and Ninetieth Street, running thence under and over Eleventh Avenue and private property to Naegle Avenue; thence along and over Naegle Avenue to Amsterdam Avenue; thence along and over Amsterdam Avenue to a point at or near its intersection with Kingsbridge Avenue or Broadway and south of Riverdale Avenue; thence over Kingsbridge Avenue to

Riverdale Avenue, and thence easterly over Riverdale Avenue to a point within five hundred feet of the present Kingsbridge station of the New York and Putnam Railroad Company; including a loop at the City Hall Park which shall connect with the portion of the route aforesaid along Centre Street at or near the south end of that street, and thence proceed westerly and southerly under City Hall Park and Broadway, and thence easterly to again connect with the portion of the route aforesaid in Park Row. This route shall also include suitable tracks and connections from the City Hall loop to the Post Office, such tracks and connections being under the City Hall Park and under the portion of Park Row between the south end of Centre Street and Ann Street. This route shall also include suitable tracks and connections from the portion of the route near the corner of Park Avenue and Forty-second Street to the yard and tracks of the Grand Central Station. All of the tracks and connections last mentioned shall be under Park Avenue and Forty-second Street and private property to be acquired.

The other route or line is about seven miles in length. Its termini are (1) a point of connection with the first above-described route on the Boulevard (or Broadway), in the Borough of Manhattan, City of New York, at or near its intersection with One Hundred and Third Street, and (2) a point at or near the intersection of Boston Road with Bronx Park in the Borough of the Bronx, City of New York.

The said route or line is to be constructed under and over the following-described route, viz.: Beginning at a point of intersection with the first above-described line on the Boulevard or Broadway, in the Borough of Manhattan, City of New York, between One Hundred and Third and One Hundred and Fourth Streets; thence under private property to a point in One Hundred and Fourth Street; thence under One Hundred and Fourth Street to and across Central Park West; thence under Central Park to the intersection of Lenox Avenue and One Hundred and Tenth Street; thence under Lenox Avenue to a point near One Hundred and Forty-second Street; thence, curving to the east and passing under private property, One Hundred and Forty-third and One Hundred and Forty-fourth Streets to the Harlem River at or near the foot of One

Hundred and Forty-fifth Street; thence under the Harlem River and private property to East One Hundred and Forty-ninth Street at or near its intersection with River Avenue; thence under East One Hundred and Forty-ninth Street to a point near its intersection with Third Avenue; thence with a curve to the left and under Third Avenue to a point near its intersection with Westchester Avenue; thence with a curve to the right to and under Westchester Avenue, and thence by viaduct over and along Westchester Avenue to the Southern Boulevard; thence over and along the Southern Boulevard to the Boston road, and thence over and along the Boston road to Bronx Park.

Also with a branch or spur extending from One Hundred and Forty-second Street under Lenox Avenue to One Hundred and Fiftieth Street.

The said above-described railroad being the railroad constructed and in process of construction at the expense of the City of New York under contract made by and between said City of New York (acting by the Board of Rapid Transit Railroad Commissioners for said City) and John B. McDonald, dated February 21, 1900, and the agreements amendatory thereof.

FIFTH. The said corporation shall also have power to enter into and fully perform any contract for the construction and operation of any other rapid transit railway authorized or which may be authorized to be constructed pursuant to the provisions of chapter four of the Laws of eighteen hundred and ninety-one, and its amendments and supplements.

SIXTH. The name of each county in which any part of its railroads are to be located are the counties of New York, Westchester, Richmond, Kings and Queens.

SEVENTH. The amount of the capital stock shall be Twenty-five Million Dollars (\$25,000,000).

EIGHTH. The number of shares into which the capital stock is to be divided is two hundred and fifty thousand (250,000), and the par value of each share is One Hundred Dollars (\$100). All of the said stock is to be common stock.

NINTH. The names and post-office addresses of the directors of the corporation who shall manage its affairs for the first year are as follows:

Names.	Post-Office Addresses.
Win. H. Baldwin, Jr.	New York City.
Charles T. Barney.....	" "
August Belmont.....	" "
E. P. Bryan.....	Yonkers, N. Y.
Andrew Freedman.....	New York City.
James Jourdan.....	" "
Gardiner M. Lane.....	Boston, Mass.
John B. McDonald.....	New York City.
Walter G. Oakman.....	" "
John Peirce.....	" "
William A. Read.....	" "
Cornelius Vanderbilt.....	" "
George W. Young.....	" "

TENTH. As soon as practicable the directors shall divide themselves into classes, of which the first class shall consist of five directors, each of whom shall hold his office for one year, or until the first annual election; the second class shall consist of four other directors, each of whom shall hold office for two years, or until the second annual election; the third class shall consist of four other directors, each of whom shall hold office for three years, or until the third annual election; and at each annual election the successors to the class of directors whose terms shall expire in that year shall be elected to hold office for the term of three years, so that the terms of one class of directors shall expire in each year. The board of directors may make by-laws to carry out this provision, which by-laws shall bind the members of the corporation.

ELEVENTH. The place where the principal office of the corporation is to be located is the Borough of Manhattan, City of New York. *

TWELFTH. The corporation shall have power to purchase, acquire, hold and dispose of the stocks, bonds and other evidences of indebtedness of any corporation, domestic or foreign, and to issue in exchange therefor its own stock, bonds or other obligations.

THIRTEENTH. The board of directors, by an affirmative vote of a majority of the whole board, may annually appoint an executive committee composed of seven of the directors, who shall continue as such committee for one year, and until their successors are appointed. The said executive committee shall have and may exercise any and all of the powers of the board of directors, except when the board is in session. Vacancies in said committee shall be filled by the board. A majority of said committee shall constitute a quorum for the transaction of business.

FOURTEENTH. The name and post-office address of each subscriber to this certificate, and the number of shares of stock in the corporation which he agrees to take, are as follows:

Name.	Post-Office Address.	Number of Shares.
Wm. H. Baldwin, Jr.	New York City	10
Charles T. Barney	“ “	10
August Belmont	“ “	10
E. P. Bryan	Yonkers, N. Y.	10
Andrew Freedman	New York City	10
James Jourdan	“ “	10
Gardiner M. Lane	Boston, Mass.	10
John B. McDonald	New York City	10
DeLancey Nicoll	“ “	10
Walter G. Oakman	“ “	10
John Peirce	“ “	10
Wm. A. Read	“ “	10
Cornelius Vanderbilt	“ “	10
George W. Wickersham	“ “	10
George W. Young	“ “	10

IN WITNESS WHEREOF, we have executed and acknowledged this certificate in duplicate, and have hereunto subscribed our names at the City of New York this 25th day of April, one thousand nine hundred and two.

WM. H. BALDWIN, JR.

GARDNER M. LANE.

JAMES JOURDAN.

C. T. BARNEY.

ANDREW FREEDMAN.

AUGUST BELMONT.

JOHN PEIRCE.

E. P. BRYAN.

JOHN B. McDONALD.

WALTER G. OAKMAN.

G. W. YOUNG.

W. A. READ.

CORNELIUS VANDERBILT.

DELANCEY NICOLL.

GEO. W. WICKERSHAM.

STATE OF NEW YORK, }
County of New York, } ss.:

On the 25th day of April, 1902, before me personally appeared August Belmont, DeLancey Nicoll, Walter G. Oakman, William A. Read, George W. Wickersham, George W. Young and E. P. Bryan; and on the 28th day of April, in the year last aforesaid, also before me personally came John Peirce, John B. McDonald, Andrew Freedman, Cornelius Vanderbilt, Charles T. Barney and James Jourdan; and on this fifth day of May, in the year last aforesaid, also before me personally came William H. Baldwin, Jr., each to me known, and known to me to be one of the individuals described in and who executed the foregoing instrument, and each of whom to me severally acknowledged that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of New York the day and year last above written.

[SEAL.]

A. W. ANDREWS,
Notary Public (36),
N. Y. County.

STATE OF MASSACHUSETTS, }
County of Suffolk, } ss.:

I, CHARLES HALL ADAMS, a Commissioner of the State of New York, residing in Boston, in the County of Suffolk and State of Massachusetts, do certify that on this third day of May, 1902, before me personally appeared, in the City of Boston aforesaid, Gardiner M. Lane, to me known, and known to me to be one of the individuals described in and who executed the foregoing instrument, and who to me acknowledged that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Boston the day and year aforesaid.

[SEAL.]

CHAS. HALL ADAMS,
Commissioner of the State of New York.

STATE OF NEW YORK, }
Office of the Secretary of State, } ss.:

I hereby certify that Charles Hall Adams, of Boston, County of Suffolk and State of Massachusetts, was, at the time of taking the proof and acknowledgment mentioned in his annexed certificate, a Commissioner for the State of New York to take the proof and acknowledgment of deeds and other instruments to be used or recorded in this State, and to administer oaths and affirmations; and that such Commissioner was at the time aforesaid duly authorized to take the same; and that I have compared the signature of the said Commissioner to the certificate subjoined to the annexed instrument with the signature of such Commissioner deposited in this office, and have also compared the impression of the seal affixed to such certificate with the impression of the seal of such Commissioner, deposited in this office, and I verily believe the signature and impression of the seal to the said certificate to be genuine.

Witness my hand and the seal of office of the Secretary of State, at the City of Albany, this 6th day of May, in the year one thousand nine hundred and two.

JOHN T. McDONOUGH,
Secretary of State.

[SEAL.]

STATE OF NEW YORK, }
County of New York, } ss.:

AUGUST BELMONT, WALTER G. OAKMAN and E. P. BRYAN, being severally duly sworn, each for himself, deposes and says, that he is a director named in the foregoing certificate of incorporation; that at least one thousand dollars of capital stock for every mile of road built or proposed to be built has been subscribed thereto, and has been paid in good faith and in cash to the directors named in

152 *Certificate Incorporation Interborough Rapid Transit Co.*

the certificate, and that it is intended in good faith to build, maintain and operate the roads mentioned therein.

AUGUST BELMONT.
WALTER G. OAKMAN.
E. P. BRYAN.

Severally subscribed and sworn to }
before me this 25th day of }
April, 1902. }

A. W. ANDREWS,
Notary Public (36),
N. Y. County.

[SEAL.]

THIS IS TO CERTIFY that, pursuant to the authority upon it conferred by chapter 4 of the Laws of eighteen hundred and ninety-one, as amended by chapter 544 of the Laws of nineteen hundred and two, the Board of Rapid Transit Railroad Commissioners, appointed in and for the City of New York, has, by a resolution duly adopted at a meeting held on the first day of May, 1902, approved, and does hereby approve, the Interborough Rapid Transit Company, the certificate of incorporation of which is hereunto annexed.

IN WITNESS WHEREOF, the said Board of Rapid Transit Railroad Commissioners has caused this certificate to be duly executed in duplicate by its President and Secretary, under its official seal, this first day of May, 1902.

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
IN AND FOR THE CITY OF NEW YORK.

Attest:

By A. E. ORR, President.

[SEAL.] BION L. BURROWS,
Secretary.

At a meeting of the Board of Rapid Transit Railroad Commissioners in and for the City of New York, duly held on the first day of May, 1902, the following resolution was duly adopted, viz.:

"Resolved, that, pursuant to the authority upon it conferred by chapter 4 of the Laws of 1891, as amended by chapter 544 of the Laws of 1902, this Board does hereby approve the Interborough Rapid Transit Company, a certificate for the incorporation whereof has been submitted to this meeting, and the President and Secretary of this Board are hereby authorized and directed to make and execute, under the seal of this Board, the certificate of approval of said corporation provided for in section 34 of the said act as so amended, in the form submitted to this meeting, and that a copy of said certificate of incorporation, and of said certificate of approval, be spread upon the minutes of this meeting."

And I do further certify that a true copy of the certificate of incorporation of Interborough Rapid Transit Company hereto annexed was submitted to and approved by said Board at said meeting and that the certificate of approval authorized by said meeting is in the same form as the certificate of approval hereto attached.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed the official seal of the said Board this first day of April, 1902.

[SEAL.] BION L. BURROWS,
Secretary,

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
IN AND FOR THE CITY OF NEW YORK.

STATE OF NEW YORK, }
Office of the Secretary of State, } ss.:

I have compared the preceding with the original certificate of incorporation of Interborough Rapid Transit Company and the certificate and resolution of the Board of Rapid Transit Railroad Commissioners in and for the City of New York, all filed and re-

corded in this office on the sixth day of May, 1902, and do hereby certify the same to be a correct transcript therefrom and of the whole of said original.

Witness my hand and the seal of office of the Secretary of State, at the City of Albany, this sixth day of May, one thousand nine hundred and two.

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JOHN T. McDONOUGH,
Secretary of State.

[SEAL.]

No. 714.

STATE OF NEW YORK, }
County of New York, } ss. :

THOS. L. HAMILTON, Clerk of the said County and Clerk of the Supreme Court of said State for said County, do certify that I have compared the preceding with the original certificate of incorporation of Interborough Rapid Transit Company with certificate and resolution of Board of Rapid Transit Railroad Commissioners in and for the City of New York, on file in my office, and that the same is a correct transcript therefrom and of the whole of such original.

Endorsed, filed and recorded, May 7th, 1902, 12 h. 7 m.

In witness whereof, I have hereunto subscribed my name and affixed my official seal this 7th day of May, 1902.

THOS. L. HAMILTON,
Clerk.

ORIGINAL ENDORSED AS FOLLOWS :

Tax for privilege of organization of this Company

\$12,500.00

Under Chapter 448 Laws of 1901

Paid to

State Treasurer before filing

STATE OF NEW YORK

Office of Secretary of State

Filed and Recorded May 6, 1902

J. B. H. MORGAN,

Deputy Secretary of State.

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Filed and Recorded

May 7, 1902

12 H. 7 M.

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APPENDIX IV

ASSIGNMENT OF LEASING PART OF MAN-
HATTAN-BRONX CONTRACT TO INTER-
BOROUGH RAPID TRANSIT COMPANY

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ASSIGNMENT OF LEASING PART OF MANHATTAN-
BRONX CONTRACT TO INTERBOROUGH
RAPID TRANSIT COMPANY

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AUGUST 1, 1902.

This agreement, made the 10th day of July, 1902, by and between John B. McDonald, of the City, County and State of New York, hereinafter called the "Contractor," party of the first part, and Interborough Rapid Transit Company, a corporation duly organized and existing under the laws of the State of New York, hereinafter called "Interborough Company," party of the second part, witnesseth:

Whereas, The Contractor heretofore entered into a contract with The City of New York (acting by the Board of Rapid Transit Railroad Commissioners for The City of New York), bearing date the 21st day of February, 1900, for the construction, equipment and operation of a rapid transit railroad in The City of New York, which contract was thereafter modified in certain particulars by agreements between the said parties supplemental thereto and amendatory thereof, which agreements bear date the said 21st day of February, 1900; the 21st day of June, 1900; the 10th day of January, 1901, and the 2d day of May, 1901, respectively, the said contract and agreements amendatory thereof and supplemental thereto being together hereinafter referred to as the rapid transit contract; and

Whereas, The Interborough Company has been duly organized under the Railroad Law of this State for the purposes, among other things, of maintaining and operating the said railway, and has been approved in writing by the said Board of Rapid Transit Railroad Commissioners, pursuant to the provisions of chapter 4 of the Laws of 1891, as amended by chapter 544 of the Laws of 1902, and the Contractor desires to assign and transfer unto Interborough

Company, and Interborough Company desires to accept an assignment of so much of the rapid transit contract as provides for the maintenance and operation of the said railway, including the obligation to provide an equipment for the same, subject to all the terms and conditions in said contract contained with respect to such maintenance and operation, and with respect to the equipment of the said railroad. www.libtool.com.cn

Now, therefore, in consideration of the premises, and for a valuable consideration by Interborough Company to the Contractor in hand paid, the receipt whereof is hereby acknowledged, the Contractor has sold, assigned, transferred, conveyed and set over, and does hereby sell, assign, transfer, convey and set over unto Interborough Company so much of the rapid transit contract as provides for the maintenance and operation of the said rapid transit railroad (including the equipment thereof), and does hereby assign unto the Interborough Company the right or obligation to maintain and operate the said road or roads in the rapid transit contract described, for and during the remainder of the term of years specified in such contract, and all rights with respect to such maintenance and operation, or included in the leasing provisions of such contract, subject to all the terms and conditions therein stated, together with all obligations assumed by the Contractor in and by the said rapid transit contract with respect to the equipment of the said railroad; and from and after the execution hereof the Interborough Company shall be entitled to have and receive all sums of money due or to come due from The City of New York under said contract for the equipment of the said railroad or any part thereof, or for the maintenance and operation of the same, and shall have and enjoy all rights, privileges, emoluments and benefits arising under or because of the provisions for the equipment of said railroad, and for the maintenance and operation thereof as in said contract provided, as fully as the Contractor might or could have and enjoy if this assignment were not made.

The Interborough Company on its part does hereby assume all of the obligations of the Contractor under or by reason of the rapid transit contract with respect to the equipment of the said railroad and every portion thereof, and all obligations whatsoever of the

Contractor under or by reason of the leasing provisions of said contract, and all obligations which relate in any way to the maintenance or operation of the said railroad in said contract described, and does hereby agree to carry out and perform each and every of the said obligations as fully as the Contractor has been or is bound to do in and by the said contract.

The Interborough Company further agrees to well and truly indemnify and save harmless the Contractor of and from any liability, claim or demand arising under such portions of the rapid transit contract as are hereby assigned, or any portion thereof.

This agreement shall bind the parties hereto, their respective heirs, executors, administrators, successors and assigns.

It is, however, understood and agreed that this assignment shall not take effect until the same shall be consented to in writing by the said Board of Rapid Transit Railroad Commissioners, and such assignment and consent shall in no respect affect the security or securities for the performance of the rapid transit contract or any part thereof by the Contractor.

Provided, further, and it is expressly agreed, that this agreement shall take effect when, and only when, the following consents hereto and approvals hereof shall be duly had—to wit, the consents as subjoined of Rapid Transit Subway Construction Company, The United States Fidelity and Guaranty Company, the City Trust, Safe Deposit and Surety Company, of Philadelphia; American Surety Company, of New York; National Surety Company and Perry Belmont.

In witness whereof, the party hereto of the first part has hereunto set his hand and seal, and the party hereto of the second part has caused these presents to be duly signed by its proper officers under its corporate seal, the day and year first above written.

JOHN B. McDONALD.

[L. S.]

INTERBOROUGH RAPID TRANSIT COMPANY.

Attest:

By AUGUST BELMONT, President.

FREDERICK EVANS,

Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 17th day of July, 1902, before me personally came John B. McDonald, to me known, and known to me to be the individual described in and who executed the foregoing instrument, and to me acknowledged that he executed the same.

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GEO. A. STAPES,
Notary Public (114),
County of Kings.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 11th day of July, 1902, before me personally came August Belmont, to me known, who being by me duly sworn, did depose and say, that he resided in the Town of Hempstead, Nassau County, New York; that he is President of the Interborough Rapid Transit Company, the corporation described in and which executed the above instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

CHAS. W. SANDFORD,
Notary Public (20),
County of Kings.

The Board of Rapid Transit Railroad Commissioners for The City of New York does hereby consent to the foregoing assignment.

Dated, New York, July 18, 1902.

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

By A. E. ORR, President.

Attest:

BION L. BURROWS,
Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 4th day of September, 1902, at The City of New York, in said county, before me personally appeared Alexander E. Orr and Bion L. Burrows, to me known, and known to me to be the said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary of the Board of Rapid Transit Railroad Commissioners for The City of New York; and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn, did depose and say, each for himself, and not one for the other, the said Alexander Orr, that he resided in the Borough of Brooklyn, in the said city, that he was the President of the said Board, and that he subscribed his name to the foregoing consent by virtue of the authority thereof; and the said Bion L. Burrows, that he resided in the Borough of Manhattan, in the said City of New York, that he was the Secretary of the said Board, and that he subscribed his name thereto by like authority; and both the said Alexander E. Orr and Bion L. Burrows, that they knew the seal of the said Board, that one of the seals affixed to the above instrument was such seal, and that the same was affixed to the foregoing instrument by the order of the said Board and of a resolution duly adopted by the same, and that they signed their names thereto by like order.

SEYMOUR K. FULLER,

Notary Public (14),

Kings County.

Certificate filed in New York County.

We hereby consent to the foregoing assignment.

Dated, New York, July 17, 1902.

AUGUST BELMONT & Co.

On this 17th day of July, 1902, before me personally appeared August Belmont, to me known, and known to me to be a member of the firm of August Belmont & Co., described in and which executed the foregoing consent, and who acknowledged to me that he executed the same as and for the act and deed of the said firm.

CHAS. W. SANDFORD,

Notary Public (20).

Kings County.

Certificate filed in New York County.

The undersigned, being the sureties of John B. McDonald, the Contractor above mentioned, upon the continuing bond in the penalty of one million dollars (\$1,000,000), and the bond for construction and equipment in the penalty of five million dollars (\$5,000,000), hereby consent to the making of the foregoing instrument.

Dated, New York, July 18, 1902.

RAPID TRANSIT SUBWAY CONSTRUCTION COMPANY.
By AUGUST BELMONT, President.

THE UNITED STATES FIDELITY AND GUARANTY
COMPANY.
By SYLVESTER J. O'SULLIVAN, Manager.

CITY TRUST, SAFE DEPOSIT AND SURETY COMPANY.
By ADRIAN T. KIERNAN, Vice-President.

AMERICAN SURETY COMPANY.
By H. D. LYMAN, President.

NATIONAL SURETY COMPANY.
By CHAS. A. DEAN, President.

PERRY BELMONT.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On the 21st day of July, 1902, before me personally appeared Perry Belmont, to me known, and known to me to be the individual described in and who executed the foregoing consent, and who to me acknowledged that he executed the same.

A. W. ANDREWS,
Notary Public (36),
New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 21st day of July, 1902, before me personally appeared Sylvester J. O'Sullivan, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the Manager of the United

States Fidelity and Guaranty Company, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of said company, and that he signed his name thereto by like order. And also, on the 21st day of July, 1902, before me personally appeared Adrian T. Kieran, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the Vice-President of the City Trust, Safe Deposit and Surety Company, of Philadelphia, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 18th day of July, 1902, before me personally appeared Henry D. Lyman, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the President of American Surety Company, of New York, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 21st day of July, 1902, before me personally appeared Charles A. Dean, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the President of National Surety Company, of New York, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 18th day of July, 1902, before me personally appeared August Belmont, to me known, who being by me first duly sworn, did depose and say, that he resided in the Town of Hempstead, Nassau County, New York, and

was the President of Rapid Transit Subway Construction Company, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order.

A. W. ANDREWS,
Notary Public (36),
New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 30th day of July, in the year 1902, before me personally came John R. Bland, to me known, who being by me duly sworn, did depose and say, that he resided in the City of Baltimore, in the State of Maryland; that he is the President of The United States Fidelity and Guaranty Company, one of the corporations described herein and which executed the above instrument; that he knew the seal of said corporation; that one of the seals affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

A. W. ANDREWS,
Notary Public (36),
New York County.

Agreement made this 10th day of July, 1902, by and between The City of New York (acting by its Board of Rapid Transit Railroad Commissioners), party of the first part, John B. McDonald, party of the second part, and Interborough Rapid Transit Company, a corporation duly organized and existing under the laws of the State of New York, party of the third part, witnesseth:

Whereas, The said John B. McDonald heretofore entered into a contract with The City of New York (acting by the Board of Rapid Transit Railroad Commissioners for The City of New York), bearing date the 21st day of February, 1900, for the construction, equip-

ment and operation of a rapid transit railroad in The City of New York, which contract (hereinafter called the rapid transit contract) was thereafter modified by certain agreements supplemental thereto and amendatory thereof; and

Whereas, The said John B. McDonald has assigned, or is about to assign unto Interborough Rapid Transit Company, by an instrument bearing even date herewith, consented to or to be consented to in writing by the sureties upon all bonds and undertakings given by said John B. McDonald pursuant to said contract, so much of the said contract as provides for the maintenance and operation of the railway therein described, including the obligation to provide all equipment for the same, subject to all the terms and conditions in said contract contained with respect to such maintenance and operation, and with respect to the equipment of the said railroad, to which assignment reference is hereby had, and the said parties have requested the said Board of Rapid Transit Railroad Commissioners to consent to the said assignment as provided by law; and

Whereas, The said Board of Rapid Transit Railroad Commissioners is willing to consent to such assignment, but only upon the execution and delivery to said Board for said city of this instrument.

Now, therefore, in consideration of the premises and of the covenants hereinafter contained, The City of New York, by its said Board of Rapid Transit Railroad Commissioners, hereby consents to the said assignment to Interborough Rapid Transit Company, and to the execution of the said instrument bearing even date herewith.

And the said Interborough Rapid Transit Company hereby covenants to and with The City of New York that it is, and shall hereafter in all respects be, bound to The City of New York, with respect to the equipment of the said railroad mentioned in the said instrument and every portion thereof and all obligations whatsoever of the contractor under or by reason of the leasing provisions of said rapid transit contract and all obligations thereof or thereunder which relate in any way to the maintenance or operation of the railroad in the said rapid transit contract described, and does

hereby agree to carry out and perform each and every of the said obligations as fully as the contractor has been or is bound to do in and by the said rapid transit contract. And the said Interborough Rapid Transit Company further covenants to and with the city that the said John B. McDonald, his executors, administrators and assigns, shall fully perform all the obligations and comply with all the provisions and terms of said contract which are not assigned to and assumed by said Interborough Rapid Transit Company in and by the said instrument bearing even date herewith.

This agreement shall bind the parties hereto, their respective heirs, executors, administrators, successors and assigns.

Provided, further, and it is expressly agreed, that this agreement shall take effect when, and only when, the following consents hereto and approvals hereof shall be duly had—to wit, the consents as subjoined of Rapid Transit Subway Construction Company, The United States Fidelity and Guaranty Company, the City Trust, Safe Deposit and Surety Company, of Philadelphia; American Surety Company, of New York; National Surety Company and Perry Belmont.

In witness whereof, the party of the first part has caused these presents to be duly executed by its said Board of Rapid Transit Railroad Commissioners under the seal of the said Board, the party of the second part has hereunto set his hand and seal, and the party of the third part has caused these presents to be duly executed by its proper officers under its corporate seal, the day and year first above written.

THE CITY OF NEW YORK.

By the BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS OF
THE CITY OF NEW YORK.

Attest: By A. E. ORR, President.

[SEAL.] BION L. BURROWS,
Secretary.

INTERBOROUGH RAPID TRANSIT COMPANY.

Attest: By AUGUST BELMONT, President.

[SEAL.] FREDERICK EVANS,
Secretary.

JOHN B. McDONALD.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 17th day of July, 1902, before me personally appeared John B. McDonald, to me known, and known to me to be the individual described in and who executed the foregoing instrument, and who to me acknowledged that he executed the same.

Geo. A. Sixtus,
Notary Public (114),
Kings County.

Certificate filed in New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 11th day of July, in the year 1902, before me personally came August Belmont, to me known, who being by me duly sworn, did depose and say, that he resided in Hempstead, Nassau County, New York; that he is the President of the Interborough Rapid Transit Company, the corporation described in and which executed the above instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

CHAS. W. SANDFORD,
Notary Public (20),
Kings County.

Certificate filed in New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 4th day of September, 1902, at The City of New York, in said county, before me personally appeared Alexander E. Orr and Bion L. Burrows, to me known, and known to me to be the said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary of the Board of Rapid Transit Railroad Commissioners for The City of New York; and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn, did depose and say, each for himself, and not one for the other, the said Alexander

Orr, that he resided in the Borough of Brooklyn, in the said city, that he was the President of the said Board, and that he subscribed his name to the foregoing consent by virtue of the authority thereof; and the said Bion L. Burrows, that he resided in the Borough of Manhattan, in the said City of New York, that he was the secretary of the said Board, and that he subscribed his name thereto by like authority; and both the said Alexander R. Orr and Bion L. Burrows, that they knew the seal of the said Board, that one of the seals affixed to the above instrument was such seal, and that the same was affixed to the foregoing instrument by the order of the said Board and of a resolution duly adopted by the same, and that they signed their names thereto by like order.

SEYMOUR K. FULLER,

Notary Public (14),

Kings County.

Certificate filed in New York County.

The undersigned, being the sureties of John B. McDonald, the Contractor above mentioned, upon the continuing bond in the penalty of one million dollars (\$1,000,000) and the bond for construction and equipment in the penalty of five million dollars (\$5,000,000), hereby consent to the making of the foregoing instrument.

Dated, New York, July 18, 1902.

RAPID TRANSIT SUBWAY CONSTRUCTION COMPANY.

[SEAL.] By AUGUST BELMONT, President.

THE UNITED STATES FIDELITY AND GUARANTY
COMPANY.

[SEAL.] By SYLVESTER J. O'SULLIVAN, Manager.

Attest:

LEONIDAS DENNIS,
Attorney in Fact.

JOHN R. BLAND,
President.

GEORGE R. CALLIS,
Secretary.

CITY TRUST, SAFE DEPOSIT AND SURETY COMPANY.

[SEAL.] By ADRIAN T. KIERNAN, Vice-President.

AMERICAN SURETY COMPANY.

[SEAL.] By H. D. LYMAN, President.

NATIONAL SURETY COMPANY.

[SEAL.] By CYRUS A. DEAN, President.

PERRY BELMONT.

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STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On the 21st day of July, 1902, before me personally appeared Perry Belmont, to me known, and known to me to be the individual described in and who executed the foregoing consent, and who to me acknowledged that he executed the same.

A. W. ANDREWS,
Notary Public (361),
New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On the 21st day of July, 1902, before me personally appeared Sylvester J. O'Sullivan, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the Manager of The United States Fidelity and Guaranty Company, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 21st day of July, 1902, before me personally appeared Adrian T. Kiernan, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the Vice-President of the City Trust, Safe Deposit and Surety Company, of Philadelphia, one of the cor-

porations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 18th day of July, 1902, before me personally appeared Henry D. Lyman, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the President of American Surety Company, of New York, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 21st day of July, 1902, before me personally appeared Charles A. Dean, to me known, who being by me first duly sworn, did depose and say, that he resided in the Borough of Manhattan, City of New York, and was the President of National Surety Company, of New York, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order. And also, on the 18th day of July, 1902, before me personally appeared August Belmont, to me known, who being by me first duly sworn, did depose and say, that he resided in Hempstead, Nassau County, New York, and was the President of Rapid Transit Subway Construction Company, one of the corporations described in and which executed the foregoing consent; that he knew the corporate seal of said company; that one of the seals affixed to said consent was such corporate seal; that it was affixed thereto by order of the Board of Directors of such company, and that he signed his name thereto by like order.

A. W. ANDREWS,
Notary Public (36),
New York County.

STATE OF NEW YORK, COUNTY OF NEW YORK, SS.:

On this 30th day of July, in the year 1902, before me personally came John R. Bland, to me known, who being by me duly sworn, did depose and say, that he resided in the city of Baltimore, in the State of Maryland; that he is the President of The United States Fidelity and Guaranty Company, one of the corporations described in and which executed the above instrument; that he knew the seal of said corporation; that one of the seals affixed to said instrument was such corporate seal, and that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

A. W. ANDREWS,
Notary Public (36),
New York County.

[Copy Resolution Board of Directors, The United States Fidelity and Guaranty Company, authorizing Sylvester J. O'Sullivan to sign for company, also attached].

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APPENDIX V

CERTIFICATE OF THE BOARD TO THE
PENNSYLVANIA, NEW YORK AND
LONG ISLAND RAILROAD CO.

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BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS OF THE
CITY OF NEW YORK

TO

THE PENNSYLVANIA, NEW YORK AND LONG ISLAND RAILROAD
COMPANY.

CERTIFICATE, OCTOBER 9, 1902.

*The Board of Rapid Transit Railroad Commissioners for The
City of New York does hereby certify as follows:*

Whereas, The Pennsylvania, New York and Long Island Railroad Company (which is hereinafter called the Tunnel Company) is a railroad corporation, which has been duly incorporated under the laws of the State of New York for the purpose, so declared in its articles of association, of constructing and operating a tunnel railroad in The City of New York (which city is hereinafter called the City) to be connected with any railroad or railroads within the State of New York or any adjoining State, and thereby forming a continuous line for the carriage of passengers and property between a point or points within, and a point or points without, the City, and, more particularly, a tunnel railroad to be connected with the railroad of the Pennsylvania, New Jersey and New York Railroad Company in the State of New Jersey (being a State adjoining the State of New York) and the railroad of the Long Island Railroad Company (being a railroad within the State of New York extending from within the City to points without the same) and thus forming a continuous line for the carriage of passengers and property between points on the line of the railroad of the Tunnel Company within the City and points along the line of the railroad of the Pennsylvania, New Jersey and New York Railroad Company, the Pennsylvania Railroad Company and connections between Jersey City and Trenton in the State of New Jersey, between Morrisville and Philadelphia, and between Philadelphia and Pittsburgh, in the State of Pennsylvania, and various other points in the States

of New Jersey, Pennsylvania and Ohio, and other States, and also between such points on the said line of the railroad of the Tunnel Company and points in Long Island without the City; and

Whereas, The Tunnel Company, pursuant to section 32 of chapter 4 of the Laws of 1891, as amended by chapter 584 of the Laws of 1902 (which entire statute as amended by various acts and as now in force is hereinafter called the Rapid Transit Act), has made application to the Board of Rapid Transit Railroad Commissioners for The City of New York (which is hereinafter called the Board) for authority to lay railroad tracks along certain routes within the City and to have and maintain therein a terminal station and another station, and to acquire on Thirty-second street in Manhattan Borough and elsewhere in the City, terminal and other facilities necessary for the accommodation of the traveling public and to construct and operate its railroad along the said routes and under lands, streets, avenues, waters, rivers, highways and public places in the City, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, and with the right to emerge to the surface upon private lands at the terminus thereof in Queens Borough, all as hereinafter particularly set forth, and to transport over the said railroad passengers or freight, or both; and

Whereas, The Board, by a concurrent vote of at least six of its members, has fixed and determined the locations and plans of construction of such railroad of the Tunnel Company upon such routes and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Tunnel Company; and

Whereas, The Board, by such concurrent vote, has prescribed such terms, conditions and requirements as to the Board appear to be just and proper for the grant hereby made to the Tunnel Company, including the terms, conditions and requirements provided by the Rapid Transit Act, and has included among them a provision that the Tunnel Company shall, from the time of the commencement of the operation of such railroad under such determination, annually pay to the City a sum or rental for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sum or rental at

the expiration of such period and at intervals thereafter of twenty-five years,—

Now, therefore, the Board has authorized and does hereby authorize, but subject, however, to the terms, conditions and requirements hereinafter set forth, the Tunnel Company—

1. To lay down, construct and operate a railway, including two tracks, on a route beginning at the boundary line between the States of New York and New Jersey, under the Hudson river, substantially opposite the westerly foot of Thirty-first street, in the Borough of Manhattan, in the City, and thence running easterly under the said river and dock or bulkhead property on the easterly bank thereof (whether belonging to the City or to other owners) to Thirty-first street, and thence still easterly under Thirty-first street (crossing under the various avenues and streets crossed by Thirty-first street) to First avenue, thence across First avenue, and thence still continuing easterly under Thirty-first street or dock or bulkhead property (whether belonging to the City or other owners) and under the East river to a point near the foot of Pidgeon street in Queens Borough in the City, thence still easterly under dock or bulkhead property (whether belonging to the City or to other owners) and under or through private property and under Pidgeon street (or so much thereof, if any, as may be necessary), and crossing under Front street, Flushing street, West avenue, First street, Vernon avenue, Borden avenue, East avenue, Third street, Van Alst avenue, Fourth street, Hunter's Point avenue and reaching the surface at or near the intersection of Thompson avenue and Purves street in Queens Borough, and extending thence through private property to the eastern terminus of said railroad.

2. To lay down, construct and operate a railway, including two tracks, on a route beginning at the said boundary line between the States of New York and New Jersey, under the said Hudson river, substantially opposite the westerly foot of Thirty-second street in Manhattan Borough and thence running easterly under the said river and dock or bulkhead property at the easterly bank thereof (whether belonging to the City or to other owners) to Thirty-second street, and thence still easterly (crossing under the various avenues and streets crossed by Thirty-second street) under Thirty-

second street to Second avenue, thence across Second avenue, and thence still continuing easterly under Thirty-second street, private property, First avenue, Thirty-third street and dock or bulkhead property (whether belonging to the City or to other owners) and under the East river to a point near the foot of Flushing street in Queens Borough, thence still easterly under dock or bulkhead property (whether belonging to the City or other owners) and under or through private property and crossing under Front street, First street, West avenue, Vernon avenue, Borden avenue, East avenue, Third street, Van Alst avenue, Fourth street, Hunter's Point avenue, and reaching the surface at or near the intersection of Thompson avenue and Purves street in Queens Borough, and extending thence through private property to the eastern terminus of said railroad.

3. To lay down, construct and operate a railway, including two tracks, on a route beginning in the station site hereinafter mentioned between Seventh and Ninth avenues, Thirty-first and Thirty-third streets, in Manhattan Borough, in the City, running from thence to a point under Thirty-third street, at or near the intersection of Thirty-third street and Seventh avenue, and thence running easterly under Thirty-third street to Second avenue (crossing under the various avenues and streets crossed by Thirty-third street), thence across Second avenue and thence still continuing easterly under Thirty-third street, private property, First avenue, Thirty-fourth street and dock or bulkhead property (whether belonging to the City or to other owners) and under the East river to a point near the foot of said Flushing street in Queens Borough, and thence still easterly under dock or bulkhead property (whether belonging to the City or to other owners) and under or through private property and under Front street, First street, West avenue, Vernon avenue, Borden avenue, East avenue, Third street, Van Alst avenue, Fourth street, Hunter's Point avenue, and reaching the surface at or near the intersection of Thompson avenue and Purves street in Queens Borough, and extending thence through private property to the eastern terminus of said railroad.

4. To lay down, construct and operate two additional tracks under all or any part of Thirty-second street west of Ninth ave-

nue, in Manhattan Borough, which additional tracks may be included with the two main tracks under said street hereinbefore provided for in a tunnel of four tracks or otherwise.

5. To lay down, construct and operate one additional track under any part of Thirty-second street, between the westerly side of Seventh avenue and the westerly side of Fifth avenue, in Manhattan Borough, which additional track may be included with the two main tracks under said street hereinbefore provided for in a tunnel of three tracks or otherwise.

6. To lay down, construct and operate one additional track under any part of Thirty-third street, between the westerly side of Seventh avenue and the westerly side of Fifth avenue, in Manhattan Borough, which additional track may be included with the two main tracks under said street hereinbefore provided for in a tunnel of three tracks or otherwise.

7. To lay under Thirty-first, Thirty-second and Thirty-third streets for the distance between the easterly line of Seventh avenue and a line parallel with such easterly line and distant 250 feet easterly therefrom, as many tracks, sidings and connections as may be found convenient for the operation of the railroad with the right to use therefor such portions of said streets not approaching within 19 feet of the surface and extending the entire width of the street.

8. To lay under Thirty-first and Thirty-second streets for the distance between the westerly line of Ninth avenue and a line parallel with such westerly line and distant 100 feet westerly therefrom, as many tracks, sidings and connections as may be found convenient for the operation of the railroad, with the right to use therefor such portions of said streets not approaching within 19 feet of the surface and extending the entire width of the street.

9. To acquire and maintain a terminal and station which shall occupy the four blocks bounded by Thirty-first street, Seventh avenue, Thirty-third street and Ninth avenue, in Manhattan Borough, the same now being private property, or so much as the Tunnel Company may find necessary, and such private property on the east side of Seventh avenue, between Thirty-first and Thirty-

third streets, as the Tunnel Company may find necessary; and also to occupy for said terminal and station all or any parts of the underground portions of Thirty-first street and Thirty-third street, in Manhattan Borough, lying between the easterly side of Seventh avenue and the westerly side of Ninth avenue, and all or any parts of the underground portions of Seventh avenue, Eighth avenue and Ninth avenue lying between the southern side of Thirty-first street and the northerly side of Thirty-third street.

10. To occupy with its terminal facilities all or any part of the surface or underground of the portion of Thirty-second street, in Manhattan Borough, lying between the westerly side of Seventh avenue and the easterly side of Eighth avenue, and of the portion of Thirty-second street lying between the westerly side of Eighth avenue and the easterly side of Ninth avenue, which two portions of Thirty-second street shall be closed, such closing being necessary for such terminal facilities, and the Tunnel Company owning or having the consent thereto of the owners of all the property on both side of such portions of Thirty-second street.

11. To occupy for purposes of a station at Fourth avenue and Thirty-third street, in Manhattan Borough, so much as the Tunnel Company may find necessary of the underground portion of Thirty-third street lying between the line parallel with the easterly line of Fourth avenue and easterly six hundred (600) feet therefrom and the line parallel with the westerly line of Fourth avenue and four hundred (400) feet westerly therefrom, including the underground portion of such space also included in Fourth avenue. But this shall not include any right to connect at this point the tracks of the railway of the Tunnel Company with the tracks of any other railroad for the continuous operation of trains over such tracks of the Tunnel Company and of any other railroad.

12. To run upon the said railways (all of which railways upon the routes aforesaid, together with the said terminal station and facilities, stations and all their appurtenances, are together hereinafter called the Railroad) motors, cars and carriages for the transportation of persons and property, and to use thereon and in connection therewith all suitable appliances.

13. To maintain and operate under the streets or avenues of the routes aforesaid and along the lines of the said railways composing the Railroad, telegraph wires and wires, cables, conduits, ducts, and ways for the distribution of power, heat and light, and other appurtenances for use of the Railroad.

14. To acquire and use for stations or station extensions, power plants, pumping stations, shafts for access to the surface and other necessary purposes of the Railroad, private property as the same may be lawfully acquired within the scope of the corporate rights and powers of the Tunnel Company.

The rights hereinbefore granted to maintain and operate the Railroad or necessary or convenient for that purpose shall be held by the Tunnel Company in perpetuity, except as may be herein otherwise expressly provided.

But this authorization and the rights and privileges hereby granted are subject to certain terms, conditions and requirements which appear to the Board to be just and proper, and as so subject are hereinafter called the franchise hereby granted.

The said terms, conditions and requirements are hereby prescribed as follows, to wit:

1.

This certificate will be executed by the Board in four identical originals, so proved as to be entitled to be recorded in the office of the Register of the County of New York and to be filed in the office of the Secretary of State of the State of New York, all of which will be delivered by the Board to the President, Vice-President, Secretary or Treasurer of the Tunnel Company. The franchise hereby granted shall be inoperative and this certificate shall be void unless within thirty days after such delivery or such further period not exceeding three months as shall be prescribed in writing by the Board, the Tunnel Company shall have procured three of the said identical originals to be returned to the Board, each of them having an acceptance of the franchise and all the terms, conditions and requirements thereof subscribed at the foot thereof by the Tunnel Company, such acceptance being so proved as to entitle it to be recorded and filed as aforesaid.

II.

The franchise hereby granted shall, if the Board shall so determine, become void unless within three calendar months after the time of the delivery to the Board of the acceptance of this certificate by the Tunnel Company, that company shall, in due and lawful form, obtain or receive all the consents and approvals following, to wit:

1. The consent of the Board of Aldermen of the City, being the local authority having the control of the portions of the streets, avenues and highways upon, above or under which it is proposed to construct the Railroad, together with the approval of the Mayor of the City.

2. The consents of the Department of Docks and Ferries and the Commissioners of the Sinking Fund of the City, if and so far, if at all, as such consents or either of them may be necessary to the construction, maintenance and operation of the Railroad, or any part thereof, under docks belonging to The City of New York.

3. The consent and approval of the Board of Estimate and Apportionment and the Board of Aldermen of the City to the use as aforesaid of the portion of Thirty-second street lying between the westerly line of Seventh avenue and the easterly line of Eighth avenue and the portion of Thirty-second street lying between the westerly line of Eighth avenue and the easterly line of Ninth avenue for terminal facilities of the Tunnel Company, including its station purposes, and also the consent and approval thereto (if the same shall be necessary) of the Commissioners of the Sinking Fund of the City, and such other consent, approval or proceeding of the said Boards, or any of them, or any other authority or authorities, if and so far as the same may be necessary to the use as aforesaid and for the purposes aforesaid of the said portions of Thirty-second street.

4. The consent of the said Boards or authorities, or any of them, if and so far as the same may be necessary, and such procedure as may be necessary or proper, for the use of such portions of streets or avenues in Queens Borough where the said railways approach to the surface at or near the intersection of Thompson avenue and Purves street.

If it shall appear that any consent herein required is not necessary, the Board shall have power to waive the same, and in such case the franchise hereby granted shall be deemed as effectually granted as if the consent were given. So also if the Tunnel Company shall surrender or waive any right for which a consent cannot or shall not be obtained, then and in such case the Board shall have power to waive the procurement by the Tunnel Company of such consent; and in such case, the franchise hereby granted shall, except as to such right, be deemed as effectually granted as if all the consents aforesaid should have been obtained.

The franchise hereby granted shall, if the Board shall so determine, become void, unless within one year after the time of the acceptance of its certificate by the Tunnel Company, that Company shall further, and in due and lawful form, obtain the consent of the owners of one-half in value of the property bounded on each portion of the streets or avenues under or through which the railroad or any part of the routes thereof runs, to the construction and operation of the railroad or such part thereof, or in case the consent of such property owners cannot be obtained, then the determination of Commissioners, to be appointed pursuant to law by the Appellate Division of the Supreme Court in the First Department or the Second Department (as the case may be), that such portion of the railroad ought to be constructed and operated, the said determination of such Commissioners, when confirmed by the Appellate Division which shall have appointed such Commissioners, to be taken in lieu of such consent of property owners, provided, however, and it is expressly stipulated that the Board shall have power, upon reasonable cause shown, to extend by written certificate either of the periods hereinbefore in this article prescribed. Provided, further, however, that the total period of any such extension or extensions allowed for obtaining the consents prescribed in the sub-paragraphs Nos. 1, 2, 3 and 4 above contained in this article, shall not exceed three years, and that the total period of any such extension or extensions, allowed for obtaining the consents of owners of property or in lieu thereof, the determination of Commissioners confirmed by the Appellate Division, shall not exceed five years.

If the Tunnel Company shall be diligent in prosecuting applications for the consents aforesaid, and shall not have secured the same other than such, if any, as shall have been so waived, within the period of one year after its acceptance as aforesaid of this franchise, then and in such case the Tunnel Company shall, after a written notice of three months to the Board, be released from its obligations hereunder, unless within such three months such consents shall have been given.

III.

The Tunnel Company shall begin the construction of the Railroad within three months after it shall have obtained the consents aforesaid, or such of them as shall be necessary as aforesaid, and shall not have been waived as aforesaid, and shall complete the construction of the Railroad and begin its operation within five years after such construction shall be begun, except that portion thereof described in paragraph 1 of the grant herein contained consisting of two tracks beginning at the boundary line between the States of New York and New Jersey under the Hudson river, and running easterly under the said river, under Thirty-first street, in Manhattan Borough, under the East river and under private property in Queens Borough, crossing under intermediate streets and avenues and reaching the surface near Thompson avenue, which portion shall be constructed within ten years after the completion of the remainder of the railroad.

Provided, however, that, if it shall be found by the Tunnel Company that the construction of either or both of the sections of its lines on Thirty-first street, east of Seventh avenue and west of Ninth avenue, is not necessary to the efficient and proper operation of the Railroad, then the Tunnel Company shall have the right upon one year's written notice to the Board at any time prior to the expiration of said ten years to relinquish and surrender its right to construct and operate either or both of said sections, and shall thereupon be relieved from all obligations respecting the same.

In case the Tunnel Company, within the period of three months after it shall have obtained the consents necessary as aforesaid, shall not have begun the actual construction of the Railroad, or if,

after having begun such construction, it shall suspend the same prior to the completion thereof for a period exceeding three months, or if it shall not complete such construction and begin the operation of the Railroad (except the portion thereof excepted in the first paragraph of Article III. hereof) within the said period of five years, or shall not complete the construction and begin the operation of such excepted portion within ten years after the completion of the remainder, then and in either of such cases, the Board, upon a written notice, to be delivered to the Tunnel Company not less than three months before the action of the Board, may annul the franchise hereby granted as to any part of the Railroad not then completed and in operation; Provided, however, that the Board shall have the power, upon reasonable cause shown, to extend by written order any of the periods in this article prescribed. Provided, further, however, that such extension or extensions shall not in all exceed five years, and Provided, further, that additional time shall be allowed by way of extension of any period for such commencement of construction or for the completion thereof, or for the commencement of operation of the Railroad equal to the total period of delay caused by injunction or by necessary proceedings for condemnation of real estate, easements or other property, so far as such proceedings shall necessarily prevent the Tunnel Company from prosecuting such construction, but no delay to be so allowed for unless, during the same, such proceedings shall be diligently prosecuted by or for the Tunnel Company; and provided, further, that in no case shall such delay be deemed to begin until the Tunnel Company shall have given written notice to the Board of the injunction or other occasion of delay and delivered to the Board copies of the injunction or other orders, and of the papers upon which the same shall have been granted, and unless, upon the request of the Board, the Tunnel Company shall in writing consent that the Board, either in its own name as a party or in the name of The City of New York as a party, may intervene in any such injunction proceedings or other suit or proceeding; and Provided, further, that in case of annulment of any part of the franchise the Tunnel Company shall have no right to any return of payments which it shall have made to the City by way of rental or otherwise.

IV.

The Tunnel Company shall pay to the City for the rights, franchises and licenses hereinbefore given to construct and maintain its said railways under the beds of the Hudson river and East river, outside of pierhead lines (or so much of the railroad as shall be thereunder), the sum of one hundred dollars (\$100) for each river for each year, beginning on the date on which the Tunnel Company shall first commence the actual operation of the railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operations), and ending on the day twenty-five (25) years next thereafter.

The Tunnel Company shall pay to the City for the rights, franchises and licenses hereinbefore given to construct and maintain its said railways under the docks and bulkheads belonging to the City (and including all space occupied between any pierhead line and the part nearest thereto of the street or avenue under which any such railway shall be laid), for each year beginning on the date on which the Tunnel Company shall first commence the actual operation of the railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten (10) years next thereafter, a sum equal to fifty cents (\$.50) per linear foot of single railway track then constructed, or which the Tunnel Company shall be bound to have then constructed under such docks and bulkheads, and the sum of one dollar (\$1) per annum per linear foot of such tracks for the period beginning on the last day of the said period of ten (10) years and ending on the day fifteen (15) years next thereafter.

The Tunnel Company shall pay to the City for the rights, franchises and licenses in, under, on or above streets or avenues hereinbefore granted the sum of fifty cents (\$.50) per annum for each linear foot of single railway track which shall be then constructed or which the Tunnel Company shall be bound to have then constructed, under any streets or avenues or parts of streets or avenues (but excluding Thirty-first and Thirty-third streets, between Seventh and Eighth avenues and between Eighth and Ninth avenues), within Manhattan Borough, during the period beginning on the day when the Tunnel Company shall first commence actual

operation of the railroad (but not later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten (10) years next thereafter; and the sum of one dollar (\$1) per annum for each linear foot of such tracks during the period beginning on the last day of such period of ten (10) years and ending on the day fifteen (15) years next thereafter, and shall during such periods annually pay to the City for the rights, franchises and licenses hereinbefore granted in, under, on or above opened streets or avenues in Queens Borough for each linear foot of single railway track there constructed at a rate equal to one-half the rate prescribed for streets and avenues in Manhattan Borough as aforesaid.

The Tunnel Company shall pay to the City for such underground portions of Thirty-first street and Thirty-third street, in Manhattan Borough, between Seventh and Eighth avenues, and between Eighth and Ninth avenues, the sum of fourteen thousand dollars (\$14,000) per annum, such rental to begin on the date of the commencement of construction therein by the Tunnel Company (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such construction) and to continue during the period of ten (10) years next thereafter, and the sum of twenty-eight thousand dollars (\$28,000) per annum for the period of fifteen (15) years next after such first period of ten (10) years.

The Tunnel Company shall pay to the City for the use of the underground portions of Thirty-third street and Fourth avenue which shall be occupied for station purposes as aforesaid, at the rate of eleven hundred and forty dollars (\$1,140) per annum, beginning at the date of commencement of the actual operation of the railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and to continue during the period of ten (10) years next thereafter, and the sum of two thousand two hundred and eighty dollars (\$2,280) per annum for the period of fifteen (15) years next after such first period of ten (10) years.

All such payments shall be made to the Comptroller of the City in equal payments at the end of each quarter year, on the first days of January, April, July and October in each year.

The amounts to be paid by the Tunnel Company as aforesaid shall be readjusted at the end of the first period of twenty-five (25) years, and shall thereafter be readjusted at intervals of twenty-five (25) years. The amounts to be paid by the Tunnel Company at the end of the first period of twenty-five (25) years shall be determined as follows, to wit: Each such determination shall be had upon the application of either the Tunnel Company or the Board or any authority which shall be authorized by law to act for the City in place of the Board. Such application shall be made at any time not earlier than two years and not later than one year before the expiration of the preceding period of twenty-five years. The determination shall be sufficient if agreed to in writing by the Tunnel Company and the Board or such other authority in its place. If the Tunnel Company and the Board or such other authority in its place for the City shall not reach such agreement on or before the day one year before the expiration of such preceding twenty-five years period, then the rate of compensation for such succeeding twenty-five years period shall be reasonable; and either the City (by the Board or such other authority in its place) or the Tunnel Company shall be bound, upon request of the other, to enter into a written agreement with such other fixing the rate of such compensation at such amount as shall be reasonable; and if the parties shall not forthwith agree upon what is reasonable, then the parties shall enter into a written agreement fixing such rate at such amount as shall be determined by the Supreme Court of the State of New York; and either party may in such case apply to the said Court to fix such rate. If, in any case, the rate shall not be fixed prior to the commencement of such succeeding twenty-five years period, then the Tunnel Company shall pay the rate theretofore prevailing until the new rate shall be determined, and shall then make up to the City the amount of the excess of the rate then determined over the previous rate. Nothing herein contained shall be deemed to determine or affect the basis of any such readjustment of the amounts to be paid, it being intended that such basis shall be completely open to either the City or the Tunnel Company whenever any such readjustment is to be made, except that any such readjusted amount shall never be less than the corresponding amount provided herein.

V.

The Tunnel Company shall pay to the City for its terminal facilities hereinbefore described on the portions of Thirty-second street between the westerly line of Seventh avenue and the easterly line of Eighth avenue, and between the westerly line of Eighth avenue and the easterly line of Ninth avenue, at the rate of thirty-six thousand dollars (\$36,000) per annum, payable in quarterly installments at the end of each quarter; such payment to begin on the day when the Tunnel Company shall begin the use of such portions of Thirty-second street or any part thereof or shall enter thereon for purposes of construction or otherwise, and such rate to continue for the period of twenty-five years next thereafter, and thereupon to be readjusted, and thereafter to be readjusted at intervals of twenty-five years, in manner provided in Article IV hereof with respect to the payments therein provided for. Provided, however, and it is expressly agreed that, if the City or any of the said authorities of the City shall be or become authorized by law to convey to the Tunnel Company the fee simple of such portions of Thirty-second street, then and in such case the City or its authorities so authorized by law shall thereupon convey to the Tunnel Company by deed good in law for the conveyance of such fee simple thereof, reciting the payment of a consideration of seven hundred and eighty-eight thousand six hundred dollars (\$788,600), and in such case, the Tunnel Company shall pay therefor to the City or the Comptroller thereof the amount of the consideration so recited and upon such conveyance and payment the obligation of the Tunnel Company to make annual payments for terminal facilities on such portions of Thirty-second street shall cease.

VI.

The railways forming part of the Railroad, where the same shall occupy parts of streets or avenues, shall be in tunnel or tunnels under the streets or avenues, except that from the point, or points, where they come to the surface near Thompson avenue, in Queens Borough, to the eastern terminus of said railroad, where they are constructed on private property, said railways may be placed on, or above, or under the surface, and may be covered or open as the Tunnel Company may see fit.

The Tunnel Company may construct the railways in tunnels containing one or more tracks, as it may find most advantageous.

No part of the structure of the railroad, except its terminals or stations, and except on the portion of Thirty-second street west of Ninth avenue, where the Tunnel Company is authorized to construct and operate four tracks, shall approach within five (5) feet of the exterior line of any street or avenue, unless the abutting property shall be owned by the Tunnel Company or unless the owner or owners of the property so abutting shall consent. The tunnel or tunnels, except as hereinbefore limited, may be placed in such places under the streets or avenues as may be found most convenient. The uppermost part of any tunnel or of the said station at Thirty-third street and Fourth avenue shall not approach nearer than nineteen (19) feet to the surface of any street or avenue, except the portion of Thirty-second street to be closed as aforesaid, and except that under the roadways of Thirty-first street, between Seventh avenue and Eighth avenue, and between Eighth avenue and Ninth avenue, and of Thirty-third street, between Seventh avenue and Eighth avenue, and between Eighth avenue and Ninth avenue, the top of the tunnel may come within not less than thirty (30) inches to the surface of the roadway, and except that under the sidewalks on the south side of such portions of Thirty-first street and on the north side of such portions of Thirty-third street, the uppermost part of the tunnel may come within not less than five (5) feet of the surface of the sidewalk, and except that under the sidewalks on the north side of such portions of Thirty-first street and on the south side of such portions of Thirty-third street, the uppermost part of the tunnel may come to any point below the surface of the sidewalk and except as may be necessary upon the approach to the surface at or near Thompson avenue, in Queens Borough.

Provided, however, and it is expressly stipulated that the Tunnel Company shall in the course of construction at its own expense maintain and care for all underground structures and any necessary interference with underground structures shall be subject to reasonable regulation by the Department of the government of the City in control or charge thereof.

The Tunnel Company shall make good to the City all damage which shall be done to the property of the City, and shall make good to every owner of property abutting upon the railroad, or which shall be injured by the work of construction or by operation thereof, all damage which shall be done to such abutting or injured property through any fault or negligence of the Tunnel Company or successor thereof or of any contractor, sub-contractor or other person in the course of any employment upon the construction or operation of the railroad or any part thereof. The Tunnel Company shall indemnify the City against any damage for which the City shall be adjudged liable in favor of owners of property on Thirty-second street, between Seventh and Tenth avenues, by reason of the closing as aforesaid of that street, between Seventh and Eighth and between Eighth and Ninth avenues.

The Tunnel Company shall at all times keep paved with smooth pavement in such manner as may be reasonably required by the municipal authorities having care of the streets and shall at all times keep in thoroughly good condition the portions of Thirty-first and Thirty-third streets, between Seventh and Eighth avenues, and between Eighth and Ninth avenues.

The method of construction shall be generally as follows: The tunnels under rivers, streets and avenues shall be constructed in whole or part of masonry or of steel or of iron or any two or more thereof combined. Excavations necessary in the course of construction by the Tunnel Company shall be made without disturbing the surface of the streets or avenues, except the portions of Thirty-first street, Seventh avenue, Thirty-third street, Eighth avenue and Ninth avenue, immediately in front of the terminal station aforesaid, and except in Queens Borough; provided, however, that the Board may, wherever elsewhere local conditions make excavations from the surface necessary for efficient construction, grant the right to make such excavations from the surface, subject to such conditions as the Board may prescribe.

The tracks shall be constructed of the most approved plan so as to avoid noise or tremor.

All plans for and the method of doing the work shall from time to time be subject to the approval of the Board. All necessary permits for opening of streets and other necessary depart-

mental permits shall be granted by the President of the proper borough or other officer as provided by law.

VII.

The power to be used shall be electricity or such other power (not involving combustion in the tunnel) as may be approved by the Board.

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VIII.

The plan and profile of the Railroad herewith attached are to be deemed a part of this franchise and to be construed with the text hereof. The same shall be substantially followed, but deviations therefrom not inconsistent with the other provisions hereof may be permitted by the Board.

IX.

The Tunnel Company shall have no power to carry on merely local traffic unless with the approval of the Board and the Board of Aldermen and Mayor of the City and for such additional consideration to be paid to the City as they shall prescribe. Local traffic shall be deemed to include the carriage of passengers or freight between the terminal station of the Tunnel Company and any point in the City of New York within five miles of said terminal station, or between stations within said limits.

X.

The Railroad shall be diligently and skillfully operated with due regard to the convenience of the traveling public, so long as the franchise hereby granted shall remain in force.

XI.

The City shall have a lien upon the franchise and real property of the Tunnel Company under the said rivers, streets and avenues to secure the payment of such compensation and rental. In case of any failure to make such payments as herein prescribed the lien aforesaid may be enforced by the Board or by any authority which shall be authorized to act for the City in place of the Board, either by entry, foreclosure or other proper proceeding and by sale of such franchise and real property.

The Board may, in its own name, or in the name and behalf of the City, bring action for the specific performance, or may apply by mandamus to compel the performance by the Tunnel Company of the duties and obligations hereby imposed upon the said Company or any of them. And the Board may, in behalf or in the name of the City, bring action or proceedings to recover possession of any part of the property of the City to be used by the Tunnel Company as aforesaid, or to enforce the said lien of the City, or to enforce any part of this contract in the manner provided by section 9 of the Rapid Transit Act, or any other proper action or proceeding.

XII.

The Tunnel Company will not at any future time oppose—but shall at any time upon the request of the Board consent to—the construction of any rapid transit railroad over, along or under any portion of any of the said streets or avenues to be occupied by the Railroad of the Tunnel Company aforesaid, where the same shall not actually interfere with the structure of the Tunnel Company as herein authorized.

XIII.

The City, the Board, and all duly authorized representatives of the City, shall have the right at all reasonable times to inspect the Railroad and any part thereof, and to enter thereon when necessary for the examination, supervision or care of any property of the City or for any proper purpose. Nothing in this franchise shall be deemed to diminish or affect the sanitary or police jurisdiction which the public authorities shall lawfully have over property in the City. The City shall have the right to use the tunnel of the Railroad for police and fire, telegraph and telephone wires, to such extent as is not inconsistent with the purposes of this franchise.

XIV.

The Tunnel Company shall have the right to grant, convey, mortgagen and strengthen all parts of the Railroad which shall be under any street or avenue so that the same shall safely support any structure su-

perimposed or which shall be superimposed thereon by the City or under its authority or under any other public authority.

XV.

The Tunnel Company shall have the right to grant, convey, mortgage, assign or transfer the franchise hereby granted. Provided, however, that every grantee, assignee or transferee thereof, not including, however, a mortgage or mere lienor, but including any purchaser upon foreclosure of or under or by virtue of any provision of any mortgage or lien, shall be a corporation subject to the laws of the State of New York, and shall, upon accepting the grant, assignment or transfer and before such grant, assignment or transfer shall be valid, assume and agree to perform all of the obligations which by the provisions hereof are assumed by the Tunnel Company and that no such grant, conveyance, assignment or transfer shall relieve the Tunnel Company of its obligations hereunder.

XVI.

If, at any time, the powers of the Board or any other of the authorities herein mentioned or intended to be mentioned shall be transferred by law to any other board, authorities, officer or officers, then and in such case such other board, authorities, officer or officers shall have all the powers, rights and duties herein reserved to or prescribed for the Board or other authorities, officer or officers.

In witness whereof this certificate has been prepared by the Board of Rapid Transit Railroad Commissioners for The City of New York by and upon the concurrent vote of at least six of the members of the said Board, and is now attested by its seal and by the signature of its President, who is its presiding officer, and by the signature of its Secretary, this 15th day of October, 1902.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

By A. E. ORR, President.

[SEAL.] BION L. BURROWS,
Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 15th day of October, 1902, in The City of New York, in said county, before me personally appeared Alexander E. Orr and Bion L. Burrows, each to me known, and known to me to be the said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary of the Board of Rapid Transit Railroad Commissioners for The City of New York; and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn, did depose and say, each for himself, and not one for the other, the said Alexander E. Orr, that he resided in the Borough of Brooklyn in the said city, that he was the President of the said Board, and that he subscribed his name to the foregoing certificate by virtue of the authority thereof; and the said Bion L. Burrows, that he resided in the Borough of Manhattan in the said city, that he was the Secretary of the said Board, and that he subscribed his name thereto by like authority; and both the said Alexander E. Orr and Bion L. Burrows, that they knew the seal of the said Board and that the same was affixed to the foregoing certificate by the authority of the said Board and of a resolution duly adopted by the same.

SEYMOUR K. FULLER,

Notary Public, Kings County.

Certificate filed in New York County.

The Pennsylvania, New York and Long Island Railroad Company hereby accepts the foregoing franchise and all the terms, conditions and requirements thereof.

Dated, New York, November 5, 1902.

THE PENNSYLVANIA, NEW YORK AND LONG ISLAND
RAILROAD Co.

By A. J. CASSATT, President.

[SEAL.] ROBERT H. GROFF,
Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 5th day of November, 1902, at The City of New York, before me personally came A. J. Cassatt and Robert H. Groff, each to me known, and known to me respectively to be the said A. J. Cassatt, the President, and the said Robert H. Groff, the Secretary of the Pennsylvania, New York and Long Island Railroad Company, the corporation named in, and which executed the foregoing consent, and being by me duly sworn, they did depose, each for himself, and not one for the other, the said A. J. Cassatt, that he resides at Haverford, Montgomery County, Pennsylvania, and was President of the Pennsylvania, New York and Long Island Railroad Company, the corporation described in and which executed the foregoing consent, and that he subscribed his name to the foregoing consent by the authority of the Board of Directors thereof; and the said Robert H. Groff, that he resided in the Borough of Manhattan, City of New York, that he was the Secretary of the said Pennsylvania, New York and Long Island Railroad Company, and subscribed his name to the foregoing consent by like authority; and both the said A. J. Cassatt and Robert H. Groff, that they knew the seal of the said Pennsylvania, New York and Long Island Railroad Company, that the seal affixed to said consent was such seal, and that the same was affixed to the foregoing consent by authority of the Board of Directors of the said Pennsylvania, New York and Long Island Railroad Company and pursuant to a resolution adopted by the said Board.

CHAS. LA RUE KINGSLEY,
Notary Public,
New York County.

(In the original plan and profile annexed.)

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APPENDIX VI

CERTIFICATE OF THE BOARD TO THE NEW
YORK AND JERSEY RAILROAD CO.

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BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS FOR THE
CITY OF NEW YORK

TO
NEW YORK AND JERSEY RAILROAD COMPANY

CERTIFICATE, JULY 10, 1902.

The Board of Rapid Transit Railroad Commissioners for The City of New York does hereby certify as follows:

Whereas, The New York and Jersey Railroad Company (which is hereinafter called the Tunnel Company) is a railroad corporation which has been duly incorporated under the laws of the State of New York for the purpose, so declared in its articles of association, of owning and operating the tunnel and railroad in part within the limits of The City of New York, formerly of the Hudson Tunnel Railway Company, and of constructing and operating a tunnel railroad in The City of New York (which city is hereinafter called the City) to be connected with a railroad or railroads within the State of New Jersey and thereby forming a continuous line for the carriage of passengers and property between a point or points within, and a point or points without, the City, and more particularly a tunnel railroad having its eastern terminus in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in the Borough of Manhattan, in The City of New York, and thence extending westwardly and to be connected with a railroad or railroads in the State of New Jersey, and thus form a continuous line for the carriage of passengers and property between such terminus of the railroad of the Tunnel Company within the City and a point or points upon the lines of such railroads in the State of New Jersey, and other States; and

Whereas, The Tunnel Company, pursuant to section 32 of chapter 4 of the Laws of 1891, as amended by chapter 584 of the Laws of 1902 (which entire statute as amended by various acts and as

now in force is hereinafter called the Rapid Transit Act), has made application to the Board of Rapid Transit Railroad Commissioners for The City of New York (which is hereinafter called the Board) for authority to lay railroad tracks along a certain route from its terminal in the City westwardly to the Hudson river, and to have and maintain in the City a terminal station and such terminal and other facilities as may be necessary for the accommodation of the traveling public, and to construct and operate its railroad along the said route and under lands, streets, avenues, waters, rivers, high-ways and public places in the City, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, and with the right to emerge to the surface upon private lands at the terminus thereof in Manhattan Borough, all as hereinafter particularly set forth, and to transport over the said railroad passengers or freight, or both; and

Whereas, The Board, by a concurrent vote of at least six of its members, has fixed and determined the locations and plans of construction of such railroad of the Tunnel Company upon such route, and of such tracks and facilities, the times within which they shall be respectively constructed and the compensation to be paid therefor to the City by the Tunnel Company; and

Whereas, The Board, by such concurrent vote, has prescribed such terms, conditions and requirements as to the Board appear to be just and proper for the grant hereby made to the Tunnel Company, including the terms, conditions and requirements provided by the Rapid Transit Act, and has included among them a provision that the Tunnel Company shall, from the time of the commencement of the operation of such railroad under such determination, annually pay to the City a sum or rental for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sum or rental at the expiration of such period and at intervals thereafter of twenty-five years—

Now, therefore, the Board has authorized and does hereby authorize, but subject, however, to the terms, conditions and requirements hereinafter set forth, the Tunnel Company—

1. To lay down, construct and operate a railway, including two tracks, on a route beginning at the boundary line between the States of New York and New Jersey under the Hudson river substantially opposite the foot of Morton street, in the Borough of Manhattan, and thence running easterly under the said river and dock or bulkhead property on the easterly bank thereof, whether belonging to the City or to other owners, to West street at a point opposite or nearly opposite or at the foot of Morton street; and thence still easterly crossing under West street, and thence still easterly under Morton street crossing under Washington street to Greenwich street, and thence northerly under Greenwich street crossing under Barrow street and Christopher street and partly under West Tenth street to a terminal in the westerly half of the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, the eastern terminus of said railway.

2. To acquire and maintain a terminal and station in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in Manhattan Borough, the same being private property, or so much as the Tunnel Company may find necessary and be able to acquire, and also to occupy for said terminal and station all or any parts of the underground portions of Greenwich, Christopher and West Tenth streets, in Manhattan Borough, contiguous to its said terminal station in said block, and also that portion of Greenwich street lying between the north line of Barrow street and said terminal, and to lay and operate therein such tracks, sidings and connections as may be found convenient for the operation of the Railroad.

3. To run upon the said railways (all of which railways upon the route aforesaid, together with the said terminal station and facilities, and all their appurtenances, are together hereinafter called the Railroad) motors, cars and carriages for the transportation of persons and property, and to use thereon and in connection therewith all suitable appliances.

4. To maintain and operate under the streets of the routes aforesaid and along the lines of the said railways composing the railroad, telegraph wires and wires, cables, conduits and ways for the

distribution of power, heat and light and other appurtenances for use of the railroad.

5. To acquire and use for stations or station extensions, power plants, pumping stations, shafts for access to the surface and other necessary purposes of the railroad, private property as the same may be lawfully acquired within the scope of the corporate rights and powers of the Tunnel Company.

The rights hereinbefore granted to maintain and operate the railroad or necessary or convenient for that purpose shall be held by the Tunnel Company in perpetuity, except as may be herein otherwise expressly provided.

Provided, however, and it is expressly agreed that this authorization and the rights and privileges hereby granted are subject to certain terms, conditions and requirements which appear to the Board to be just and proper, and as so subject are hereinafter called the franchise hereby granted. The said terms, conditions and requirements are hereby prescribed as follows, to wit:

I.

This certificate will be executed by the Board in four identical originals, so proved as to be entitled to be recorded in the office of the Register of the County of New York and to be filed in the office of the Secretary of State of the State of New York, all of which will be delivered by the Board to the President, Vice-President, Secretary or Treasurer of the Tunnel Company. The franchise hereby granted shall be inoperative and this certificate shall be void unless within thirty days after such delivery or such further period as shall be prescribed in writing by the Board, the Tunnel Company shall have procured three of the said identical originals to be returned to the Board, each of them having an acceptance of the franchise and all the terms, conditions and requirements thereof subscribed at the foot thereof by the Tunnel Company, such acceptance being so proved as to entitle it to be recorded and filed as aforesaid.

II.

The franchise hereby granted shall, if the Board shall so determine, become void unless within three calendar months after

the time of the delivery to the Board of the acceptance of this certificate by the Tunnel Company, that Company shall, in due and lawful form, obtain or receive all the consents and approvals following, to wit:

1. The consent of the Board of Aldermen of the City, being the local authority having the control of the portions of the streets and highways upon or under which it is proposed to construct the Railroad, together with the approval of the Mayor of the City.

2. The consents of the Department of Docks and Ferries, and the Commissioners of the Sinking Fund of the City, if and so far, if at all, as such consents or either of them may be necessary to the construction, maintenance and operation of the Railroad, or any part thereof, under docks or other property belonging to the City of New York.

If it shall appear that any consent herein required is not necessary, the Board shall have power to waive the same; and in such case the franchise hereby granted shall be deemed as effectually granted as if the consent were given. So also if the Tunnel Company shall surrender or waive any right for which a consent cannot or shall not be obtained, then and in such case the Board shall have power to waive the procurement by the Tunnel Company of such consent; and in such case the franchise hereby granted shall, except as to such right, be deemed as effectually granted as if all the consents aforesaid should have been obtained.

The franchise hereby granted shall, if the Board shall so determine, become void unless within one year after the time of the acceptance of its certificate by the Tunnel Company, that Company shall further and in due and lawful form obtain the consent of the owners of one-half in value of the property bounded on each portion of the streets under or through which the Railroad or any part of the route thereof runs, to the construction and operation of the Railroad, or such part thereof, or in case the consent of such property owners cannot be obtained then the determination of commissioners to be appointed pursuant to law by the Appellate Division of the Supreme Court in the First Department that such portion of the Railroad ought to be constructed and operated, the said determination of such commissioners, when con-

firmed by the Appellate Division which shall have appointed such commissioners, to be taken in lieu of such consent of property owners, provided, however, and it is expressly stipulated, that the Board shall have power, upon reasonable cause shown, to extend by written certificate either of the periods hereinbefore in this article prescribed.

If the Tunnel Company shall be diligent in prosecuting applications for the consents aforesaid, and shall not have secured the same other than such, if any, as shall have been so waived, within the period of one year after its acceptance as aforesaid of this franchise, then and in such case the Tunnel Company shall, after a written notice of three months to the Board, be released from its obligations hereunder, unless within such three months such consents shall have been given.

III.

The Tunnel Company shall begin the construction of the Railroad within three months after it shall have obtained the consents aforesaid or such of them as shall be necessary as aforesaid and shall not have been waived as aforesaid, and shall complete the construction of the Railroad within three years after such construction shall be begun.

In case the Tunnel Company, within the period of three months after it shall have obtained the consents necessary as aforesaid, shall not have begun the actual construction of the Railroad, or if, after having begun such construction, it shall suspend the same prior to the completion thereof for a period exceeding three months, or if it shall not complete such construction and begin the operation of the Railroad within the said period of three years, then and in either of such cases the Board, upon a written notice to be delivered to the Tunnel Company not less than three months before the action of the Board, may annul the franchise hereby granted as to any part of the Railroad not then completed and in operation; Provided, however, that the Board shall have the power, upon reasonable cause shown, to extend by written order any of the periods in this article prescribed; and Provided, further, that additional time shall be allowed by way of extension of any period for such commencement of construction or for the completion

thereof, or for the commencement of operation of the Railroad equal to the total period of delay caused by injunction or by necessary proceedings for condemnation of real estate, easements or other property, so far as such proceedings shall necessarily prevent the Tunnel Company from prosecuting such construction, but no delay to be so allowed for unless, during the same, such proceedings shall be diligently prosecuted by or for the Tunnel Company; and Provided, further, that in no case shall such delay be deemed to begin until the Tunnel Company shall have given written notice to the Board of the injunction or other occasion of delay and delivered to the Board copies of the injunction or other orders and of the papers upon which the same shall have been granted, and unless, upon the request of the Board, the Tunnel Company shall in writing consent that the Board, either in its own name as a party or in the name of The City of New York as a party, may intervene in any such injunction proceedings, or other suit or proceeding; and Provided, further, that in case of annulment of any part of the franchise the Tunnel Company shall have no right to any return of payments which it shall have made to the City by way of rental or otherwise.

IV.

The Tunnel Company shall pay to the City for the rights, franchises and licenses hereinbefore granted to construct and maintain its said railways under the bed of the Hudson river, outside of the pierhead lines, or so much of the railway as shall be thereunder, the sum of one hundred dollars (\$100) for each year beginning on the date on which the Tunnel Company shall first commence the actual operation of the Railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day twenty-five years next thereafter; Provided, however, that the payment of said amount shall not be deemed a waiver on the part of the Tunnel Company of any rights which it has in and to the bed of said river by deed from the State of New York, or otherwise.

The Tunnel Company shall pay to the City for the rights, franchises and licenses hereinbefore granted to construct, maintain and operate its said railways under the docks and bulkheads belong-

ing to the City (and including all space occupied between any pier-head line and the part of West street or Morton street nearest thereto under which said Railroad shall be laid) for each year beginning on the date on which the Tunnel Company shall first commence the actual operation of the Railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten years next thereafter, a sum equal to fifty cents (50c.) per annum for each linear foot of single railway track which shall be then constructed or which the Tunnel Company shall be bound to have then constructed under such docks and bulkheads, and the sum of one dollar (\$1) per annum per linear foot of such tracks for the period beginning on the last day of the said period of ten years and ending on the day fifteen years next thereafter.

The Tunnel Company shall pay to the City for the rights, franchises and licenses in and under streets hereinbefore granted from West street to the north line of Barrow street the sum of fifty cents (50c.) per annum for each linear foot of single railway track which shall be then constructed or which the Tunnel Company shall be bound to have then constructed under any such streets, or parts of streets, within The City of New York during the period beginning on the day when the Tunnel Company shall first commence actual operation of the Railroad (but not later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten years next thereafter, and the sum of one dollar (\$1) per annum for each linear foot of such tracks during the period beginning on the last day of such period of ten years and ending on the day fifteen years next thereafter.

The Tunnel Company shall pay to the City for such underground portions of Greenwich, Christopher and West Tenth streets, in Manhattan Borough, contiguous to its terminal station and for that portion of Greenwich street between the north line of Barrow street and said terminal, the sum of three thousand two hundred and twenty-four dollars (\$3,224) per annum, such rental to begin on the day of the commencement of construction therein by the Tunnel Company (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such con-

struction) and to continue during the period of ten years next thereafter, and the sum of six thousand four hundred and forty-eight dollars (\$6,448) per annum for the period of fifteen years next after such first period of ten years.

The Tunnel Company shall pay to the City for the rights under streets of the City hereinbefore granted the further sum of nine thousand dollars (\$9,000) per annum (the same being 3 per cent. per annum on the gross earnings of the New York portion of said Railroad, said gross earnings being estimated and fixed for the purposes of this grant at three hundred thousand dollars (\$300,000) per annum for the period of twenty-five years from the date on which the Tunnel Company shall first commence the actual operation of the Railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin the actual operation of the Railroad) for each year beginning on the date on which the Tunnel Company shall first commence the actual operation of the Railroad (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten years next thereafter, and the sum of fifteen thousand dollars (\$15,000) per annum (the same being 5 per cent. per annum on such gross earnings as so fixed) for the period beginning on the last day of the said period of ten years and ending on the day fifteen years next thereafter.

All such payments shall be made to the Comptroller of the City in equal payments at the end of each quarter year on the first days of January, April, July and October in each year.

The annual amounts to be paid by the Tunnel Company as aforesaid shall be readjusted at the end of the first period of twenty-five years, and shall thereafter be readjusted at intervals of twenty-five years. The annual amounts to be paid by the Tunnel Company for each and every period of twenty-five years after such first period shall be determined as follows, to wit: Each such determination shall be had upon the application of either the Tunnel Company or the Board or any authority which shall be authorized by law to act for the City in place of the Board. Such application shall be made at any time not earlier than two years and not later than one year before the expiration of the preceding

period of twenty-five years. The determination shall be sufficient if agreed to in writing by the Tunnel Company and the Board or such other authority in its place. If the Tunnel Company and the Board or such other authority in its place for the City shall not reach such agreement on or before the day one year before the expiration of such preceding twenty-five years period, then the annual rate of compensation for such succeeding twenty-five years period shall be reasonable; and either the City (by the Board or such other authority in its place) or the Tunnel Company shall be bound, upon request of the other, to enter into a written agreement with such other fixing the rate of such compensation at such amount as shall be reasonable; and if the parties shall not forthwith agree upon what is reasonable, then the parties shall enter into a written agreement fixing such annual rate at such amount as shall be determined by the Supreme Court of the State of New York; and either party may in such case apply to the said Court to fix such rate. If, in any case, the annual rate shall not be fixed prior to the commencement of such succeeding twenty-five years period, then the Tunnel Company shall pay the annual rate theretofore prevailing until the new rate shall be determined and shall then make up to the City the amount of any excess of the annual rate then determined over the previous annual rate.

V.

The railways forming part of the Railroad, where the same shall occupy parts of streets, shall be in tunnel or tunnels under the streets, and the Tunnel Company may construct the railways under the Hudson river and under West, Morton, Greenwich and West Tenth streets hereinbefore mentioned in tunnels containing one or more tracks, as it may find most advantageous.

No part of the structure of the Railroad, except its terminal station, shall approach within five feet of the exterior line of any street except streets which it shall cross, unless the abutting property shall be owned by the Tunnel Company, or unless the owner or owners of the property so abutting shall consent. The tunnel or tunnels, except as hereinbefore limited, may be placed in such places under the streets as may be found most convenient. The uppermost part of any tunnel shall not approach nearer than nine-

teen feet to the surface of any street, except that in Greenwich street, north of the north line of Barrow street, and in Christopher and West Tenth streets, opposite the said terminal station, the top of the tunnel may come within not less than thirty inches of the surface of the roadway or sidewalk.

Provided, however, and it is expressly stipulated that the Tunnel Company shall, in the course of construction, at its own expense, maintain and care for all underground structures; and any necessary interference with underground structures shall be subject to reasonable regulation by the department of the government of the City in control or charge thereof.

The Tunnel Company shall at all times keep paved with smooth pavement, in such manner as may be reasonably required by the Municipal authorities having care of the streets, and shall at all times keep in thoroughly good condition those portions of Christopher and West Tenth streets contiguous to its terminal station, and that portion of Greenwich street between the north line of Barrow street and the south line of West Tenth street.

The Tunnel Company shall make good to the City all damage which shall be done to the property of the City by the construction or operation of the Railroad, and shall make good to every owner of property abutting upon the Railroad, or which shall be injured by the work of construction or by operation thereof, all damage which shall be done to such abutting or injured property through any fault or negligence of the Tunnel Company or successor thereof or of any contractor, sub-contractor or other person in the course of any employment upon the construction or operation of the Railroad or any part thereof.

The method of construction shall be generally as follows: The tunnels under rivers and streets shall be constructed in whole or in part of masonry or of steel or of iron or any two or more thereof combined. Excavations necessary in the course of construction by the Tunnel Company shall be made without disturbing the surface of the streets, except the portions of Greenwich, Christopher and West Tenth streets adjoining the terminal station aforesaid; Provided, however, that the Board may, wherever elsewhere local conditions make excavations from the surface necessary for efficient

construction, grant the right to make such excavations from the surface, subject to such conditions as the Board may prescribe.

The tracks shall be constructed of the most approved plan, so as to avoid noise or tremor.

All plans for, and the method of doing, the work shall, from time to time, be subject to the approval of the Board.

VI.

The power to be used shall be electricity or such other power (not involving combustion in the tunnel), as may be approved by the Board.

VII.

The plan and profile of the Railroad herewith attached are to be deemed a part of this franchise and to be construed with the text hereof. The same shall be substantially followed, but deviations therefrom not inconsistent with the other provisions hereof may be permitted by the Board.

VIII.

The Tunnel Company shall have no power to carry on merely local traffic unless with the approval of the Board and for such additional consideration to be paid to the City as shall be prescribed by the Board. Local traffic shall be deemed to include the carriage of passengers or freight between the terminal station of the Tunnel Company and any point in The City of New York.

IX.

The Railroad shall be diligently and skillfully operated with due regard to the convenience of the traveling public, so long as the franchise hereby granted shall remain in force.

X.

The City shall have a lien upon the franchise and upon the real property of the Tunnel Company under the said river and streets to secure the payment of such compensation and rental.

In case of any failure to make such payments as herein prescribed, the lien aforesaid may be enforced by the Board or by any

authority which shall be authorized to act for the City in place of the Board, either by entry, foreclosure or other proper proceeding and by sale of such franchise and real property.

The Board may, in its own name, or in the name and behalf of the City, bring action for the specific performance, or may apply by mandamus, to compel the performance by the Tunnel Company of the duties and obligations hereby imposed upon the said Company, or any of them. And the Board may, in behalf or in the name of the City, bring action or proceedings to recover possession of any part of the property of the City to be used by the Tunnel Company as aforesaid, or to enforce the said lien of the City, or to enforce any part of this contract in the manner provided by section 9 of the Rapid Transit Act or any other proper action or proceeding.

XI.

The Tunnel Company will not at any future time oppose, but shall at any time upon the request of the Board consent to, the construction of any rapid transit railroad over, along or under any portion of any of the said streets to be occupied by the Railroad of the Tunnel Company aforesaid, where the same shall not actually interfere with the structure of the Tunnel Company as herein authorized.

XII.

The City, the Board and all duly authorized representatives of the City, shall have the right at all reasonable times to inspect the Railroad and any part thereof and to enter thereon when necessary for the examination, supervision or care of any property of the City or for any proper purpose.

XIII.

The Tunnel Company shall, from time to time, maintain and strengthen all parts of the Railroad which shall be under any street or avenue, so that the same shall safely support any structure superimposed or which shall be superimposed thereon by the City or under its authority or under any other public authority.

XIV.

The Tunnel Company shall have the right to grant, convey, mortgage, assign or transfer the franchise hereby granted, provided, however, that every grantee, assignee or transferee thereof, not including, however, a mortgagee or mere lienor, but including any purchaser upon foreclosure of or under or by virtue of any provision of any mortgage or lien, shall, upon accepting the grant, assignment or transfer and before such grant, assignment or transfer shall be valid, assume and agree to perform all of the obligations which by the provisions hereof are assumed by the Tunnel Company, and that no such grant, conveyance, assignment or transfer shall relieve the Tunnel Company of its obligations hereunder.

XV.

If, at any time, the powers of the Board shall be transferred by law to any other Board, officer or officers, then and in such case such other Board, officers or officer shall have all the powers, rights and duties herein reserved to or prescribed for the Board.

In witness whereof this certificate has been prepared by the Board of Rapid Transit Railroad Commissioners for The City of New York by and upon the concurrent vote of at least six of the members of the said Board, and is now attested by its seal and by the signature of its President, who is its presiding officer, and by the signature of its Secretary, this 10th day of July, 1902.

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

By ALEXANDER E. ORR, President.

[SEAL.] BION L. BURROWS,
Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 11th day of July, 1902, in The City of New York, in said county, before me personally appeared Alexander E. Orr and Bion L. Burrows, each to me known, and known to me to be the

said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary of the Board of Rapid Transit Railroad Commissioners for The City of New York, and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn, did depose and say, each for himself, and not one for the other, the said Alexander E. Orr, that he resided in the Borough of Brooklyn, in the said city, that he was the President of the said Board, and that he subscribed his name to the foregoing certificate by virtue of the authority thereof; and the said Bion L. Burrows, that he resided in the Borough of Manhattan, in the said city, that he was the Secretary of the said Board, and that he subscribed his name thereto by like authority; and both the said Alexander E. Orr and Bion L. Burrows, that they know the seal of the said Board and that the same was affixed to the foregoing certificate by the authority of the said Board and of a resolution duly adopted by the same.

CHARLES LA RUE KINGSLEY,

[SEAL.]

Notary Public,
New York County.

The New York and Jersey Railroad Company hereby accepts the foregoing franchise and all the terms, conditions and requirements thereof.

Dated, New York, July 14, 1902.

NEW YORK AND JERSEY RAILROAD COMPANY.

By WILLIAM G. McADOO, President.

[SEAL.] CHARLES W. KING,

Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 14th day of July, 1902, at The City of New York, before me personally came William G. McAdoo and Charles W. King, to me known, and known to me respectively to be the said William G. McAdoo, the President, and the said Charles W. King, the Secretary of New York and Jersey Railroad Company, and being

by me duly sworn, they did depose, each for himself, and not one for the other, the said William G. McAdoo that he resided at Yonkers, in the State of New York, and was the President of the New York and Jersey Railroad Company, the corporation named in and which executed the foregoing consent, and that he subscribed his name to the foregoing consent by the authority of the Board of Directors thereof; and the said Charles W. King, that he resided in the Borough of Brooklyn, City of New York, in the State of New York, that he was the Secretary of the said New York and Jersey Railroad Company, and subscribed his name to the foregoing consent by like authority; and both the said William G. McAdoo and Charles W. King, that they knew the seal of the said New York and Jersey Railroad Company, that the seal affixed to such consent was such seal, and that the same was affixed to the foregoing consent by authority of the Board of Directors of the said New York and Jersey Railroad Company and pursuant to a resolution adopted by the said Board.

CLARENCE J. S. DEVERE,

[SEAL.]

Notary Public 114,

New York County.

(In the originals the plan and profile is annexed.)

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REPORT
OF THE
CHIEF ENGINEER

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NEW YORK, January 1, 1903.

ALEXANDER E. ORR, *President*,

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS,

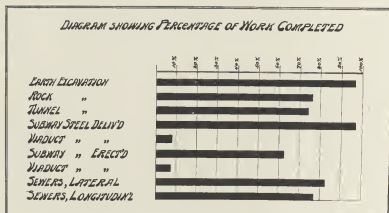
CITY OF NEW YORK.

Sir:—Pursuant to your instructions, I beg leave to report to you upon the work done by and under the supervision of the Engineering Department of the Board during the year ended December 31, 1902.

The close of the year 1902 completes a period of thirty-four months since the signing of the contract, and one week more than thirty-three months since the official commencement of the work on March 24, 1900. Inasmuch, however, as active operations did not begin until about September 1, owing to the delay in making sub-contracts and collecting plant, it can be said that a space of about twenty-eight months represents the duration of actual work, and owing to the satisfactory progress that in general has attended the work during the year, it can also be said that the completion of construction and the beginning of operations are brought within measurable distance. Unless some catastrophe, greater than can be reasonably imagined, shall occur, it is certain that the whole of the work will be completed within the time limit set by the contract, namely, four and one-half years, while if no serious contingencies arise, it is hoped that the greater part of the railway will be ready for operation before the close of the present year. The fact that all the sections are well in hand and most of the construction material delivered, gives good reason to expect that this hope will be realized.

The work done during the year 1902 exceeded that done during 1901, the total value of the former aggregating \$11,667,000, and of the latter, \$10,505,000. In fact, the cost of work done during 1902 was almost as much as that done during 1900 and 1901 combined, which total amounted to \$12,190,000. As will be seen by the detailed figures given below, 98% of the earth excavation, 76% of the rock excavation, and 74% of the tunneling, have been completed; and of 41,876 tons of steel required for the subway, 40,678

tions, or 97%, have been delivered. In like manner as to sewers, 29,933 feet out of 38,152 feet of longitudinal sewers have been completed, and 25,660 feet out of 31,254 feet of lateral sewer diversions. The tunnel work does not show so high a percentage of work accomplished; as the Contractor was prevented from beginning at Fort George the north end of the Fort Washington Tunnel, owing to a change in route having been adopted by the Board. This will involve a delay in completing Sections 14 and 15 beyond the remainder of the railway, but not, it is expected, beyond the time stated in the contract, exclusive of the extra allowance in time on account of the change in route. The following diagram will indicate the percentage of work done in the principal items of construction:



In the report made to you one year ago it was stated that so far "it has not been found necessary to make any radical departure from the plans originally designed, nor have any unforeseen or unexpected contingencies arisen, nor any conditions that were not foreseen and provided for," and also that "the problems that have so far arisen have been solved satisfactorily, which indicate that the remaining problems can be solved when they are reached." The year 1902 has developed the confirmation of this confidence. No changes in design have been found necessary, so that the structure will be completed substantially as first planned, and the problems

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INTERSECTION OF FOURTH AVENUE AND 23D STREET.

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remaining unsolved at the end of 1901 have either been completely worked out or are so near completion as to be considered as solved. The most important of these problems were certain readjustment of pipes, the work under the intersections of Fourth Avenue and 23d Street, and of Fifth Avenue and 42d Street, and the tunnel under the Harlem River.

All of the intricate pipe readjustments have been either constructed or satisfactorily planned. Some of these involved radical alterations, as is shown in a typical example at Broadway and 66th Street, where there were two gas mains, one 36 inches and the other 30 inches in diameter. As the subway had to be kept close to the surface in order to accommodate the station at 66th Street, and also to cross over a sewer at 65th Street, there was not room enough to pass these large gas mains over the roof of the subway and beneath the conduit of the surface railway. The mains were, in consequence, subdivided into five mains of 24 inches in diameter, and each one laid in a separate trough between the roof beams. This construction, which is in accordance with the original plans, has been carried into execution during the year.

The crossings at 23d Street and 42d Street above mentioned presented special problems of handling great congestion of surface travel that could not be interrupted. At 23d Street, in addition to the ordinary street vehicular traffic, there is the intersection of the double-track surface electric tramways, on one of which run the cars of the Fourth Avenue line, and on the other those of the Lexington Avenue and 23d Street cross-town lines. During the busy hours of the morning and afternoon seven hundred cars pass over this crossing during an hour, or at the rate of about one car every five seconds. The problem was further complicated by a network of water and gas pipes, and an intricate arrangement of electrical conduits.

As soon as the pavement was removed, timbers were laid carrying planks extending over the whole area of the street between the curb lines, and beneath this planked surface the work of excavation and construction has been carried on. The various water and gas mains, which were found in a veritable tangle, will be relaid in a systematic order, those running north and south in one plane, and those east and west in another. There will not, however, be

room enough above the roof of the subway for the electric conduits of the 23d Street railway cross lines. These conduits are very numerous, containing fifty-four cables, carrying power from the generating station at 25th Street to the Broadway and other lines. A special large conduit for such cables, six feet in height by four feet in width, has been constructed beneath and transverse to the Rapid Transit Subway. www.libtool.com.cn

The problem at Fifth Avenue and 42d Street was similar, except that at this point there is but one tramway, on 42d Street, but on the other hand, there is found on Fifth Avenue the greatest congestion of vehicular traffic to be met with in New York. In addition to the usual number of gas pipes, water mains, sewers and electric conduits, there are two 36-inch and two 48-inch water mains running down Fifth Avenue. As at 23d Street, this intersection has been planked and the excavation carried to a depth of 39.5 feet, of which 17.5 feet were in very hard rock. The large water mains were supported by specially designed trusses.

At the Harlem River, as was explained in the last report, the sub-contractor elected to make an attempt to build the river crossing without resorting to compressed air, or at most, to very moderate pressures. The United States authorities having required that a minimum depth of 20 feet of water be left clear at low tide, thus fixed the elevation of the tunnel roof. Instead of using a shield or some of the well-known methods requiring compressed air, the sub-contractor excavated the river bottom to about grade level by means of a dredge. The material thus removed was mud with clay beneath. When the excavation had been completed he drove very heavy (12-inch) tongued and grooved sheet piling, and then fixed cross braces in place by the aid of divers, the expectation being that such sheeting would be sufficiently tight to prevent leakage. This work of preparation and installation of temporary false work has required a large expenditure of money and a year in time, so that it was not until December, 1902, that pumping was begun. At the close of the year this was sufficiently advanced to indicate that the attempt will be successful, and that the trench will be substantially free from water, although the external hydrostatic pressure will be 48 feet. The tunnel approaches will now be built in an open excavation, the sides of which will be protected by the sheet

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INTERSECTION OF FIFTH AVENUE AND 42D STREET.

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piling, in the same manner as the other subway construction. Under the river channel, which for navigation must be kept open, but which the Government will permit to be temporarily narrowed, the plan above described will be modified so that the excavation will be roofed over with heavy timbers to exclude water, as does the sheet piling at the sides. Provision has been made to install air pressure at this point if it be found necessary.

During the year two untoward accidents occurred. The first was an explosion of dynamite in the powder house at the head of the shaft at Park Avenue and 41st Street. At noon on January 27, one of the workmen discovered the house to be on fire, when almost instantly the explosion followed. As the man nearest to the house—and who alone possessed definite information—was killed, it has been impossible to learn the exact condition of affairs, and the amount of dynamite on hand. It is believed that the latter was between 200 and 300 lbs. The result of this explosion was to throw down much plaster in the Murray Hill Hotel, the immediately adjacent building, and to break every window in the houses in the close vicinity, and even some windows at a distance of 600 feet. No structural damage was done to any building or to the subway. Unfortunately five persons were killed and many injured, the latter being struck by pieces of flying glass or plaster, but such injuries were for the most part slight. Of those killed, one was a workman; the others were in the Murray Hill Hotel, one being an employé.

The second accident was a sliding forward of a stratum of rock in the east wall of the east tunnel under Murray Hill at a point between Thirty-seventh and Thirty-eighth Streets. This part of the subway is in tunnel, the rail level being about 60 feet below the street surface. The work of driving the tunnels, for there are two, each containing two tracks, was by the bottom-heading method. At the point in question the bottom for nearly the full width and for about 10 feet in height had been removed, the rock being very hard and to all appearances quite sound. On March 20 there was a fall of rock in the roof, and on March 21 a fall in the side, one of the strata which had an inclination of 45 degrees sliding forward, disclosing the fact that, instead of the rock being solid and sound as appearances indicated, there was but a thin shell of hard rock out-

side of the line of the excavation, behind which was a mass of decomposed rock of no tenacity. As soon as the rock shell was broken this decomposed rock fell, the break extending to the surface and next to the walls of the abutting houses. As a result the front walls of four houses were so damaged that they had to be removed. This accident was not attended by any personal loss or injury. The break in the ground had a length of 35 feet and a width on the surface of about 20 feet. The void thus formed was filled with material excavated on other sections, consisting of earth and stone, which, with the broken pieces of the rock itself, formed a loose mass of material presenting great difficulties for tunneling operations, especially as any further movement of the ground was to be prevented if possible. To complete the work by open excavation was no more encouraging, for the removal of the superincumbent material would take away the abutment support of the street railway tunnel, which is above and only a few feet to the west of the Rapid Transit Subway. As the former structure was an old brick arch, already cracked, no risk could be taken with it. The contractors finally decided to pump Portland cement grout into the broken mass with a view not only of cementing it together, but also to fill all the voids so as to permit pieces of rock to be removed without taking away all the support from other pieces resting on them. About 1900 barrels of cement were thus pumped in, the tunnel itself having been bulk-headed to prevent the grout from running away. Of this amount about 1100 barrels were effective, the remainder being lost in leaks. After this grout had been given a chance to set, two side drifts ten feet high and seven feet wide were opened, in which the permanent masonry side walls of the tunnel were constructed. A top heading along the crown of the arch was next driven, from which, working laterally and downwards, the excavation was completed to the side walls. At this point both the side walls and the arch have been given an increased thickness. The experiment of grout was found to work admirably, for it not only filled the large voids but penetrated into all the fine crevices, so that the material, which before grouting was quite loose, required blasting for its removal. Before the end of the year the excavation at this point was completed and arched with masonry without any settlement of the ground above.

Immediately after the break the property owners in the vicinity, with a view to ascertain if other or similar occurrences were to be apprehended, appointed Messrs. Virgil G. Bogue, Albert L. Webster and Prof. James F. Kemp, a Committee of Engineers to investigate and report, permission to that end having been at once accorded by the Board, who also requested Mr. Theodore Cooper, M. Am. Soc. C. E., to co-operate with the Chief Engineer conjointly with the above gentlemen. Such joint committee and the Deputy Chief Engineer of the Commission drafted a set of regulations for the further progress of the work to prevent a similar recurrence. The general condition of Section 4 (Murray Hill Tunnel) will be given in detail below.

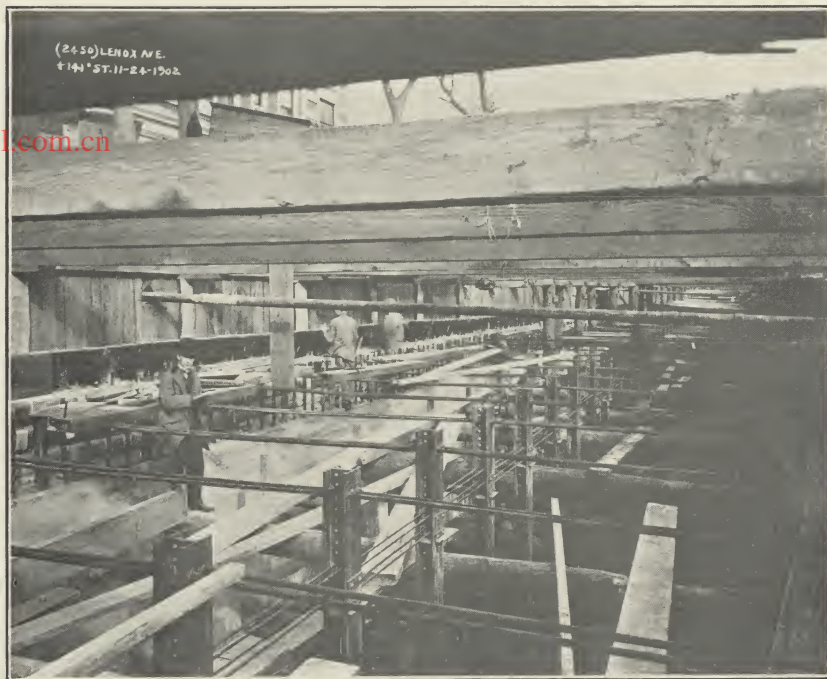
The excellent results attending the construction in concrete that we have been employing for two years gave confidence to the hope that a combination of rods and concrete would afford advantages over the ordinary combination of concrete and beams. With this view, a design was prepared for a section of subway with the walls and roof consisting of rods imbedded in concrete, the tensile strains to be taken by the former and the compressive by the latter. Columns were introduced between the tracks, as in the standard plan, to the tops of which rods were attached both transversely and longitudinally.

The site selected for carrying this design into execution was in Lenox Avenue between 138th and 142d Streets, adjoining the approach to the Harlem River tunnel, where the subway has two tracks and is located between the surface car tracks and the curb, thus affording freedom for work. As the bottom of the excavation at this point is about 14 feet below water level, it was found necessary to reinforce the bottom concrete with rods in order to withstand the upward thrust of the hydrostatic pressure. So successful was the experiment, not only in quality of work produced but also in rapidity and lessened cost of execution, that it has been decided to apply the same principle of design to the Lenox Avenue extension from 142d to 148th Streets, the station and subway extension at 149th Street and Third Avenue in The Bronx, and to portions of Contract No. 2 in Brooklyn. The details of these plans will be found in the appendix, while the work in progress in Lenox Avenue is illustrated by a photograph.

Reinforced concrete has also been used elsewhere, in strengthening arches and sidewalls where extraordinary or uncertain stresses were liable to occur; in stiffening the bottom against upward pressures, and in vault lights. Expanded metal for the same object was introduced in the arch and wall of the Murray Hill tunnel wherever the ground was treacherous.

During the year the question of the designs for station decoration and interior arrangement has been very fully considered by the Consulting Architects, Messrs. Heins & La Farge, in company with the Chief Engineer. The task of preparing suitable designs has been by no means light. There are 38 underground stations, varying in length from 200 to 350 feet. The large area of walls and ceilings to be thus covered precluded the use of many materials, either on account of expense or the difficulty of procuring them in sufficient quantity, although such materials were otherwise very desirable. Many designs were prepared, and even some sub-contracts let and subsequently cancelled. At length a general principle was established that is now being followed, and in accordance with which four stations (City Hall, Bleecker Street, 28th Street and Columbus Circle) are already under finishing treatment, while plans for several more are ready for sub-contracts. Although a general principle of design has been laid down no details will be repeated, so that no two stations will be alike. This, it is hoped, will produce a pleasing variety in effect. The main features of the design are floors of concrete for the platforms; walls of brick, enameled tiles, faience or terra cotta; and ceilings of plaster. The base of the walls for a height of about 30 inches will consist of very hard vitrified but light colored bricks to withstand the rough treatment that such portions of the walls are certain to meet. Above this brick base the main treatment of the surface will be white tiles, but divided into panels by decorative work in colored tiles, faience or terra cotta. The name of the station will be boldly displayed by large decorative tablets at intervals, and the number of the street, if numbered, or the initial letter, if named, will be worked in the design of the cornice at shorter spaces of about fifteen feet. This will greatly facilitate passengers in recognizing stations from car windows.

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REINFORCED CONCRETE CONSTRUCTION, LENOX AVENUE.

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The walls and ceilings will be constructed, according to the specifications, with an air space at the back. In the case of ceilings this will be done by making them in plaster on wire lath, either flat or in a series of arches, by bending the wire lath in curves parallel to, but at a slight distance from, the roof concrete.

The electric lights will be set in recesses, and all plumbing pipes and electric wires will be built in out of sight. The plumbing fixtures will be of the very best quality.

Alterations in or additions to the work in hand during the year have been neither many nor important, except in the matter of ordering the ducts for the electrical cables to be laid in the walls and to be considered an integral part of the rapid transit construction.

On February 6 the Board, by resolution, moved the station from Jennings Street on the East Side line to Freeman Street, and a new station was established at 174th Street.

On May 8 the Board, by resolution, authorized the Contractor to lay rails weighing 100 lbs. in weight, instead of rails weighing 80 lbs. as called for by the specifications.

On May 15 a letter was received from the Contractor requesting payment for extra work on account of ducts. On June 25 the Board, by resolution, passed requisition No. 1 for extra work on this account. The Comptroller, believing that the ducts should not be considered as part of the work of construction but as a part of the equipment, declined to pay the requisition when the same was presented. An appeal from this ruling was immediately taken by the Contractor, so that the question of payment is now being passed upon by the Courts.

On June 25 the Board changed that portion of the route of the East Side line lying between 149th Street at Third Avenue, and Westchester Avenue at Brook Avenue. This route involved the obstruction of Westchester Avenue, between Third Avenue and Brook Avenue, by an open cut and an embankment between solid masonry walls in order to permit the transition from subway to viaduct construction. Such an obstruction would have necessitated a very expensive widening of Westchester Avenue. In order to avoid this the Board laid out a new route, passing east-

erly along 149th Street to private property at Gerard Street, and thence across private property to Brook Avenue. The transition from subway to viaduct will be made on private property, and no street will be obstructed or closed.

On July 24 the Board authorized the laying of a third track on the East Side line from Brook Avenue to Bronx Park.

During the summer an application was made by the Contractor to permit the use of a ballasted track instead of a concrete track, as called for by the Contract Drawings. The Board submitted the question to Messrs. W. J. Wilgus, Chief Engineer, New York Central & Hudson River Railroad, George H. Pegram, Chief Engineer, Manhattan Elevated Railroad and P. D. Ford, Chief Engineer, Long Island Railroad, for consideration and report. These gentlemen reported that, in their judgment, the request of the Contractor should be granted.

On September 25 the Board authorized the specifications to be changed in accordance with the above report so as to read:

"The rails shall be securely fastened to cross-ties of sound material, of quality and dimensions which shall be approved by the Engineer, and said ties shall be supported on a bed of gravel or broken trap rock, capable of passing through a three-quarter inch ring."

In the report for the years 1900 and 1901 a detailed description was given of each section into which the line had been divided. During the year 1902 work was continued energetically. Below will be found a description of each sub-section, with the names of the sub-contractors, and a brief summary of the work that has been accomplished during the year on each, with the total quantities of the principal items of construction removed, received or put in place, to date and during the year 1902, together with the remaining amount of work to be done, by which comparison can be made between the amount of work accomplished during last year and previous years, and that still remaining to be finished. In addition to the regular work covered by the general contract, the Board has from time to time ordered certain extra work that is to be paid for in addition to the stipulated contract price. Such extra work to date is:

Section 1,

Lengthening platforms at Brooklyn Bridge Station.

Section 2,

Additional cross-over at Chambers Street.

Additional side track at Spring Street.

Section 3,

Lengthening platforms and additional side track at 14th Street Station.

Section 5-A,

Lengthening platforms at Grand Central Station.

Removing 48-inch water main from 42d Street to 40th Street.

Section 6-A,

Lengthening platforms and additional side tracks at 72d Street Station.

Section 6-B,

Lengthening platforms and additional side tracks at 96th Street and 103d Street Stations.

Section 8,

Lengthening platforms at 110th, 116th, 125th and 135th Street Stations.

Section 9-A,

Lengthening platforms at 145th Street Station.

Section 9-B,

Lengthening platforms at Mott Avenue and 149th Street Stations.

Section 10,

Lengthening platforms at Jackson Avenue, Prospect Avenue, Southern Boulevard, Freeman Street, 177th Street and Bronx Park Stations.

Extra Station at 174th Street.

Section 11,

Third track from 104th to 125th Streets.

Lengthening platforms at 104th Street, Cathedral Parkway and Columbia University Stations.

Section 12,

3d track from 125th to 133d Streets.

Lengthening platforms at Manhattan Street Station.

Section 13,

Third track from 133d to 147th Streets.

Lengthening platforms at 137th, 145th, 157th and 167th Street Stations.

Section 14,

Lengthening platforms at 181st Street Station.

Change of alignment and lengthening tunnel at Fort George.

Section 15,

3d track from Dyckman Street to Kingsbridge.

Lengthening platforms at Dyckman Street, 215th Street, Marble Hill and Bailey Avenue Stations.

Lenox Avenue Extension and Terminal, 142d to 150th Streets.

In addition to the above changes involving extras, changes involving decreases have been ordered to date as follows:

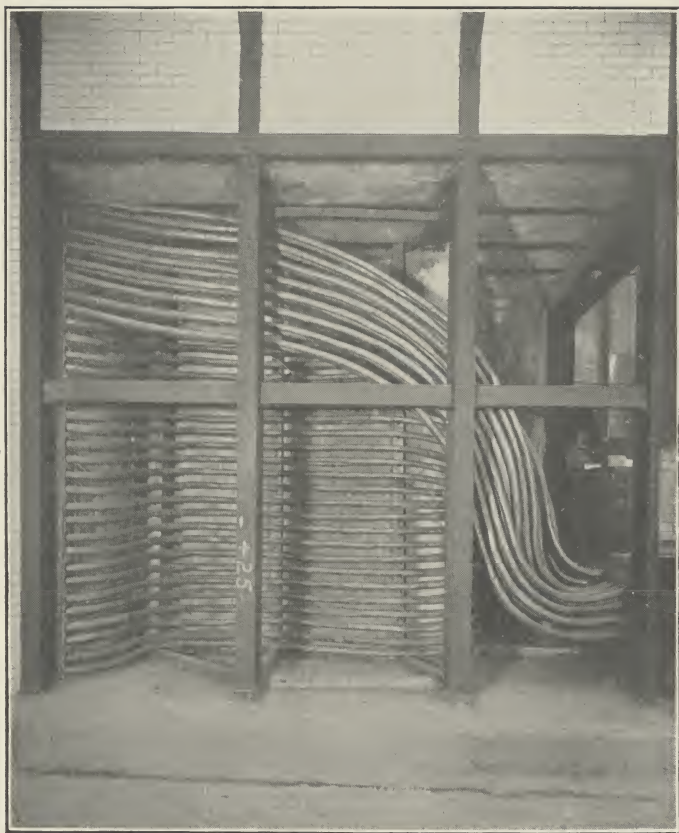
Section 1,

City Hall Loop.

Section 15,

Change of route from Kingsbridge Road to Amsterdam Avenue.

On account of the above extras, payments were vouchered during 1901 to the amount of \$162,000, and during 1902, to \$231,000. The quantities of the principal items in the construction of such



ELECTRIC CABLES IN DUCT MANHOLE, AS DEFLECTED FROM VERTICAL TO HORIZONTAL POSITION, TO PASS BENEATH STATION PLATFORM.

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extras accomplished to date and during 1902, or remaining to be done are given in connection with the description of each section, and in complete detail subsequently.

In measuring the quantities for the several estimates, measurements are taken only of the exact amount of work within the exterior or "neat" lines of the structure, this being the arrangement between the Contractor and the sub-contractors. Of necessity there must be work of an appreciable amount done outside of the neat lines, both as to excavation and as to masonry. As a matter of interest and information, these excess quantities have been recorded and they will be given below in each case, but payments are not made on account of them. In connection with these excess quantities, the work on the ducts is included pending the decision by the Courts as to whether such work is an extra on the construction, or is to be treated as part of the equipment.

Section 1.—City Hall Loop, Park Row and Centre Street to centre line of Chambers Street. Degnon-McLean Contracting Co., Sub-Contractors.

This section has been one of the most difficult sections to construct on account of the great traffic along Park Row with the four lines of surface electric railway, the operations of which had to be and have been maintained uninterrupted. The construction details due to the building of the loop beneath the main line tracks under Park Row, in order to avoid crossings at grade, involved other great complications. The whole work has been unfortunately considerably delayed by the presence of the old Hall of Records, the previous removal of which had been expected, but which was in process of demolition at the end of the year. The most interesting detail of construction on this section, besides the loop junction referred to above, is the station within the limits of the Park and directly in front of the City Hall. This station being on the terminal loop contains but a single track, and in that respect is therefore unique. It is also on a curve. These two features rendered it possible to make a special design that would differ in all respects from the other stations on the road. Such a design was worked out by the Consulting Architects, Messrs. Heins & La Farge, and has been constructed, except so far as the tiles

on the side walls and the platforms are concerned. This station is located at the point where the official beginning of the work was made. A photograph of the interior as it looked at the close of the year, appears as the frontispiece of this report.

Details of the work done on this section are shown in the following table:

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SECTION 1.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation Cu. Yds.	81,666	44,854	46,014
Concrete "	9,144	5,869	11,826
Other Masonry "	454	431	692
Steel Erected Tons	954	945	1,481
Steel Delivered "	2,185	1,145	250

On Section 1 the original contract plans contemplated a loop surrounding the Post Office, instead of which the loop has been constructed wholly within City Hall Park. On account of this change, the quantities have been materially decreased from the originally estimated quantities, and although certain additional work has been ordered in lengthening the express platforms at the Brooklyn Bridge station, the net balance shows a decrease from the quantities required by the contract plans. There is, therefore, no extra work on this section to record. The quantities as given above are in accordance with the plans under execution.

The quantities in excess of the above, outside of neat lines and for the construction of ducts, for which no allowance for payment was made, are as follows:

SECTION 1.

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yds.	1,180	1,390	2,570
Concrete..... "	199	72	271
Other Masonry..... "	397	....	397
Steel Erected..... TONS	....	7	7
Steel Delivered..... "	....	7	7
Ducts.....Lin. Ft.	....	33,248	33,248

Section 2.—From the centre line of Chambers Street along Centre Street and Elm Street to the centre line of Great Jones Street. Degnon-McLean Contracting Co., Sub-Contractor.

This part of the line follows the line of Elm Street, which, in its widened condition, has never been turned over to traffic. The sub-contractor was, therefore, permitted to occupy the whole of the street, making provision only for access to abutting buildings. North of Howard Street this section presented no great difficulty, the material excavated being sand only, and above tide level. From Howard Street to Leonard Street the surface of the ground has an elevation of from 11 to 12 feet only above the plane of mean high tide, thus bringing the bottom of the excavation of the subway considerably below that level. Work on the line south of Howard Street was begun during the year 1902. At the close of the year excavation for the four-track width had been completed southerly across Canal Street, and an excavation sufficient to construct the first two tracks had been carried southerly from that point to nearly Leonard Street. In order to deal with the ground-water the sub-contractor drove sheet piling at the sides of the excavation, and with the aid of a pumping plant was able to keep down the water level sufficiently for him to carry on his work. The soil

being for the most part firm sand and gravel, there has been no tendency to "run" with the removal of the water. From White Street southerly to Leonard Street the excavation disclosed the bottom of the Collect Pond, originally the source of water supply for the City of New York, at a time when the city was confined wholly to the district south of where the City Hall now stands. The bottom of the old pond consisted of peat and compressible vegetable matter, lying in a layer with a depth of from 2 to 8 feet. Beneath this peat was found sand and gravel. In some places the excavation for the subway was sufficiently deep to require the removal of the whole of the compressible soil. Where, however, the compressible soil extended below the foundation level, the sub-contractors were directed to remove it, and to fill the space with sand, gravel and broken stone, and in some cases to supplement the latter with a timber grillage foundation. Full precautions were taken to prevent the percolation of water into the finished structure by reinforcing the ordinary water proofing layer of felt and asphalt with courses of brick laid in hot asphalt.

The regular work done in accordance with the contract drawings, and the extra work called for in addition to the contract, are shown in the following tables:

SECTION 2.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	242,120	85,469	29,480
Concrete..... "	32,312	16,202	13,838
Other Masonry..... "	2,556	1,350	771
Steel Erected..... Tons	3,822	1,605	1,516
Steel Delivered..... "	5,317	870	21

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	5,700	5,700	
Concrete..... "	742	742	433
Steel Erected..... Tons	335	335	45
Steel Delivered..... "	33	33	347

In addition to the foregoing the following excess quantities were dealt with:

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	12,796	5,260	18,056
Concrete..... "	545	585	1,130
Other Masonry..... "	1,966	....	1,966
Steel Erected..... Tons	6.4	38	44.4
Steel Delivered. "	6.4	38	44.4
Ducts.....Lin. Ft.	....	542,524	542,524

Section 3.—Lafayette Place from the centre line of Great Jones Street to Astor Place, and Fourth Avenue from Astor Place to 100 feet north of the centre line of 33d Street. Holbrook, Cabot & Daly, Sub-Contractors.

The work on this section has progressed in a manner entirely satisfactory, the close of the year finding but a small amount of

excavation to be completed in the neighborhood of 8th Street and at the 14th Street and 18th Street stations.

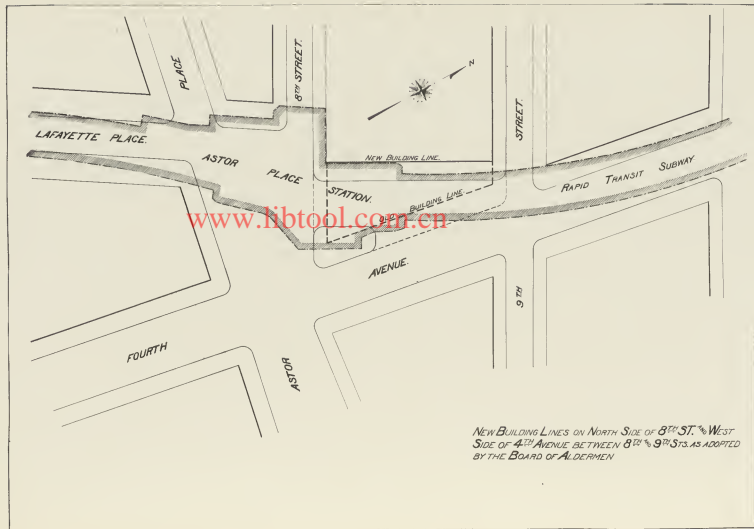
The Rapid Transit Board made a recommendation to the municipal authorities during the year 1901, to the effect that a portion of the block between 8th and 9th Streets on Fourth Avenue should be acquired and Fourth Avenue widened, so as to provide a proper junction between Fourth Avenue and Elm Street in order to avoid congestion at the intersection. After considerable deliberation the suggestion was adopted by the Board of Aldermen on October 14, and steps were at once taken to acquire the property. In accordance with this decision, the Rapid Transit Board authorized the Chief Engineer to remove the buildings standing on the site in question. The annexed map indicates the original street lines and the new street lines that will be made by the widening above described. As described previously in this report, the crossing of 23d Street and Fourth Avenue, on account of the great burden of vehicular and surface railway traffic and the intricate complications of the subsurface structures, added enormously to the difficulties of building the station at that point.

The principal items of work done on this section, both in regular and extra work, as well as the principal excess quantities, are shown in the following tables:

SECTION 3.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation Cu. Yds.	325,717	132,164	14,583
Rock " "	95,750	41,287	3,958
Concrete "	49,166	30,031	13,493
Other Masonry "	3,958	2,585	825
Steel Erected Tons	5,885	3,678	1,550
Steel Delivered "	7,362	1,046	73



NEW BUILDING LINES ON NORTH SIDE OF 8TH ST. % WEST SIDE OF 4TH AVENUE BETWEEN 8TH % 9TH STS. AS ADOPTED BY THE BOARD OF ALDERMEN

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EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	3,499	3,499	858
Rock " " " "	1,673	1,673	....
Concrete..... " "	825	825	85
Other Masonry " " " "	18	18	....
Steel Erected..... Tons	81	13	153
Steel Delivered..... " "	....	....	234

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yds.	8,951	7,223	16,174
Rock " " " "	3,109	2,052	5,161
Concrete..... " "	1,785	1,362	3,147
Other Masonry " " " "	8,167	....	8,167
Steel Erected..... Tons	....	40	40
Steel Delivered..... " "	....	42	42
Ducts..... Lin. Ft.	....	772,419	772,419

Section 4.—From 100 feet north of the centre line of 33d Street to the centre line of 41st Street. Ira A. Shaler, Sub-Contractor.

The twin double-track tunnels beneath Murray Hill comprise the work. These tunnels have been driven from two shafts located in Park Avenue, a few feet south of 34th Street, and from two other shafts located in Park Avenue near 41st Street. The headings in the west tunnel met on February 28, at a distance of 1176 feet north from the 34th Street shaft, and 670.5 feet south from the 41st Street shaft; and the headings in the east tunnel met on March 14, at a distance of 1235.5 feet north from the 34th Street shaft, and 558 feet south from the 41st Street shaft. The removal of the bench and roof, the latter in the north portion of the east tunnel, followed the driving of the headings.

On this sub-contract two serious accidents occurred during the year, as has been already described at length in this report. These accidents entailed a considerable delay, preventing the completion of Section 4 during the year 1902. In spite of this delay and other difficulties, the close of the year found the work in good condition and well advanced.

Of a total length of 1999.86 feet, there were at the close of the year 1928 linear feet in the west tunnel completely excavated, and 1766 feet in the east tunnel, leaving 72 feet partially excavated in the east and 234 feet in the west tunnel. The lining of these tunnels was begun in January, and, as in the case of the other tunnels, this lining consists of concrete. The minimum thickness of arch is 18 inches, increased to a maximum of 30 inches where the ground was heavy. In some cases where the tunnel lining was liable to be subjected to uneven strains, the arch was reinforced with either expanded metal or steel rods. When constructing the arch, 2-inch pipes were built into the crown of the arch at distances from 30 to 50 feet. After the concrete had thoroughly set, a force pump was attached to the end of these pipes and grout of pure cement was forced in under pressure to fill all voids that might be left between the concrete and the rock.

At the end of the year, in the west tunnel, 1857 feet of both side-walls were constructed to spring line, and 1782 feet of arch

had been turned. In the east tunnel 1769 feet of both side-walls were in place and 1662 feet of arch.

The monthly progress in heading and bench removal was as follows:

MURRAY HILL TUNNELS

1902	WEST TUNNEL				EAST TUNNEL			
	N. END		S. END		N. END		S. END	
	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH
	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.
January ...	152	....	147	....	....	119	112	....
February ..	49.5	....	122.5	....	....	59	88	....
March.....	....	....	..	84	....	33	67	10
April.....	....	....	....	....	....	....	....	....
May .....	....	29	....	37	....	....	....	23
June .....	....	34	....	60	....	16	....	17
July .....	....	42	....	36	....	100	....	....
August .....	....	21	....	89	....	82	....	12
September .	....	41	....	77	....	....	....	58
October.....	....	50	....	12	....	....	....	42
November..	....	....	....	53	....	....	....	103
December ..	....	....	....	7	....	....	....	71
Totals.....	201.5	217	269.5	455	....	409	267	336

The work accomplished on Section 4 to date is shown below:

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	1,161	475	72
Rock " " " " "	6,220	3,754	....
Tunneling..... " " " " "	66,788	23,559	2,227
Concrete..... " " " " "	23,884	23,884	5,542
Steel Erected..... Tons	24	24	4.1
Steel Delivered..... " " " " "	24	24	4.1

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yds.	1,962	....	1,962
Rock " " " " "	867	42	909
Tunneling..... " " " " "	8,542	854	9,396
Concrete..... " " " " "	180	268	448
Other Masonry..... " " " " "	929	.. .	929
Broken Stone Bk. Filling " " " " "	2,264	....	2,264
Ducts..... Lin. Ft.	....	66,304	66,304

On the morning of June 17, while the Chief Engineer and the Deputy Chief Engineer were inspecting the work on Section 4, accompanied by Major Shaler and Mr. Charles E. Fraser, a piece of rock fell from the roof, striking Major Shaler and inflicting such serious injury that death followed. Major Shaler, by his integrity of character; his charm of personality; his skill as an engineer; his energy as a contractor, and his sense of justice towards his em-

ployés, won the regard of all with whom he came in contact. Therefore his sudden and sad death was felt as a personal loss by every one connected with the work; and especially by the Chief Engineer, who had rejoiced to be able to claim Major Shaler as a personal friend for many years, and who having been at his side when he was mortally struck, knows that he met his death with courageous resignation, for even at that supreme moment he thought only of his work and of others and not of his own suffering. His death closed a series of unfortunate occurrences, for which Major Shaler was not in any way to blame.

Section 5-A.—From the centre of 41st Street and Park Avenue to the centre line of 47th Street and Broadway. Degnon-McLean Contracting Co., Sub-Contractors.

This sub-contract being one of the last let, the actual work was late in beginning. This section contains many serious difficulties. At the corner of 42d Street and Park Avenue and at the two corners of 42d Street and Broadway, the line passes under private property, and special arrangements had to be made so that the railway might be constructed and yet permit a modern building to be built above it. At the corner of 42d Street and Park Avenue a large hotel, twenty stories in height, has been in course of erection simultaneously with the construction of the railway, the foundations of the hotel being about 28 feet below the rail level of the subway. At the northeast corner of 42d Street and Broadway, there stood an old building which the owners, on account of leases, were not in position to improve for some years. It was decided, however, to place beneath this building foundations to a depth of 40 feet, so that in the future a modern building could be constructed with cellars and sub-cellars to that depth. On the opposite side of Broadway, between 42d and 43d Streets, where the railway again passes under private property, the property was acquired by one of the large daily newspapers, and plans were drawn for the construction of a building, whose floor was to be at a depth of 47 feet below the sidewalk, and 27 feet below the rail level. As this property is triangular in plan and small in area, the owners decided to utilize the space beneath the sidewalks and beneath the railway, so that the building, as finally designed, will be both below and above

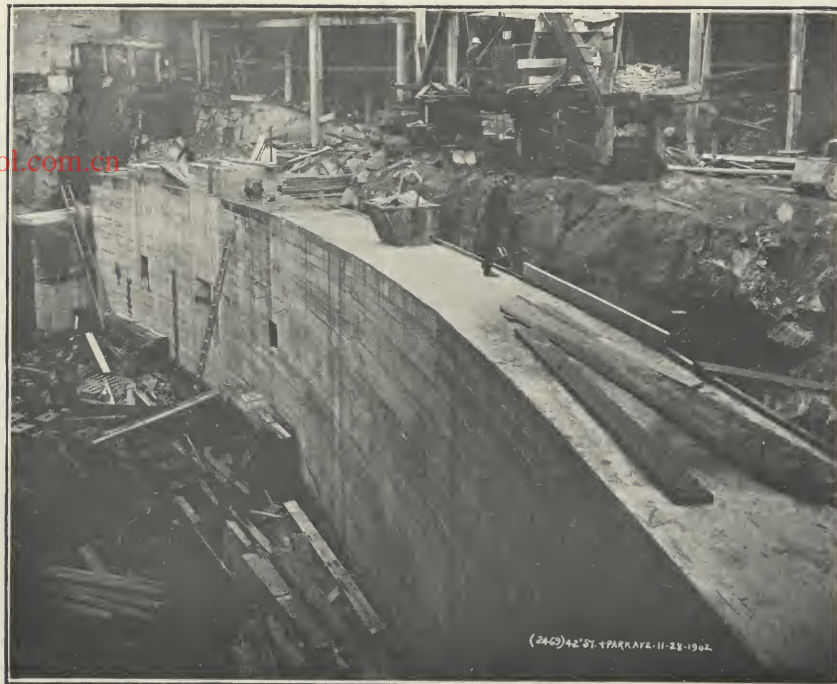
the railway, the latter passing through what would ordinarily be the basement story. In order that the vibrations of the railway might not affect the building, the plans were so arranged that the two structures should be independent of each other. Cross-sectional views of the buildings at 42d Street and Park Avenue and at 43d Street and Broadway are annexed to this report.

The physical difficulties connected with this section are due to the great traffic along the whole of the route, and the depth of the cut at Fifth Avenue and 42d Street necessitated by the topography of the latter street. Reference has been made to this feature elsewhere in this report. The large express station at 42d Street and Madison Avenue required the taking of nearly the whole of the street from building line to building line. In order to prevent accidents, the buildings, whose foundations were shallow, were underpinned to rock. The methods adopted by the sub-contractors for doing the work in the deep cut west of Fifth Avenue, as described in detail in the previous report, have during the year proved successful. In brief, this method consisted in excavating a longitudinal trench for one track, and from it, drifting laterally, carrying the overlying material, the depth of which is 6 to 15 feet. Although the surface under 42d Street has suffered very materially, the surface has been retained in a condition for traffic, and at the conclusion of the work will be entirely reconstructed. The quantities of construction handled on this section are as follows:

SECTION 5 A.
QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	129,544	63,794	27,757
Rock " " " "	95,484	58,842	31,761
Concrete..... " "	18,171	14,362	19,184
Other Masonry " " " "	1,224	915	1,415
Steel Erected..... Tons	2,152	1,836	2,500
Steel Delivered..... " "	4,231	1,682	421

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CONCRETE RETAINING WALL AT HOTEL BELMONT.

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EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	1,200	1,200	300
Rock " " " "	1,250	1,250	250
Concrete..... "	155	155	45
Steel Erected..... Tons	11	11	128
Steel Delivered..... "	16	16	123

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	3,600	3,682	7,282
Rock " " " "	2,650	2,258	4,908
Concrete..... " "	116	386	502
Other Masonry..... "	247	6	253
Steel Erected..... Tons	....	10	10
Steel Delivered..... "	....	19	19
Ducts.....Lin. Ft.	....	291,372	291,372

Section 5-B.—From the centre line of 47th Street and Broadway to the north end of the station at Columbus Circle, 60th Street and Broadway. Naughton & Co., Sub-Contractors.

The close of the year finds this section almost completed, work on it having progressed steadily throughout the year. This section covers two stations, one at 50th Street, and one at Columbus Circle, which latter being more advanced than any other station on the

line, it was possible to begin during the year the work of decoration and finish. The record of work done on this section during the year is as follows:

SECTION 5 B.
QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	98,345	29,619	....
Rock "..... "	86,630	30,066	....
Concrete..... "	24,811	12,971	1,091
Other Masonry..... "	2,119	901	280
Steel Erected..... Tons	2,694	1,411	170
Steel Delivered..... "	2,864	16	....

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yds.	1,777	2,530	4,307
Rock "..... "	4,146	2,500	6,646
Concrete..... "	....	816	816
Other Masonry..... "	2,256	80	2,336
Steel Erected..... Tons	....	26	26
Steel Delivered..... "	....	29	29
Ducts..... Lin. Ft.	....	431,526	431,526

Sections 6-A and 6-B.—From 60th Street and Broadway to 82d Street and Broadway; and from 82d Street and Broadway to the centre line of 104th Street. William Bradley, Sub-Contractor.

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SUBDIVISION OF LARGE GAS MAINS AT 66TH STREET.

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These two sections, covered practically by one contract, represent the longest sub-contract of open excavation on the work. While the work on these two sections has not progressed as rapidly as was hoped, nevertheless, the close of the year finds Section 6-A in an advanced state of completion, except from 72d to 80th Streets.

At 65th Street and Broadway the subway passes beneath the columns of the Manhattan Elevated Railway. As the work was in rock, it was a matter of some difficulty to support the railway and the street surface while removing the rock from beneath the foundations. At the end of the year all but one of the four foundations had been successfully removed and new foundations constructed on the roof of the subway.

At 66th Street and Broadway it was necessary to reconstruct two large gas mains, as has already been described. At the beginning of the winter the subway was in condition to have those gas mains exchanged to their new position. On account of the season, the gas company objected to the change being made until spring arrived and the demand for gas was temporarily reduced. It was, therefore, necessary to maintain an open excavation at this point for some months.

The main items of construction accomplished on Section 6-A are:

SECTION 6 A.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation. Cu.Yds.	131,072	68,712	16,885
Rock " "	129,787	90,964	24,385
Concrete "	24,941	19,381	19,090
Other Masonry "	2,085	1,708	1,734
Steel Erected. Tons	2,822	2,241	2,445
Steel Delivered. "	5,012	339	255

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation Cu. Yds.	4,140	4,140	460
Rock " "	4,590	4,590	510
Concrete "	276	276	1,272
Steel Erected Tons	67	67	66
Steel Delivered "	133	....	....

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation Cu. Yds.	7,583	3,180	10,763
Rock " "	5,357	3,576	8,933
Concrete . . . . . "	....	905	905
Other Masonry "	487	51	538
Steel Erected Tons	....	17	17
Steel Delivered . . . . . "	....	19	19
Ducts Lin. Ft.	....	464,478	464,478

Section 6-B includes the junction north from 96th Street, where two of the tracks are depressed so as to pass beneath the north bound track at 103d Street. The cut necessary for this work has a depth of 45 feet, almost wholly in rock. The construction as designed calls for two levels with three tracks on the top level in the neighborhood of 102d Street, and represents, therefore, the largest detail of construction that has been accomplished.

The main items of construction accomplished on this section are:

SECTION 6 B.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	161,796	44,496	17,837
Rock " " " "	99,389	63,976	46,380
Concrete..... "	24,652	15,550	23,691
Other Masonry..... "	1,666	1,082	2,024
Steel Erected..... Tons	2,662	1,806	3,311
Steel Delivered..... "	5,794	2,440	179

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	3,742	3,742	3,321
Rock " " " "	7,985	7,985	6,224
Concrete..... "	379	379	5,047
Other Masonry..... "	....	..	....
Steel Erected..... Tons	23	23	423
Steel Delivered..... "	23	23	433

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

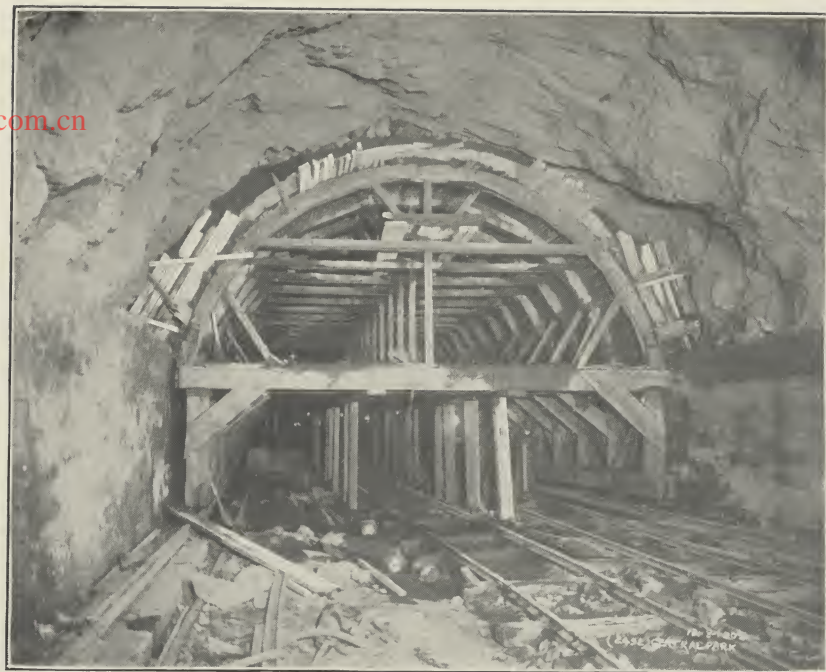
	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yd.	10,300	4,194	14,494
Rock ".....	6,600	1,623	8,223
Concrete..... "	75	806	881
Other Masonry..... "	220	18	238
Steel Erected..... Tons	....	15	15
Steel Delivered..... "	....	15	15
Ducts..... Lin. Ft.	....	398,070	398,070

Section 7.—From a junction with the main line on Broadway easterly under private property to 104th Street, Central Park, to the centre line of 110th Street. Farrell & Hopper, Sub-Contractors.

At the beginning of the year the open excavation on this section had been completed, and the driving of the tunnel proper from a portal near the main drive in Central Park near the Lenox Avenue gate had been begun, and also headings from the shaft on the west side of Central Park at 104th Street. In addition to this, a second shaft had been started 110 feet east of Broadway. On February 19, the headings met between the portal in the Park and the shaft at Central Park West, at a distance of 602 feet west from the portal, and 1123 feet east from the centre line of the latter. The shaft near Broadway reached sub-grade on May 10, but the top headings for the tunnel were begun on January 6. The headings between this shaft and the shaft at Central Park West met on April 30, at a distance of 410 feet east of the centre line of the former, and 1752 feet west of the centre line of the latter.

The removal of the bench followed closely after the meeting of the headings; so that at the completion of the year 1902, all the bench between the Park portal and the Central Park West shaft had been removed, 813 feet of bench between the Central Park West shaft and the Broadway shaft, and 115 feet of bench west of the Broadway shaft, leaving 1124 feet of bench in place.

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CENTRES FOR CONCRETE LINING OF CENTRAL PARK TUNNEL.

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CENTRAL PARK TUNNEL

1902 MONTH	BROADWAY SHAFT, WEST.		BROADWAY SHAFT, EAST		CENTRAL PARK SHAFT, WEST		CENTRAL PARK SHAFT, EAST		PARK PORTAL, WEST	
	HEADING	BENCH	HEADING	BENCH	HEADING	BENCH	HEADING	BENCH	HEADING	BENCH
January	48	....	87	....	188	....	160	....	136	153
February	17	....	98	....	133	....	75	....	62	97
March.....	93	....	129	....	164	....	....	6	....	172
April.....	....	....	96	....	176	....	....	75	....	204
May .....	....	48	....	80	....	36	....	52	....	175
June .....	....	38	....	45	....	61	....	26	....	71
July .....	....	....	....	....	....	59	....	53	....	....
August .....	....	....	....	....	....	56	....	49	....	....
September .....	....	....	....	....	....	69	....	66	....	....
October.....	....	....	....	....	....	96	....	76	....	28
November.....	....	....	....	....	....	111	....	....	....	....
December .....	....	29	....	17	....	135	....	....	....	....
Total	158	115	410	142	661	623	235	403	198	900

The progress of heading and bench work, month by month, from the various shafts is shown in the following table:

The total length of tunnel on this section is 4,045 feet. Of this total, in addition 1249 feet had been completely lined with concrete masonry, and 191 feet of side walls had been built in part, and 549 feet of floor laid.

The total amount of work done on the various items on Section No. 7 during the year 1902, is as follows:

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SECTION 7.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	8,627	....	....
Rock "....."	3,750	....	....
Tunneling....."	56,434	37,122	18,278
Concrete....."	6,527	3,987	7,106
Other Masonry....."	322	141	....
Steel Erected.....Tons	177	....	....
Steel Delivered....."	182	....	....

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	368	282	650
Rock "....."	207	273	480
Tunneling....."	10,602	100	10,702
Concrete....."	3,933	110	4,043
Other Masonry....."	....	2	2
Steel Erected.....Tons	....	5	5
Ducts.....Lin. Ft.	....	27,573	27,573

Section 8.—From the centre line of 110th Street and Lenox Avenue to 100 feet north of the centre line of 135th Street and Lenox Avenue. Farrell & Hopper, Sub-Contractors, who, however, subsequently re-let the major portion of this work to John C. Rodgers.

This work being mostly in sand the excavation had been largely removed at the end of the year 1901. The close of the year 1902 found the subway almost entirely completed, as will be seen from the figures below; the work remaining to be done being in connection with the stations at 116th, 125th and 135th Streets, the construction of which had been somewhat delayed owing to the non-arrival of steel.

SECTION 8.
QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu.Yds.	143,615	42,175	15,785
Rock " " " "	42	....	....
Concrete..... " "	25,305	8,680	8,025
Other Masonry " " " "	2,607	760	281
Steel Erected..... Tons	2,022	614	799
Steel Delivered..... " "	2,991	401	....

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

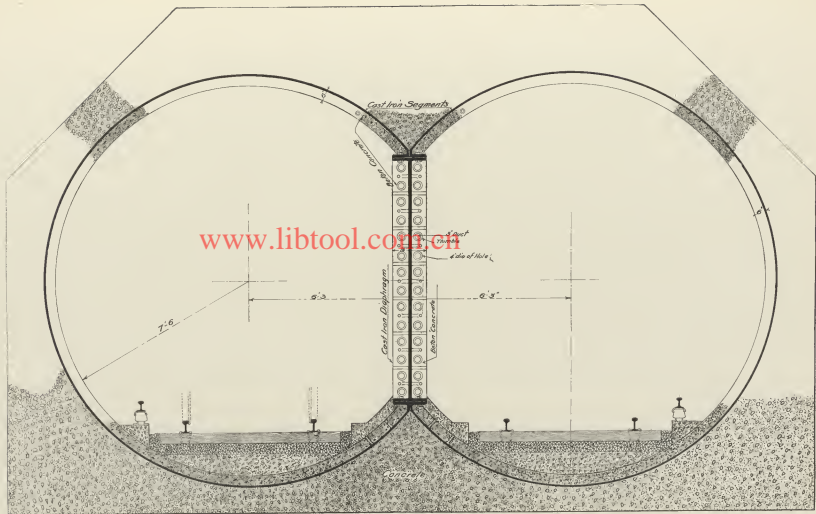
	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu.Yds.	2,435	2,435	3,423
Concrete..... " "	565	565	902
Other Masonry " " " "	17	6	10
Steel Erected..... Tons	68	68	77

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	3,794	3,820	7,614
Concrete..... "	2,250	788	3,038
Other Masonry..... "	....	7	7
Steel Erected..... Tons	....	13	13
Steel Delivered..... "	....	25	25
Ducts.....Lin. Ft.	....	89,999	89,999

Section 9-A.—From a point 100 feet north of the centre line of 135th Street and Lenox Avenue to the centre line of Gerard Avenue in the Borough of The Bronx. McMullen & McBean, Sub-Contractors.

As mentioned in the last report, the work on this section up to the beginning of the year 1902, had been confined chiefly to the work of preparing and installing the plant for the construction of the river section. For the work on the portion of the contract between 135th Street and the Harlem River, a change was made in the design from beam to steel-rod construction, as described in the earlier part of the report. The sub-contractors after a very careful consideration of the whole subject, decided to make the attempt to construct the crossing of the river, except the channel portion, in open excavation, without resorting to the use of compressed air. To this end the sub-contractors designed a coffer-dam, consisting of 12"x12" tongued and grooved yellow pine sheet-piling, which was tightly driven after the trench had been dredged. This piling was then held in place by longitudinal braces and a heavy system of trusses, all of which were put in place by divers. Plans of this coffer-dam will be found in the appendix, on reference to which it will be seen that at the easterly end of the westerly approach the maximum excavation was to a depth of 44 feet below mean high water. At the westerly end of the approach rock was encountered



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HARLEM RIVER TUNNEL
TRANSVERSE SECTION

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and the sheet piling was driven to it. Rock that had to be excavated below the bottom of the sheet-piling was removed in the ordinary manner in open excavation. At a depth of 41 feet below mean high water the rock disappeared from the bottom of the trench, and from that point easterly no rock was encountered, the bottom being clay, into which the sheet piling was driven to a depth of 10 to 15 feet below the bottom of the excavation. The pumping out of the coffer-dam was begun at the close of the year, and all indications pointed to the entire success of the method. This has since been amply confirmed. Steps were also taken on the east approach to carry out that part of the work in a similar manner.

The work done on this section, both in connection with the regular work and for excess quantities, is shown in the following tables:

SECTION 9 A.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	96,421	51,106	36,814
Rock "....."	13,507	9,899	1,219
Concrete....."	15,772	15,772	18,560
Other Masonry....."	907	907	67
Steel Erected.....Tons	991	991	105
Steel Delivered....."	1,079	1,079	17

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	820	820	....
Concrete.....	145	145	102
Other Masonry..... "	....	....	6
Steel Erected..... Tons	....	....	15
Steel Delivered..... "	....	....	15

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	33,903	1,397	35,300
Rock "..... "	510	340	850
Concrete..... "	1,550	437	1,987
Other Masonry..... "	....	3	3
Steel Erected..... Tons	....	17	17
Steel Delivered..... "	....	17	17
Ducts.....Lin. Ft.	....	25,894	25,894

Section 9-B.—From the centre line of Gerard Avenue to the west building line of Brook Avenue and Westchester Avenue. John C. Rodgers, Sub-Contractor.

The sub-contractor was prevented from continuing to the extreme easterly end of this contract owing to the Board having taken under reconsideration the portion of the line between 149th Street and Westchester Avenue. It was finally decided to abandon the line first established and to lay out a new route along 149th Street to Bergen

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WATERPROOFING INVERT, 149TH STREET.

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Avenue, and thence under and over private property to Westchester Avenue, the elevated portion beginning at Westchester Avenue. This change in line obviates the closing of any street. Except for the varied character of the work on this section, some of the open cut being especially heavy, the work progressed during the year without incident. The close of the year found the same well advanced, as will be seen by an inspection of the table of quantities.

SECTION 9 B.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	85,265	51,309	17,371
Rock "....."	40,637	37,539	21,253
Tunneling....."	545	545	....
Concrete....."	13,369	11,571	17,126
Other Masonry....."	782	649	593
Steel Erected..... Tons	364	177	468
Steel Delivered....."	485	134	347

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	3,452
Rock "....."	5,882
Concrete....."	2,244
Steel Erected..... Tons	28
Steel Delivered....."	28

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation..... Cu. Yds.	3,573	.....	3,573
Rock " "..... "	2,183	.....	2,183
Concrete..... "	1,582	.....	1,582
Steel Delivered..... Tons	.....	.....	.....

Section 10.—Viaduct on Westchester Avenue, Southern Boulevard and Boston Road, from Brook Avenue to Bronx Park. The Sub-Contractor for the erection of the steel work was the Terry & Tench Construction Company, and for the foundations, E. P. Roberts.

During the year the construction of the foundations was continued and completed. No steel for the viaduct structure was received, and, consequently, none erected. The minimum depth of foundation in rock was 4.5 feet, and 8 feet when in sand. The piers were of concrete in all cases, with a minimum area of base of 30.25 sq. ft. on rock, increased according to the requirements of the soil.

The work done on this section is as follows:

SECTION 10.
QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	8,589	3,678	.....
Rock " "..... "	751	443	.....
Concrete..... "	3,977	1,770	.....
Other Masonry..... "	323	157	.....
Steel Erected..... Tons	5	5	13,725
Steel Delivered..... "	27	27	.....

Section 11.—From the centre line of 104th Street and Broadway to 10 feet north of the south side of 125th Street on Broadway. John Shields, Sub-Contractor.

The end of the year 1902 finds the excavation on this section practically completed, except so far as some rock is concerned between 104th and 110th Streets. The increased work due to the addition of the third track placed an extra burden on the sub-contractor, who otherwise would have finished his work during 1902. In the last report a description was given of the large concrete three-track arch over a portion of the work. The experience during the past year has demonstrated that this arch is practically free from leaks, and in every respect forms a desirable and successful roof. The work done on this section under the head of regular work and extra work, and the work outside of the neat lines, are as follows:

SECTION 11.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	59,902	28,159	4,298
Rock "....."	74,408	36,738	12,352
Concrete....."	13,903	11,448	9,199
Other Masonry....."	1,164	1,074	1,521
Steel Erected..... Tons	789	763	797
Steel Delivered....."	1,586	415	....

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	25,095	16,373	2,035
Rock "....."	30,436	20,997	6,304
Concrete....."	4,564	3,945	2,816
Other Masonry....."	151	145	128
Steel Erected..... Tons	672	663	582
Steel Delivered....."	1,288	689	....

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu. Yds.	3,786	481	4,267
Rock "....."	6,642	790	7,432
Concrete....."	2,994	80	3,074
Other Masonry....."	1,100	....	1,100
Steel Erected..... Tons	....	3	3
Steel Delivered....."	....	13	13
Ducts..... Lin. Ft.	....	17,847	17,847

Section 12.—Manhattan Valley Viaduct, from 125th Street to the north building line of 133d Street on Broadway. The Sub-Contractor for the erection of the steel work was the Terry & Tench Construction Company, and for the foundations, E. P. Roberts.

The work on this section was completed during the year 1902, except the erection of the arch across 129th Street and the station

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MANHATTAN VALLEY VIADUCT.

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above it. All the foundations were put in place, the steel approaches to the arch erected, as well as the ornamental masonry piers at 125th and 133d Streets. The following table shows the work done on this section to date and during the year 1902:

SECTION 12.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu. Yds.	3,828	1,041	....
Rock " "	156	31	....
Concrete..... "	2,685	1,124	....
Other Masonry "	248	181	11
Steel Erected Tons	1,677	1,677	600
Steel Delivered..... "	1,829	1,818	448

Sections 13 and 14.—From the north building line of 133d Street to Hillside Avenue at Fort George. L. B. McCabe & Bro., Sub-Contractors.

During the year a readjustment of the personal arrangements for conducting this portion of the work was arrived at by the Contractor, the Sub-Contractors, and the Fidelity & Deposit Company of Maryland, and the work was placed in charge of Mr. R. C. Hunt. The work on these two sections, which have been treated as one section, consists chiefly in the construction of a large yard between 138th and 144th Streets, a tunnel from 151st Street to 155th Street, and the long Fort Washington tunnel from 158th Street to Fort George. Progress during the year has been satisfactory. At the end of the year the excavation for more than one-half of the yard was finished and some of it roofed over. The headings in the tunnel from 151st to 155th Streets met on April 25. The progress

in driving these headings and removing the bench has been, month by month, as follows:

1902 MONTH	151ST ST. NORTH.		155TH ST. SOUTH	
	HEADING	BENCH	HEADING	BENCH
January	26	....	137	....
February	61	....	157	....
March.....	118	....	173	....
April.....	108.5	....	99.3	15
May .....	....	....	....	64
June .....	....	....	....	66
July .....	....	....	....	50
August .....	....	....	....	85
September .....	....	....	....	70
October.....	....	....	....	85
November.....	....	....	....	74
December .....	....	....	....	86
Total	313.5	....	566.3	595

The total of bench removed, namely, 595 feet, added to the 77 feet of bench removed during the previous year, gives a total of 672 feet of bench removed, leaving 439.8 feet of bench still to be taken out.

In the Fort Washington tunnel work has proceeded regularly from the portal at 158th Street, from the two shafts at 168th Street and 181st Street, and from the portal at Fort George. The work south from the Fort George portal was delayed owing to a change of route adopted by the Board, and which did not become effective until December 18, 1901, when the Contractor was directed to proceed with his work.

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MANHATTAN VALLEY VIADUCT APPROACH.

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Between 158th Street and 167th Street the headings met on June 13, 1041.47 feet north of the 158th Street portal. The heading between 168th Street and 181st Street shafts met on October 22, 1817 feet north of 168th Street shaft. Between 158th Street and 168th Street there remained at the end of the year 611.97 feet of bench still to be removed. Between 168th and 181st Streets all of the bench had been removed. Between the 181st Street north heading and the Fort George south heading, there remain 1671.97 feet of heading, and 2380.97 feet of bench.

The rock in these tunnels has generally been good, except the ground south from Fort George, where was encountered the heaviest rock that has been discovered anywhere on the work. In spite of very strong timbering being put in place, it was found necessary to increase the timbers in number. Owing to the care exercised by Mr. Hunt, the superintendent, no accident occurred.

The work done in the Fort Washington tunnel at the various headings is as follows:

FORT WASHINGTON TUNNEL.

1902 MONTH	158TH STREET NORTH		168TH STREET SOUTH		168TH STREET NORTH		181ST STREET SOUTH		181ST STREET NORTH		FORT GEORGE SOUTH	
	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH	HEAD.	BENCH
	Jan.	9	92	89	79	82	88	89
Feb.	47	34	67	.....	71	77	73	64	79	74	.....	.....
Mar.	91	38	118	.....	69	60	68	76	55	62	45	.....
April.	144	.....	150	.....	82	77	87	84	98	103	55	.....
May	140	.....	106	.....	81	87	83	90	72	69	45	.....
June	77.97	.....	94	3	93	80	97	82	93	92	56	.....
July .....	.....	40	.....	.....	96	98	76	86	74	74	46	.....
August .....	.....	68	.....	.....	87	93	78	81	82	84	76	.....
Sept. ....	.....	81	.....	.....	105	101	93	89	92	88	10	.....
Oct. ....	.....	70	.....	.....	89	70	87.06	14	85	99	149	.....
Nov. ....	.....	55	.....	.....	.....	42	.....	94.06	100	88	131	.....
Dec. ....	.....	100	.....	.....	.....	.....	.....	.....	97	101	105	25
Total for 1902.....	499.97	494.0	535	3	856	874	821.06	842.06	1,015	1,023	718	25
Total for 1900-1901.....	541.50	494.5	916	889	961	943	898.00	877.00	935	911	.....	.....
Total progress, Dec. 31, 1902.....	1,041.47	988.5	1,451	892	1,817	1,817	1,719.06	1,719.06	1,950	1,934	718	25

The total length of the Fort Washington tunnel from portal to portal is 10,368.5 feet. The total length of tunnel on these sections is 11,480.30 feet.

The amount of work accomplished in the principal items on sections 13 and 14 is given below: www.libtool.com.cn

SECTION 13.

QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation..... Cu. Yds.	87,289	40,885	26,221
Rock "..... "	48,589	16,102	4,010
Tunneling..... "	116,233	50,978	26,395
Concrete..... "	24,080	17,383	29,268
Other Masonry..... "	1,172	855	931
Steel Erected..... Tons	843	736	899
Steel Delivered..... "	1,563	553	179

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.....Cu.Yds.	7,009	2,988	842
Rock "	2,377	2,370	....
Tunneling	1,917	1,917	2,691
Concrete.....	1,416	773	1,398
Other Masonry	23	6	13
Steel Erected	134	124	57
Steel Delivered	207	135	3

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Earth Excavation.....Cu.Yds.	14,113	3,082	17,195
Rock "	3,701	420	4,121
Concrete.....	3,113	898	4,011
Tunneling	15,626	....	15,626
Ducts.....Lin. Ft.	....	42,883	42,883

SECTION 14
 QUANTITIES OF WORK UNDER CONTRACT PLANS.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
Earth Excavation.Cu. Yds.	1,754	860	200
Rock " "	4,389	4,304	508
Tunneling "	34,126	20,845	42,700
Concrete "	1,352	1,352	16,848
Other Masonry . . . . . "	....	....	63

EXTRA WORK, LENGTHENING STATION PLATFORMS, ETC.

	TOTAL TO DEC. 31, 1902	TOTAL DURING 1902	AMOUNT TO BE DONE
TunnelingCu. Yds.	216	216	398
Concrete . . . . . "	....	....	63

EXCESS QUANTITIES. TOTAL TO DECEMBER 31, 1902.

	OUTSIDE NEAT LINES	DUCTS	TOTAL
Tunneling..... Cu Yds.	3,834	.....	3,834
Concrete..... "	25	.....	25

Section 15.—Viaduct from Fort George northerly to the Bronx at Kingsbridge. The Sub-Contractor for the erection of the steel work is the Terry & Tench Construction Company, and for the foundations, E. P. Roberts.

No work was done on this section during the year.

The quantities of work done as given above, represent the principal items of construction only, and are given in brief so as to indicate in general terms for convenience in comparison the amount of work accomplished and progress made. The following tables record in detail all the quantities under all heads, both as to contract and extra work, showing the amount done during 1902 and the total at the end of the years 1900, 1901 and 1902, separately:

TOTAL AMOUNT OF CONTRACT WORK DONE BY EACH SUB-CONTRACTOR TO DECEMBER 31, 1922.

Items	Quantity	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 5-A	Sec. 5-B	Sec. 6-A	Sec. 6-B	Sec. 7	Sec. 8	Sec. 9-A	Sec. 9-Over	Sec. 9-B	Sec. 10	Sec. 11	Sec. 12	Sec. 13	Sec. 14	TOTAL WORK DONE 1920	TOTAL WORK DONE 1921	TOTAL WORK DONE 1922	TOTAL TO DATE
Earth Excavation—																							
Block																							
Trenching																							
Shalt Excavation																							
Formed Concrete																							
Cement																							
Natural Cement Concrete																							
Stone Encased																							
Cast Iron Erected																							
Brick Masonry (Common)																							
Brick Masonry (Facing)																							
Brick Masonry (Semi-finished)																							
Federal Masonry																							
The Stone Masonry																							
Restoring Street Surface																							
Restoring Park Surface																							
Drainage																							
Vault Lights																							
Steel Decked																							
Cast Iron Delivered																							
Expended on Stations																							
Waterproofing																							
Cast Iron Pipe, Insd.																							
48-inch																							
Cast Iron Pipe, Insd.																							
36-inch																							
Cast Iron Pipe, Insd.																							
30-inch																							
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1-inch																							
Cast Pipes, Insd.																							
36-inch			</																				

TOTAL AMOUNT OF EXTRA WORK DONE BY EACH SUB-CONTRACTOR TO DEC. 31, 1902.

ITEMS	Quantity	LENGTHENING STATION PLATFORMS, EXTRA TRACK, ETC.										TOTAL EXTRA WORK 1901	TOTAL EXTRA WORK 1902	TOTAL TO DATE
		Sec. 2	Sec. 3	Sec. 5-A	Sec. 6-A	Sec. 6-B	Sec. 8	Sec. 9-A	Sec. 11	Sec. 13	Sec. 14			
Earth Excavation	Cu. Yds.	5,700	3,499	1,200	4,140	3,742	2,435	820	25,095	7,009	.....	12,743	40,897	53,640
Rock	Cu. Yds.	1,673	1,250	4,590	7,985	.....	.....	.....	30,436	2,377	.....	9,446	38,865	48,311
Tunneling	Cu. Yds.	.....	.....	.....	.....	.....	.....	.....	.....	1,917	216	.....	2,133	2,133
Portland Cement Concrete	Cu. Yds.	742	825	155	276	379	565	145	3,945	925	.....	771	7,186	7,937
Natural Cement Concrete	Cu. Yds.	.....	.....	.....	.....	.....	.....	.....	619	491	.....	491	619	1,110
Steel Erected	Tons	335	81	11	67	23	68	.....	672	134	.....	19	1,372	1,391
Cast Iron Erected	Tons	.....	.....	.....	.....	.....	.....	10	24	14	.....	.....	69	69
Brick Masonry (common)	Cu. Yds.	.....	5	.....	.....	.....	17	.....	78	5	.....	5	100	105
Brick Masonry (facing)	Cu. Yds.	.....	.....	.....	.....	.....	.....	.....	5	1	.....	.....	6	6
Pedestal Masonry	Cu. Yds.	.....	13	.....	.....	.....	.....	.....	68	11	.....	17	75	92
Cut Stone Masonry	Cu. Yds.	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	1	5	6
Restoring Street Surface	Sq. Yds.	.....	.....	.....	.....	.....	.....	.....	.....	313	.....	.....	313	313
Vault Lights	Sq. Yds.	.....	.....	.....	.....	107	.....	.....	.....	.....	.....	.....	107	107
Steel Delivered	Tons	.....	.....	16	133	23	.....	.....	1,288	207	.....	671	996	1,667
Cast Iron Delivered	Tons	.....	.....	.....	22	43	.....	10	47	7	.....	.....	129	129
Waterproofing	Sq. Yds.	1,284	1,189	303	705	494	850	156	9,569	2,575	.....	2,563	14,562	17,125
Cast Iron Water Pipe, laid, 36-inch	Lin. ft.	.....	.....	.....	.....	.....	.....	.....	.....	635	.....	.....	.....	635
Cast Iron Water Pipe, laid, 8-inch	Lin. ft.	.....	.....	.....	.....	.....	.....	.....	.....	13	.....	.....	.....	13
Gas pipe, laid, 24-inch	Lin. ft.	.....	.....	.....	.....	.....	.....	.....	.....	13	.....	.....	.....	13
Drain Pipe, 3-inch, 4- inch, 6-inch	Lin. ft.	.....	.....	.....	.....	.....	.....	.....	743	.....	.....	154	580	743

As stated above, seven pairs of tunnel headings have met during the course of the year, leaving but the headings between 181st Street and Fort George on Section 14, still in progress.

On Section 4, in the Murray Hill tunnel, the distance between shafts, centre to centre, in the west tunnel was 1690.5 feet, and in the east tunnel 1793.5 feet. In the west tunnel the two shafts were so located as to include the centre line. The alignment of the centre line was slightly curved at the south end. In the east tunnel the south shaft included the centre line. At the north end, however, the shaft was offset from the centre line, so that a transferred method of instrumental work had to be used. The alignment in the east tunnel is much broken, beginning at the south end with a tangent 605 feet long and a curve of 233.3 feet, then another tangent of 887.9 feet and a transition curve of 67.3 feet to the 41st Street shaft at the north end.

The variations in alignment at the points of meeting in the two tunnels were as follows:

	WEST TUNNEL	EAST TUNNEL
Total Distance.....	1846.50 ft.	1793.50 ft.
Variation in Line.....	0.01 "	0.155 "
Variation in Elevation....	0.013 "	0.030 "

The work of setting out the tunnels was done by Assistant Engineers J. O. Shipman and Philip P. Farley, under the general direction of Division Engineer Albert Carr, and Senior Assistant Engineer Geo. H. Clark.

In the Central Park tunnel, Section 7, there was a shaft located near Broadway, on a curve, whose radius is 340 feet. There was another shaft located at Central Park West, on a curve of 580 feet radius. The distance between these two shafts is 2162 feet, of which 1592 feet were on a tangent, and the remainder, 570 feet, on two curves. At the north end of this tunnel there was an open portal, distant from the Central Park shaft 1725 feet, of which distance 1415 feet were on a tangent and 310 feet on a curve.

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SEWER, INVERTED SIPHON, RAILROAD AVENUE AND 149TH STREET.

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The variations in line and elevation were as follows:

	BROADWAY SHAFT TO CENTRAL PARK SHAFT	CENTRAL PARK SHAFT TO CENTRAL PARK PORTAL
Total Distance.....	2162.0 ft.	1725.0 ft
Variation in Line.....	0.046 "	0.029 "
Variation in Elevation....	0.027 "	0.011 "

In the tunnel on Section 13, between 151st and 156th Streets, the distance between the portal at 151st Street and the portal at 156th Street is 1464.5 feet. This line was all on a tangent. The variation in line amounted to 0.03 feet, and the variation in elevation amounted to 0.0065 feet.

In the Fort Washington tunnel, Section 13, there were two shafts, one at 168th Street and one at 181st Street. The former of these shafts is 103 feet deep, and the latter 126 feet deep, and both were offset from the centre line about 61 feet so as to be wholly clear of the tunnel width. The alignment between the portal at 158th Street and the two shafts is on a tangent. From 158th Street to the centre line of 168th Street shaft is a distance of 2629.47, and between 168th Street and 181st Street 3536.06 feet. The variation in meeting in each of these cases is as follows:

	158TH STREET TO 168TH STREET	168TH STREET TO 181ST STREET
Total Distance.....	2629.47 ft.	3536.06 ft.
Variation in Line.....	0.082 "	0.092 "
Variation in Elevation....	0.014 "	0.001 "

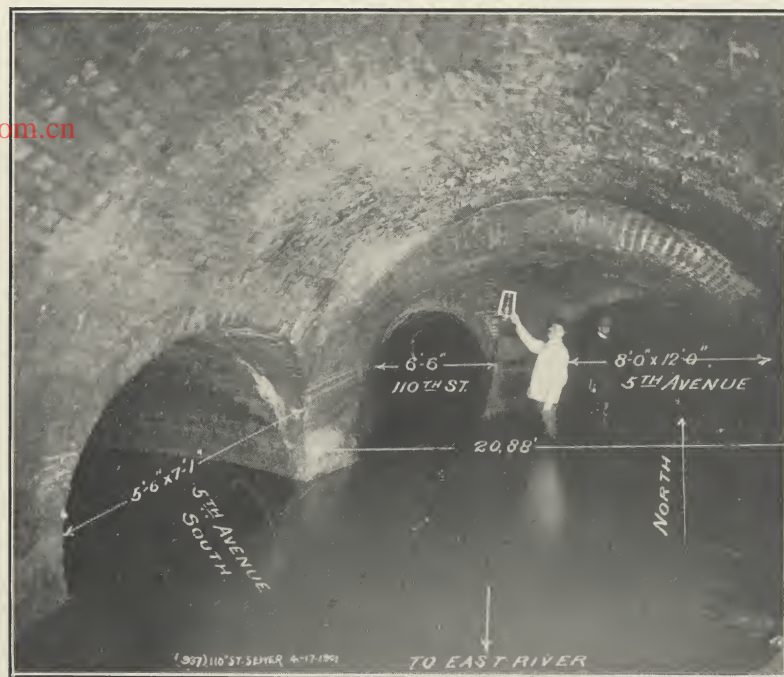
The work of determining tunnel alignment was performed by Assistant Engineers Taber, Locke, Mills and Harris on Section 7; and by Assistant Engineers Hopkins, Hauck, Shertzer and Durham on Sections 13 and 14, under the general direction of Division Engineer Valuc and the immediate supervision of Senior Assistant Engineer F. W. Carpenter.

The work of the Sewer Division has progressed satisfactorily and to a point where all the difficult pieces of construction have been completed. One hundred and six different sewers had to be built, rebuilt, or altered in part; the linear feet of such work aggregating

69,406, or nearly 13 miles. Of these sewers sixty, with a total length of 55,903 feet, have been completely finished and the pavement relaid. All of the others are in hand and most of them are approaching completion.

The Lenox Avenue Extension increased considerably the amount of sewer reconstruction. At present the drainage from a large area of Washington Heights flows towards Lenox Avenue in sewers already overburdened at times of storm. As these sewers will be still more taxed when the streets are asphalted and vacant lots built on, it was decided to make provision now for the future, and to cut off this great flow from immediate contact with the subway. To this end a large intercepting sewer has been planned to be built on Seventh Avenue, draining northward to the Harlem River, leaving the sewer on Lenox Avenue to care for the local drainage only. This intercepting sewer will have a diameter of 9 feet 6 inches.

The largest single piece of sewer construction done during the year was the large siphon at 149th Street and Railroad Avenue, in the Borough of The Bronx. The sewer at this point was circular in section with a diameter of 5 ft. 6 in., draining a large area with a flow varying greatly between the normal minimum and the storm maximum. On account of the topography of the ground, it was impossible to depress the subway so as to allow the sewer to pass over it, or to depress the sewer so as to be passed under the railway, without resorting to a siphon. An arrangement was finally designed consisting of two 42-inch cast-iron pipes and one 14-inch cast-iron pipe, all three being buried in concrete. These three pipes come together in two chambers, one on each side of the subway. In the bottom of the upstream chamber a settling basin has been constructed so as to catch the heavier material, and the connections are so arranged in this upstream chamber that the normal flow is carried entirely by the small pipe, which, acting always under pressure, can keep itself clean. The large pipes are dry, except at times of storm, when the high velocity of water passing through them keeps them clean. This arrangement was put in service during the year, and has been found to work in entire accordance with the theory of the design. All three pipes are so arranged that any one of them can be cut off at any time and thus be made readily accessible for inspection or cleaning.



SEWER JUNCTION, FIFTH AVENUE AND 110TH STREET.

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Reference was made in the last report to the large bellmouth at the intersection of Fifth Avenue and 110th Street. Although this bellmouth was designed and completed during 1901, paving was not done until the year 1902, so that the completion of the construction can be credited to the past year. At this point one small and three large sewers flow into one trunk sewer that discharges to the East River. Of these sewers, one, with a diameter of 6 ft. 6 ins., was built by this Board, under 110th Street, to take the drainage from Lenox Avenue. The other sewers were old. One came from the south, with a width of 7 ft. 2 ins., and a height of 5 ft. 6 ins. The other two came from the north—the smaller one was 4 ft. in height by 2 ft. 8 ins. in width; the larger one 7 ft. 2 ins. in height, and 5 ft. 6 ins. in width, but widening at the point of junction to a width of 11 ft. and a height of 7 ft. The junction is covered by a bellmouth, with an arched roof whose surface is "warped." The discharge of these four sewers is smoothly combined, even at times of great flood. The detail plans of the bellmouth and the centering for the arch during construction are in the appendix.

During the year 1901 an experiment was made to construct sewers in situ in concrete. The first experiment gave such satisfactory results that the principle has been extended to other sewers in a similar manner during the year, except that instead of building the arch of brick, as was done at first, the whole sewer in many cases has been built of concrete. The advantages of this form of construction are that a perfectly smooth surface is obtained without joints, with all connections, curves, cut-waters and other details moulded to perfect lines, and that construction can be carried on more rapidly. Pictures of the Fifth Avenue junction of the siphon at Railroad Avenue, and of the sewer work in concrete, will be found in this report.

In the carrying out of the work under Contracts Nos. 1 and 2 about seventeen miles of new sewers will be constructed. Although this length is but a small part of the total mileage of sewers existing in the city of New York, it is a source of congratulation to the city that even this small portion will be reconstructed. Most of the old sewers that were removed were found not true to either line or grade, so that a serious sedimentation was taking place, and many were already in a condition demanding attention on the part

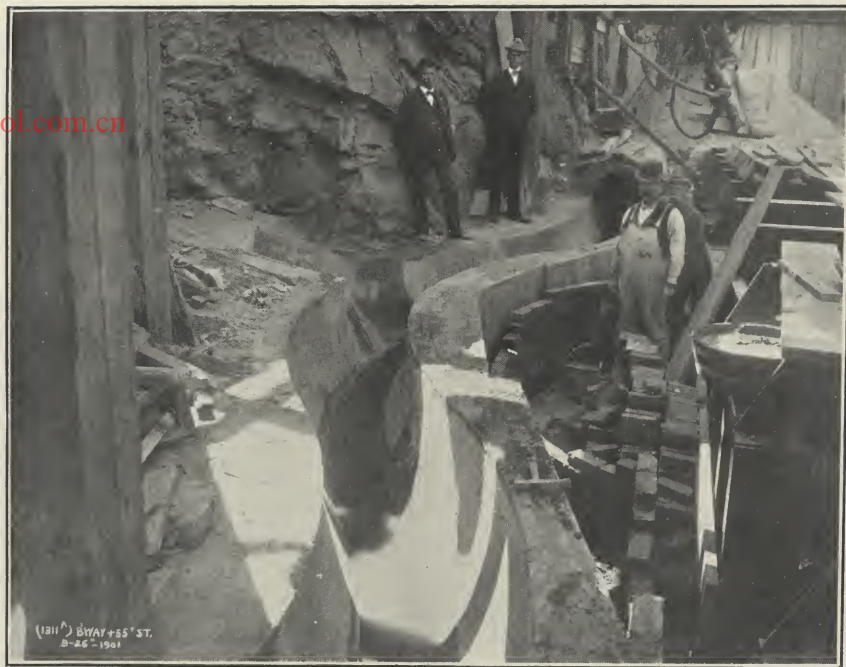
of the municipal authorities. As it is, the taxpayers have been saved the expense of their reconstruction, and sewers have been built that will be materially more economical to operate and maintain than the sewers that existed previous to our construction.

In measuring and reporting the work done, the quantities of excavation, wherever the sewers are contiguous to the subway, are reported as part of the subway excavation. Wherever the sewers are built off the line of the subway the quantities are regularly measured, but the reports state only the linear feet of completed sewers, according to the system prevailing in the city when estimating sewer construction. A record, however, has been kept of the excavation, and on such sewers where these items have not been reported there have been removed to date 104,433 cu. yds. of earth, and 10,536 cu. yds. of rock. Similarly, 5,076 cu. yds. of concrete, 1,681 cu. yds. of rubble masonry, and 15,121 cu. yds. of brick masonry, not otherwise accounted for, have been put in place in the construction of sewers. In the rearrangement of the sewers more than 1400 house and other connections have been made to date, requiring about one mile of pipe. The reconstruction of sewers had in all cases to be made without interfering with the house service. This has been done successfully. I would also state that all sewers that have been built by the contractors for this Board have satisfactorily filled the requirements.

Tables are given below showing details of the lateral and longitudinal sewers constructed during the year, and to date. The longitudinal sewers are sewers built parallel with and contiguous to the subway; and the lateral sewers are those built in separate trenches, and in nearly all cases along streets other than the Subway route.

It will be noted that the total length of work, or that remaining to be done, differs in some details from the similar figures given in the report for the years 1900 and 1901. These apparent discrepancies are due to the fact that the figures in the previous tables were necessarily estimated for the work to be done.

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CONCRETE SEWER CONSTRUCTION.

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DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902.

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED	
							LIN. FT.	SIZE
Pearl and Duane Sts.	Cunningham & Kearns.	July 23, 1900	5' 0" cir. brick . . . . .	....	189	....	235—5' 0" cir. bk	
			4' 3" cir. brick . . . . .	....	282	....	735—4' 0" cir. bk	
			4' 0"x2' 8" brick . . . . .	....	717	....	180—4' 0"x3' 6" bk	
			24" iron pipe . . . . .	....	156	....	50—4' 0"x2' 8" bk	
			15" pipe	3	3	....	
			15" invert	407	407	....	
			410	1754		1200		
Worth Street	Degnon-McLean Contracting Co.	Not begun . .	15" pipe. . . . .	....	....	195		
Leonard Street	Degnon-McLean Contracting Co.	Not begun . .	15" pipe. . . . .	....	....	75		
Canal Street	James Pilkington.	May 7, 1900	4' 6"x7' 0" brick . . . . .	....	1151	....	1200—4' 0" cir. bk	
			6' 6" cir. brick. . . . .	....	1833	....	355—4' 0"x3' 0" bk	
			5' 6" cir. brick. . . . .	....	1035	....	610—4' 0"x2' 8" bk	
			4' 6" wooden.	936	970—3' 6"x2' 8" bk	
			4' 0"x2' 8" brick	55	55	40—3' 6"x2' 4" bk	
			18" invert	111	111	235—15" pipe	
			166	5121		3410		

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DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902—Continued.

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
Marion Street	Degnon-McLean Contracting Co.	Jan. 29, 1901	4' 0"x2' 8" brick	....	431	....	431—4' 0"x3' 0" bk
Spring Street	Degnon-McLean Contracting Co.	Sept. 5, 1902	15" pipe	57	57	6	105—12" pipe
Mulberry Street	Cunningham & Kearns.	May 31, 1900	4' 0"x2' 8" brick	....	228	....	160—4' 0"x2' 8" bk
Bleecker Street and Connections.	James Pilkington.	Mar. 26, 1900	4' 0" cir. brick..	....	563	....	560—5' 4"x4' 6" bk 325—4' 0"x2' 8" bk
			4' 0"x2' 8" brick	18	345	....
			30" iron pipe...	51	169	....
			24" iron pipe...	36	36	....
				105	1113		885
East 9th Street	James Pilkington.	July 30, 1900	18" pipe . . . . .	....	111	....	50—3' 2"x2' 0" bk
East 10th Street	Cunningham & Kearns.	May 31, 1900	3' 6"x2' 4" brick	....	313	....	240—4' 0"x3' 1" bk
			30" iron pipe...	....	16	....
					329		
East 22d Street	Cunningham & Kearns.	June 11, 1900	4' 6" cir. brick .	....	1979	....	2041—4' 2"x4' 0" bk
			42" iron pipe...	....	114	....
			brick chamber.	....	5	....
					2098		

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902—Continued.

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED	
							LIN. FT.	SIZE
East 31st Street . . .	Holbrook, Cabot & Daly Contracting Co.	Sept. 23, 1901	brick chamber.. 30" iron pipe...	....	18	....	75—4' 0"x2' 7" bk	
				....	113	....	
					131			
East 41st Street . . .	James Pilkington.	Dec. 28, 1901	brick chamber, 4' 0"x2' 8" brick 24" iron pipe... 16" iron pipe. . .	....	....	12	149—4' 0"x3' 0" bk	
				432	432	342	169—4' 0"x2' 8" bk	
				....	....	95		
				....	161	246		
					593	695	318	
West 45th Street . . .	James Pilkington.	Jan. 21, 1901	6' 6" cir. brick.. 6' 0" cir. brick.. 5' 3"x3' 6" brick 36" iron pipe. . .	....	177	....	1620—4' 0"x2' 8" bk	
				17	848	....	
				304	304	....	
				117	117	....	
				438	1446			
West 54th Street . . .	Cunningham & Kearns.	Oct. 3, 1900	4' 0"x2' 8" brick	....	521	....	480—4' 0"x2' 8" bk	
59th St and Circle..	Naughton & Co.	Dec. 13, 1900	15" pipe. . . . .	....	398	....	60—3' 6"x2' 0" bk	

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902—Continued.

276

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED	
							LIN. FT.	SIZE
65th Street and Broadway.	William Bradley	Sept. 10, 1900	4' 0"x2' 8" bk...	649	1329	59	507—4' 0"x2' 7" bk	
			3' 6"x2' 4" bk...	553	553	75	185—3' 7"x2' 5" bk	
			18" pipe.....	44	296	22	225—3' 4"x2' 5" bk	
			15" pipe.....	286	286	95	423—18" pipe.....	
			30" iron pipe....	104	104	24	720—15" pipe.....	
				1636	2568	275	2061	
72d Street and Broadway.	William Bradley	Oct. 16, 1901	4' 6" cir. brick...	....	....	26	426—3' 6"x2' 4" bk	
			3' 6"x2' 4" bk...	606	648	53	144—3' 5"x2' 5" bk	
			30" iron pipe....	....	....	654		
						733	570	
West 81st Street ...	William Bradley	Sept. 10, 1900	6' 0" cir. brick...	....	313	....	375—5' 8"x5' 0" bk	
			48" iron pipe....	....	114	....	
					427			
Broadway, East Side, 84th to 86th Sts.	William Bradley	Oct. 24, 1901	3' 6"x2' 4" bk...	240	452	14		
			24" iron pipe....	49	49	11	528—3' 6"x2' 4" bk	
				289	501	25		

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DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902—Continued.

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR	LINEAR	LINEAR	OLD SEWER	
				FEET COMPL'D DURING 1902	FEET COMPL'D TO DEC. 31, 1902	FEET TO BE COM- PLETED	LIN. FT.	SIZE
West 96th Street....	William Bradley	Not begun ...	6' 0" cir. brick..	20		
			3' 6"x2' 4" bk..	....	....	135	
			54" iron pipe...	....	....	82	
			30" iron pipe...	....	....	190	
						427		
West 108th Street...	Wm. F. Norton.	Sept. 12, 1900	4' 0" cir. brick..	46	430	....	504—4' 0" cir. bk
			4' 0"x2' 8" bk..	76	76	32	94—4' 2"x3' 0" bk	
			24" iron pipe...	115	115	....	48—4' 0"x2' 8" bk
			237	621		646		
West 110th Street...	Farrell, Hopper & Co.	July 19, 1900	6' 6" cir. brick..	....	1116	....	100—4' 0"x2' 8" bk
			4' 0"x2' 8" bk..	....	25	....	30—3' 6"x2' 4" bk
			3' 6"x2' 4" bk..	....	145	....	
			42" iron pipe...	....	183	....	
				1469		130		
Lenox Avenue	Cunningham & Kearns.	Nov. 1, 1900	5' 0" cir. brick..	1468	290—4' 0"x2' 8" bk	
			4' 4" cir. brick..	153	1060—3' 6"x2' 4" bk	
				1621		1350		

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DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902--*Continued.*

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED	
							LIN. FT.	SIZE
West 115th Street...	John Shields...	Jan. 29, 1901	3' 6"x2' 4" brick	....	526	....	334	3' 6"x2' 4" bk
			30" iron pipe...	....	48	....	216	15" pipe
					574		550	
West 124th Street...	Cunningham & Kearns.	July 28, 1900	3' 6"x2' 4" brick	141	1088	25	70	3' 0" cir. brick
			15" pipe.....	116	116	....	373	3' 6"x2' 4" bk
				257	1204		788	12" pipe
							1231	
West 142d Street and Broadway.	James Pilkington.	Nov. 13, 1900	4' 0" cir. brick..	....	136	10		
			4' 0"x2' 8" brick	....	....	30	168	4' 0" cir. brick
			48" iron pipe...	....	32	50		
					168	90		
142d Street and Lenox Avenue.	Norton & Dalton.	July 24, 1902	4' 0"x2' 8" brick	782	782	30	135	4' 0"x2' 8" bk
			15" pipe.....	105	105	....	320	15" pipe
				887	887		455	
149th Street and Railroad Avenue.	J. C. Rodgers..	Aug. 26, 1901	7' x 10' brick..	30	30	....	63	6' 0"x5' 4" bk
			42" iron pipe...	....	97.5	....	
			14" iron pipe...	5.5	57.5	....	
				35.5	185			

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1902—Continued.

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED LIN. SIZE FT.
West 157th Street...	Alfred Bradley.	July 23, 1900	4' 0" cir. brick..	392	513—4' 0" cir. bk
			4' 0"x2' 8" brick	....	45	....
			3' 0"x2' 0" brick	....	69	....
			48" iron pipe...	....	121	....
					627		
Lenox Avenue Extension.	Not begun ..	9' 6" cir. brick..	1181	
			7' 0" cir. brick..	....	....	588
			6' 0" cir. brick..	....	....	86
			5' 6" cir. brick..	....	....	265
			4' 6" cir. brick..	....	....	580
			4' 0" cir. brick..	168	
			3' 6"x2' 4" brick	30	
			42" iron pipe...	344	
					3222		
Grand Totals.....	5555.5	25660	5594	19721

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DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1902.

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR	LINEAR	LINEAR	OLD SEWER	
				FEEET COMPL'D DURING 1902	FEEET COMPL'D TO DEC. 31, 1902	FEEET TO BE COM- PLETED	REMOVED LIN. FT.	SIZE
Centre Street and Elm Street (Post Office to Great Jones St.)	Degnon-McLean Contracting Co.	Jan. 12, 1901	4' 0" x 2' 8" bk.	307	307	95	170—9' 0"x6' 0"bk	
			3' 6" x 2' 4" bk	328	374	631	70—4' 5"x3' 0"bk	
			3' 6" x 2' 4" bk. and concrete ..	....	465	....	1140—4' 0"x2' 8"bk	
			3' 0"x1' 7" bk ..	....	9	....	2400—3' 6"x2' 4"bk	
			36" iron pipe ..	12	12	....	20—16" iron pipe	
			30" iron pipe ..	81	81	....	120—15" pipe.	
			24" iron pipe ..	19	146	511	610—12" pipe.	
			18" iron pipe ..	306	477	140	50—8" pipe.	
			18" pipe	1158	1559	350		
			16" iron pipe ..	36	150	104		
			15" pipe	1491	2882	502		
			8" pipe .....	....	....	60		
			6" iron pipe ..	71	138	....	
						3809	6600	2393	4610

DETAILS OF LONGITUDINAL SEWERS TO DEC. 31, 1902—Continued.

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1902	LINEAR FEET COMPL'D TO DEC. 31, 1902	LINEAR FEET TO BE COMPLETED	OLD SEWER REMOVED	
							LIN. FT.	SIZE
Lafayette Place and Fourth Ave. (Great Jones St. to 33d St.)	Holbrook, Cabot & Daly Contracting Co.	Jan. 7, 1901	4' 0" cir. brick .	22	22	....	1100—4' 0" cir. bk	
			3' 9" cir. brick .	101	201	....	330—4' 6"x3' 5"bk	
			4' 0"x3' 0" bk...	474	474	....	90—4' 1"x3' 7"bk	
			4' 0"x2' 8" bk...	....	256	....	730—4' 0"x3' 0"bk	
			4' 6"x2' 4" bk...	882	993	25	30—4' 0"x2' 8"bk	
			42" iron pipe ..	162	162	....	355—4' 0"x2' 7"bk	
			24" iron pipe ..	45	45	....	190—3' 9"x2' 7"bk	
			20" iron pipe ..	12	12	....	50—3' 8"x3' 0"bk	
			18" iron pipe ..	301	313	....	250—3' 7"x2' 8"bk	
			18" pipe	523	1090	....	85—3' 7"x2' 7"bk	
			16" iron pipe...	210	246	12	910—3' 6"x2' 4"bk	
			15" pipe.....	3758	6152	608	80—3' 5"x3' 4"bk	
			12" iron pipe ..	54	54	118	15—3' 5"x2' 8"bk	
							65—3' 5"x2' 7"bk	
				490—3' 5"x2' 3"bk				
				540—3' 5"x2' 0"bk				
				200—3' 4"x2' 0"bk				
				200—3' 0"x2' 0"bk				
				25—2' 9"x2' 2"bk				
				140—18" pipe.				
				305—15" pipe.				
				200—12" pipe.				
				6544	10020	763	6380	

DETAILS OF LONGITUDINAL SEWERS TO DEC. 31, 1902—Continued.

SEWER	NAME OF SUB-CONTRACTOR	DATE BEGUN	SIZE	LINEAR	LINEAR	LINEAR	OLD SEWER REMOVED			
				FEET COMPL'D DURING 1902	FEET COMPL'D TO DEC. 31, 1902	FEET TO BE COMPLETED	LIN. FT.	SIZE		
Park Ave., 42d St. and Broadway (41st St. to 47th St.).	Degnon-McLean Contracting Co.	Aug. 22, 1901	4' 0"x2' 8" bk...	452	452	146	1340—4' 0"x2' 8"bk			
			4' 0"x2' 8" con...	104	104	...	1550—3' 3"x2' 7"bk			
			3' 6"x2' 4" bk...	685	715	123	300—15" pipe.			
			36" iron pipe ..	....	....	81	422—12" pipe.	
			30" iron pipe ..	41	41	287				
			18" pipe	90	90	237				
			16" iron pipe ..	608	587	194				
			15" pipe	681	934	1363				
			14" iron pipe ..	....	....	305		
						2661	2923	2736	3612	
			Broadway (47th St. to 60th St.).	Naughton & Co...	Dec. 22, 1900	4' 0"x2' 8" brick	152	324—4' 0"x2' 8"bk
3' 6"x2' 4" brick	44	374				18	170—3' 6"x2' 4"bk			
3' 6"x2' 4" concrete.	405	1162				....	267—2' 5"x 1' 7" concrete		
18" pipe .....	....	407				....	2687—15" pipe.	
18" iron pipe ..	66	231				....	718—12" pipe.		
16" iron pipe ..	29	89				12				
15" pipe	2387	2862				261				
			2931	5277	291	4166				
Broadway (60th St. to 104th St.).	William Bradley	Apr. 29, 1902	3' 6"x 2' 4" brick	410	410	652	159—3' 6"x2' 4"bk			
			12" pipe	300	300	....	60—18" pipe.		
			....	....	....	....	80—15" pipe.	
				710	710	652	299			

DETAILS OF LONGITUDINAL SEWERS TO DEC. 31, 1902—Continued.

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR	LINEAR	LINEAR	OLD SEWER	
				FEET COMPL'D DURING 1902	FEET COMPL'D TO DEC. 31, 1902	FEET TO BE COM- PLETED	LIN. FT.	SIZE
Broadway (104th St. to 125th St.).	John Shields...	Aug. 26, 1901	4' 4" x 2' 11" bk.	....	97	....	92—4' 4" x 2' 11" bk	
			3' 6" x 2' 4" brick	....	94	....	90—3' 6" x 2' 4" bk	
			18" pipe .....	....	41	....	
					232		182	
Broadway (135th St. North).	James Pilkington.	July 15, 1901	4' 2" x 2' 9" brick	....	79	....	75—4' 2" x 2' 9" bk	
			4' 0" x 2' 8" brick	....	67	....	63—4' 0" x 2' 8" bk	
			3' 6" x 2' 4" brick	....	155	....	147—3' 6" x 2' 4" bk	
					301		285	
Lenox Avenue (135th St. South).	Farrell, Hopper & Co.	Apr. 25, 1902	4' 0" x 2' 8" brick	214	214	18	218—4' 0" x 2' 8" bk	
				....	....	....	36—3' 0" x 2' 0" bk	
				214	214	18	254	
Lenox Ave. (135th St. North).	J. C. Rodgers ..	June 23, 1902	4' 0" x 2' 8" brick	18	18	3	19—4' 0" x 2' 8" bk	
East 149th Street. ...	J. C. Rodgers ..	Nov. 20, 1901	18" pipe	710	710	....	710—18" pipe.	
			15" pipe	722	722	230	140—15" pipe.	
			12" pipe	1133	2045	839	1200—12" pipe.	
			12" iron pipe ..	....	....	48		
				2565	3477	1117	2050	
Grand Totals .....	.....	.....	.....	19452	29933	8219	21857	

The work of the Department of Inspection of Material has been carried on during 1902 along lines similar to those established for 1900 and 1901. The field covered by the Department has been widened, however, at several points. In the inspection of steel a new sub-office was established at the Brooklyn branch of the American Bridge Company, on account of a considerable amount of shop work being done by the company in those works.

On account of the very large amount of steel for the subway structure having been rolled during 1901, the number of tons rolled during 1902 is much less, although the latter year's rollings include some viaduct material. Of the latter nearly all the steel for the Manhattan Valley Viaduct was rolled during the year, and all of the structure except the arch manufactured. During the coming year the mills will be engaged in rolling steel for the east and west side viaduct lines, so that the amount of material to be rolled during the coming year will approximate the figures rolled during 1901.

The total weight of steel accepted at the mills since commencing work amounts to 103,324,596 lbs.; the weight accepted during 1902 being 26,629,301 lbs. The latter was rolled at the following mills:

Carnegie Steel Company.....	12,103,953	lbs.
Peneoyd Iron Works.....	13,179,853	"
Bethlehem Steel Company.....	921	"
Central Iron & Steel Company.....	1,029,682	"
Lukens Iron & Steel Company.....	312,142	"
Worth Bros. Iron & Steel Company.....	1,015	"
Chester B. Albree Works.....	1,735	"
Total	26,629,301	"

This material was distributed for manufacture into finished work at the several branches of the American Bridge Company as follows:

Keystone branch.....	1,411,101	lbs.
Peneoyd branch.....	12,961,305	"
Trenton branch.....	3,852,244	"
Athens branch.....	8,126,572	"
Brooklyn branch.....	278,079	"
Total	26,629,301	"

At this date there remain unshipped, either in the course of manufacture or rejected, the following tonnage at the above branches:

Keystone branch.....	1,594,978 lbs.
Pencoyd branch.....	5,322,660 "
Trenton branch.....	2,719,865 "
Athens branch.....	576,908 "
Brooklyn branch.....	103,171 "
Total	10,317,582 "

This is to be credited:

To Manhattan Viaduct—Section 12.....	922,209 lbs.
“ Viaduct on Section 10.....	3,733,828 "
“ Subway	5,661,545 "
Total	10,317,582 "

During 1902 there were made 4,717 tensile tests on steel. These represent 2,241 heats, 17 of which cover rivet, tie-rod and anchor-bolt material, and 34 cover material under “Manufacturers” specifications, a concession for certain small work.

The results of all accepted tests show:

38.23% or 1,572 tests, giving an average minimum ultimate strength per square inch between 58,000 and 60,500 lbs.....	59,270 lbs.
15.92% or 655 tests, giving an average maximum ultimate strength per square inch between 63,500 and 66,000 lbs.....	61,970 "
45.85% or 1,885 tests, giving an average ultimate strength per square inch approximating the mean of the specifications (62,000)	61,570 "
The average ultimate strength of all accepted tests was.....	61,230 "

The average elastic limit of accepted material showed 38,070 lbs. per square inch, as compared with specification minimum requirement of 33,000 lbs.

The average elongation of all accepted tests showed 28.18%, as compared with specification minimum requirement of 20%.

The average reduction of area of all accepted tests showed 54.5%, as compared with specification minimum requirement of 44%.

183 heats were retested, having originally partially failed. Of these, 136 were finally accepted, and 47 rejected.

217 heats were originally rejected.

153 heats were rejected on physical tests alone, of which:

92 were submitted by Carnegie Steel Company.

56 were submitted by Pencoyd Iron Works.

5 were submitted by Central Iron & Steel Company.

58 heats were rejected on chemical tests alone, of which:

42 were submitted by Carnegie Steel Company.

15 were submitted by Pencoyd Iron Works.

1 was submitted by Central Iron & Steel Company.

6 heats were rejected on both physical and chemical tests, of which:

4 were submitted by Carnegie Steel Company.

1 was submitted by Central Iron & Steel Company.

1 was submitted by Worth Bros. Iron & Steel Company.

The results of the physical tests coincided very closely with the result of similar tests made during 1901, thus indicating that under our specifications and inspection the quality of the steel that we are receiving is of very uniform character.

The total weight of finished material shipped from the shops since commencing work amounts to 93,007,014 lbs.; the weight accepted during 1902 being 27,588,185 lbs. The latter was manufactured at the following shops:

Keystone branch, American Bridge Company	4,109,014	lbs.
Pencoyd branch, " " "	8,193,898	"
Trenton branch, " " "	2,533,104	"
Athens branch, " " "	12,577,261	"
Brooklyn branch, " " "	174,908	"
Total	27,588,185	"

The following list shows some of the most important instances of errors in shop work corrected through inspection :

Number of errors in faced length of columns, beams and girders	310
Number of errors in connections on columns, beams and girders	488
Number of pieces cut apart and re-riveted.....	70
Number of pieces chipped, coped and reamed.....	398
Number of pieces of finished work re-straightened.....	1,927
Number of pieces scraped and re-painted.....	128
Number of pieces rejected for bad punching.....	328
Number of pieces of finished work finally rejected.....	5
Holes screw plugged.....	484
Holes changed for field connections.....	400
Holes omitted and drilled later.....	574
Connections reset.....	857
Pieces of material omitted by shop.....	110

A comparison between actual shipped weights and estimated weights of material on all drawings on which the work was finished in the shops, shows a total to date :

Shipped weight of.....	80,802,258 lbs.
Estimated weight of.....	80,487,983 "

These totals indicate an average excess of 0.4 of one per cent. The allowed limit of variation under the specifications is a deficiency of 2.5 per cent.

The number of foundries, at which work of inspection was done, has been increased by the commencement of work at the Davis & Thomas foundry, Catasauqua, Pa., where the segments for the Harlem River tunnel are being made, and by placing certain sub-contracts for pipe and specials with the Glamorgan Pipe & Foundry Co., of Lynchburg, Va.

The total weight of cast material accepted and shipped since work commenced amounts to 12,386,369 lbs.; the weight shipped during

1902 being 3,335,543 lbs. The latter was cast at the following foundries:

Warren Foundry and Machine Co.....	456,879 lbs.
Reading Foundry Co.....	224,708 "
Emaus (Donaldson Iron Co.).....	437,053 "
Foran Foundry and Machine Co.....	2,316,903 "
Total	3,335,543 "

In addition to the above amount of cast-iron accepted during the year, 398,273 lbs. were carefully inspected, but rejected. All rejections of cast material were due to poor workmanship and not to the quality of stock material.

354 tensional tests were made, showing an average ultimate strength of 26,802 lbs. per square inch—the average specification requirement being 21,000 lbs. per square inch.

357 transverse tests showed under specification conditions an average loading per square inch before rupture of 807 lbs.—the specification requirement being 750 lbs.

The total amount of cement shipped since the commencement of the work amounts to 207,856,790 lbs.; the amount shipped during 1902 being 140,254,674 lbs. The latter was divided as follows:

354,911 $\frac{1}{4}$ barrels Portland cement.....	134,866,275 lbs.
17,961 " Natural "	5,388,399 "

In the matter of cement the greatest difficulty has been found to meet the demand for required material. The consumption of cement during the year 1902 was nearly two and one-half times as great as the total amount of cement consumed during the years 1900 and 1901, the work of construction having reached a period when great quantities of cement were needed. Unfortunately, this great demand for cement on our part occurred during a year when the general market was almost exhausted, owing to the great amount of construction going on throughout the country. On this account the sub-contractor for cement, the American Cement Company, was compelled to furnish cement from two other American mills and a small amount of German cement, in order that our needs should be supplied. It is only right that the American Cement Company

should be given credit for having made every endeavor to meet our demand and for having given our work preference wherever it was possible to do so. It is also creditable to the manufacturer to point out that the results of our tests show that in the quality of cement supplied during the year 1902, there was an advance over the quality of cement furnished during 1901, thus indicating that the manufacturer made no attempt to sacrifice quality for quantity. During the summer the Cement Company increased its plant by the completion of a large mill, so that during the last half of the year it was able to supply its own cement entirely, and it is hoped it will be able to continue to do so during the balance of the contract. The cements that were submitted to make up the temporary insufficiency in output were analyzed and inspected at our own laboratory, and, as will be seen below, met the requirements of our specifications.

The amount of Portland cement accepted during 1902 is divided as follows:

American Giant.....	316,548 $\frac{1}{4}$	bbls.
Iron Clad.....	5,738 $\frac{1}{2}$	"
Helderberg	27,417	"
German Imported.....	5,725	"

The average results from complete tests of 223 accepted bins of American Giant, of 1,368 barrels each, show:

FOR NEAT BRIQUETTES	24 HOURS	7 DAYS	28 DAYS
Average results.....	317 lbs.	703 lbs.	800 lbs.
Specification requirements	150 lbs.	400 lbs.	500 lbs.
FOR SAND BRIQUETTES		7 DAYS	28 DAYS
Average results.....		419 lbs.	545 lbs.
Specification requirements		200 lbs.	300 lbs.

The average results from complete tests of 9 lots of Iron Clad, of 638 barrels each, show:

FOR NEAT BRIQUETTES	24 HOURS	7 DAYS	28 DAYS
Average results.....	394 lbs.	550 lbs.	636 lbs.
Specification requirements	150 lbs.	400 lbs.	500 lbs.
FOR SAND BRIQUETTES		7 DAYS	28 DAYS
Average results.....		308 lbs.	512 lbs.
Specification requirements		200 lbs.	300 lbs.

The average results from complete tests of 30 accepted lots of Helderberg, of 914 barrels each, show:

	24 HOURS	7 DAYS	28 DAYS
FOR NEAT BRIQUETTES			
Average results.....	250 lbs.	687 lbs.	828 lbs.
Specification requirements	150 lbs.	400 lbs.	500 lbs.
FOR SAND BRIQUETTES		7 DAYS	28 DAYS
Average results.....		366 lbs.	507 lbs.
Specification requirements		200 lbs.	300 lbs.

The average results from complete tests of 7 accepted lots of German imported, of 820 barrels each, show:

	24 HOURS	7 DAYS	28 DAYS
FOR NEAT BRIQUETTES			
Average results.....	284 lbs.	587 lbs.	672 lbs.
Specification requirements	150 lbs.	400 lbs.	500 lbs.
FOR SAND BRIQUETTES		7 DAYS	28 DAYS
Average results.....		352 lbs.	453 lbs.
Specification requirements		200 lbs.	300 lbs.

The standard of quality fixed in the contract requirements, that there should be a certain percentage of increase in strength from 7 to 28 days, has, in the main, been met, though the necessities of the work at times have required the acceptance of material not complying fully with this percentage. Results obtained are shown below, covering percentages of gain, both neat and in sand mixtures, as well as the average results of boiling tests of all accepted Portland cement:

	PER CENT. INCREASE		AVERAGE STRENGTH
	7 TO 28 DAYS		OF BOILED
	NEAT	SAND	BRIQUETTES
American Giant..	15.4	30.5	679 lbs.
Iron Clad.....	15.6	66.2	457 lbs.
Helderberg	20.5	38.5	624 lbs.
German Imported.	12.6	29.0	584 lbs.

Of Natural cement there was but one brand offered, namely, the Union, manufactured by the American Cement Co. The aver-

age results from complete tests of 16 accepted bins, of 1,120 barrels each, show:

FOR NEAT BRIQUETTES	7 DAYS	28 DAYS
Average results.....	208 lbs.	310 lbs.
Specification requirements.....	125 lbs.	200 lbs.
FOR SAND BRIQUETTES		
Average results.....	206 lbs.	327 lbs.
Specification requirements.....	100 lbs.	150 lbs.

During the year 1902 there have been broken of neat Portland cement 36,900 briquettes. Of these 295 failed, or less than 0.3 of one per cent.

Of Portland cement with sand, 23,930 briquettes. None failing.

Of neat Natural cement, 1,236 briquettes.

Of Natural cement with sand, 1,236 briquettes. None failing.

Total number of all briquettes, neat..... 38,136

Total number of all briquettes, sand..... 25,166

Total amount of cement inspected during the year:

Portland, 424,878 bbls., of which 355,428 bbls. were accepted, and 69,450 bbls. rejected.

Natural, 20,961 bbls. 17,961 bbls. accepted; 3,000 bbls. rejected.

As was stated in the last annual report the Board has established at the cement mills a completely equipped testing laboratory. The results of these tests of cement on a large scale have not only been to assure the Board that the cement received was of the best possible quality, but the information learned has been made use of by the manufacturer in improving his cement, as the following comparative results of three years' work indicate:

Portland Cement: Average results of all tests during year periods:

	NEAT		
	1 DAY	7 DAYS	28 DAYS
1900	229	582	714
1901	300	645	763
1902	317	703	800

SAND 2 TO 1		
1900	276	434
1901	380	525
1902	419	545

The work accomplished by the chemical laboratory of the department of tests was:

Number of steel analyses made on ladle samples...	79
Number of steel analyses made on finished material.	2,278
Number of paint samples analyzed.....	67
Number of oil samples analyzed.....	17
Number of cement samples analyzed.....	359

The work of preparing designs has been carried on in the main office under the direction of Mr. St. John Clarke. This department has not only prepared all the detailed drawings necessary for the construction of the work under Contract No. 1, but also the general and detailed plans for Contract No. 2, and a great number of studies and plans for other work in connection with extensions and new lines not yet laid before the Board, and for improvements of the Bridge terminals and connections between the several bridges. It is impossible to give any detailed account of the work done by this department, but the credit for the development of the designs of construction in reinforced concrete is due to Mr. Clarke and his associates.

In the last report it was stated that the Contractor had been complying with his contract in regard to furnishing the equipment, as a part of which a site for a power house had been acquired by the Contractor between 58th and 59th Streets and Eleventh and Twelfth Avenues, and contracts for engines, generators and boilers had been let for a plant whose total energy represented 90,000 horse power. Since then the electrical engineers for the Contractor have worked out the general scheme of power distribution and have located the sites for various sub-stations, where the current which is to be sent out from the power house at a pressure of 11,000 volts can be transformed from alternating to direct current and, at the same time, reduced in working pressure to about 550

volts. Of these stations eight have already been acquired. The real estate that has already been purchased for the power house and the sub-stations is as follows:

REAL ESTATE ACQUIRED.

FOR POWER HOUSE.—Block bounded by 58th and 59th Streets, Eleventh and Twelfth Avenues. Dimensions, 200 ft. 10 ins. by 800 ft.

FOR SUB-STATION NO. 1.—City Hall Place, between Duane and Pearl Streets. Dimensions, about 58 ft. by 100 ft.

“ “ “ 2.—East 19th Street, near Fourth Avenue. Dimensions, about 50 ft. by 92 ft.

“ “ “ 3.—West 53d Street, near Broadway. Dimensions, about 57 ft. by 100 ft.

“ “ “ 4.—West 96th Street, near Broadway. Dimensions, about 50 ft. by 100 ft.

“ “ “ 5.—West 143d Street, near Broadway. Dimensions, about 50 ft. by 100 ft.

“ “ “ 6.—West 132d Street, near Lenox Avenue. Dimensions, about 57 ft. by 100 ft.

“ “ “ 7.—Hillside and Eleventh Avenues.

“ “ “ 8.—Fox Street, near Westchester Avenue. Dimensions, 50 ft. by 100 ft.

Upon the 59th Street site the main power house was originally planned to have a length of 895 ft. 9.5 ins.; a width of 200 ft. 10 ins., and a height of 123 ft., but a provision was made that the building might be extended, as the above dimensions did not cover the full length of the block, in the event of extensions or additions being made that would require an increase in power.

Contract No. 2 having been awarded during the year to the Rapid Transit Subway Construction Company, the construction company associated with Mr. McDonald in Contract No. 1, both contracts became controlled by the same interests, and a needed increase in power was at once evident. It was therefore decided to enlarge the

building and its machinery. The power house being constructed will consequently have a length of 693 feet instead of 585 feet, and will contain eleven instead of eight generating units, with a proportionate increase in the other details. The total amount of energy produced when the engines are worked to their full capacity will be 132,000 horse power. The picture of the framework of the power house shows how it appeared on December 31.

The contracts for the building complete and for the originally contemplated various electrical and mechanical installations have all been let. The additional installations required to increase the plant from a basis of eight to eleven units will be similar to those already contracted for, but not being needed at once will be ordered later.

The contracts already placed are as follows:

CONTRACTS FOR POWER HOUSE AND EQUIPMENT.

AWARDED TO	FOR
Allis-Chalmers Company, Babcock & Wilcox Company, Shaw Electric Crane Company, American Bridge Company, Ryan & Parker, Westinghouse, Church, Kerr & Co., Alberger Condenser Company, John Peirce,	8 Engines. 52 Boilers, with settings. 3 Electric traveling cranes. Structural steel. Foundation work. 2 Exciter engines. 9 Condensing equipments. Super-structure of power house.
Alphons Custodis Company, Robins Conveying Belt Company,	5 Masonry chimneys. Complete coal and ash equipment.
Westinghouse Electric & Mfg. Co.,	8 Alternators, 5 Exciters, 3 Turbine-driven alternator sets for lighting.
General Electric Company,	Switch gear, etc.

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POWER HOUSE, ELEVENTH AVENUE AND 59TH STREET, DECEMBER 31, 1902.

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All of the above-mentioned contracts call for the delivery and completion of the several items before January 1, 1904.

The main engines contracted for have a capacity of 7,500 to 11,000 horse power each.

The generators are nominally rated at 5,000 k. w., but are capable of delivering at time of maximum load 7,500 k. w. each. These generators are of the three-phase alternating-current type, 25 cycles per second, and operating at 11,000 volts.

The five exciters ordered have a capacity of 250 k. w. each, and the turbine-driven alternators for lighting, 5,000 k. w. capacity.

The officers of the construction company state that the work on all the above orders is well in hand, and therefore they are confident that the contracts will all be filled in ample time to begin the operation of the road.

The principal parts of the sub-stations' equipment have also been contracted for, said contracts being in the following detail:

Contract with Westinghouse Electric & Manufacturing Company for thirty-six 1500 k. w. rotary converters, and one hundred and eight 550 k. w. step-down transformers.

Contract with the Westinghouse Electric & Manufacturing Company for eight sub-station motor generator starting sets.

Contract with the Standard Underground Cable Company for three-conductor 11,000 volt paper-insulated cable.

Contract with the National Conduit & Cable Company for three-conductor 11,000 volt paper-insulated cable.

The various details covered by these contracts were submitted to Messrs. Duncan & Hutchinson, the Consulting Electrical Engineers of the Board, for their examination and were approved.

The matter of cars has given the officers of the operating company much concern, and finally two cars were built so as to illustrate various details of manufacture. The car as finally decided on will have a length of about 51 feet, with a maximum width of 8 ft. $11\frac{7}{8}$ ins. This will make a car about 4 feet longer and 4 inches wider than the standard car of the Manhattan Elevated Railway Company. This increased width will add very materially to the comfort of the passengers as giving greater freedom of ingress and egress. After the consideration of many designs for cars, the

Company finally decided to adhere to the normal plan of a car with platforms and end doors; but in order to facilitate the loading and discharging of passengers, the doors are to be made larger and so arranged as not to impede the passengers while getting on or off the trains. Every precaution will be taken to provide against the cars catching fire, and to that end the sides will be sheathed with copper and the electrical apparatus will be incased in a specially prepared fire-proof substance. Contracts have already been placed for 500 cars, of which 340 will be motor cars and 160 trailer cars, with the following car firms:

St. Louis Car Company.....	200 cars.
Jewett Car Company.....	100 “
Stephenson Car Company.....	100 “
Wason Manufacturing Company....	100 “

The order was divided to insure the delivery of the cars as needed, the contracts providing that the delivery shall begin in May, 1903, and preparations are already being made to receive them on that date and to begin the necessary wiring. At the close of the year the contracts for the car equipments had not been placed, but the specifications have been prepared and the Company is ready to invite bids.

The scope of the railway covered by the Manhattan-Bronx contract now known as “Contract No. 1,” was, to the great regret of the Board and its Engineer, limited by the action of the Appellate Division of the Supreme Court to a maximum of expenditure. For this reason the route adopted began at the Post Office, leaving the portion of the city lying south of that point to a future consideration. When the time had arrived when it was possible to take up the question of such extension, the cities of New York and Brooklyn had become united, with a corresponding increase in the powers and responsibilities of the Board. In 1901 the Board, having been informed by the Comptroller that the debt-incurring capacity of the city was sufficient to supply the requisite funds, adopted a general plan for an extension of the subway from the southern terminus of the railway covered by Contract No. 1 to South Ferry, at the lower end of Manhattan Island, and thence to Brooklyn. This

plan not only restored the portion of the route that the Board had been compelled to omit, but also extended the operations of the Board into the city of Brooklyn, now a borough of the greater city.

On September 4 and October 4, 1901, respectively, two Commissions were appointed by the Appellate Division of the Supreme Court, one for the First Judicial Department, and the other for the Second Judicial Department, to determine and report whether a rapid transit railway or railways, as determined by the said Board, ought to be constructed and operated. These Commissions subsequently reported favorably to the Court, and their reports were approved by the Appellate Division on the 30th of January, 1902, for the First Department, and on the 17th of January, 1902, for the Second Department. The question of details and plans was promptly taken up by the engineering department. These plans after being carefully worked out were submitted to your Board during the spring, and were finally adopted by the Board on June 12, 1902.

The route of the extension thus adopted begins at the southern terminus of the railroad now under construction, namely, at a point at the intersection of Ann Street and Broadway, and passes thence under Broadway to Bowling Green; thence under Battery Park and State Street and the East River to the Borough of Brooklyn, where it continues under Joralemon Street to Fulton Street, and thence under Fulton Street and Flatbush Avenue to the intersection of Flatbush and Atlantic Avenues, and to the terminus of the Long Island Railroad. At Bowling Green there is a branch running to South Ferry, with a loop at the latter point.

This railroad is to have two tracks in Manhattan, and in Brooklyn as far as the intersection of Clinton and Joralemon Streets, whence there will be three tracks under Joralemon Street and Fulton Street to the intersection of Smith, Jay and Fulton Streets; thence two tracks to the intersection of Fulton Street and Flatbush Avenue, and three tracks from the latter point to the terminus at Atlantic Avenue.

The length of the main line thus to be constructed is 3.1 miles, which, with the South Ferry loop, 0.4 miles long, gives a total length of line of 3.5 miles, containing 8 miles of track.

In the Borough of Manhattan and in the Borough of Brooklyn east of Court Street, the construction of the extension is to be sub-

stantially similar to the standard type, namely, that the roof is to be as close to the surface of the street as subsurface conditions will permit, except that under Broadway the minimum distance between the top of the roof and the surface of the street has been made about six feet, instead of thirty inches, so as to avoid the readjustment of subsurface structures. With the construction now in hand the most annoying detail, and the one most liable to cause delay, has been the readjustment of pipes made necessary by bringing the roof close to the surface. In the streets where rock is encountered, or where traffic is comparatively light, or where pipes are few, the advantages of minimum clearance are paramount. In Broadway, however, these conditions do not obtain; there is no rock and the traffic is at the maximum of congestion, while the pipes are many and large. The roof has, therefore, been depressed. Although the distance from sidewalk to platform level will be thus somewhat increased, still it will not be as great as the similar distance to elevated railway station platforms. On the other hand, the duration of the construction period will be appreciably decreased. The clearance space thus provided can be utilized to make a pipe gallery above the subway, in which the pipes can always be readily subject to inspection and repairs. This question has been referred to the President of the Borough of Manhattan who has directed his consulting engineer to prepare studies for such structure.

The most radical departure from the construction details of the plans of Contract No. 1 was made in the portion of the line of Contract No. 2, between Bowling Green, Manhattan, and Court Street, Brooklyn. That part of the route includes the tunnel beneath the East River and the approaches thereto. The width of the river on the line of the crossing between bulkhead lines is 4,150 feet, with a depth at high water of 47 feet. The mean variation between high and low tides is 4 ft. 7 ins. Studies were made at first with a view of designing a construction that would permit the river section to be built by dredging a bed for a tunnel to be put together in the open and lowered into place. The War Department of the United States Government requires a minimum depth of water above the top of the tunnel at low tide of at least 45 feet. This requirement, taken in connection with the irregularities of, and varying materials forming, the bed of the river, to-

gether with the great volume of river traffic and the dangerous currents and counter-currents produced by very swift running tides, compelled the abandoning of such an idea. It was therefore decided to build this section of the route by tunnel, and following the precedents of other similar lines, to do the work by means of shields and under compressed air. Therefore, between a point near the south end of the Bowling Green Station and Clinton Street, Brooklyn, the subway will consist of two iron or steel-lined tubes, which will be put in place by shields working from shafts located in Battery Park and at convenient sites in Brooklyn along the route in Joralemon Street. The total length of these tubes will be 6,550 feet.

In Brooklyn east of Court Street it was decided to use reinforced concrete construction for the walls and roof, similar to the construction that had given such success in the Lenox Avenue work in Contract No. 1, instead of the beam and intermediate arch construction employed elsewhere.

The detail plans show stations located in Manhattan between Fulton and Dey Streets, at Rector and Wall Streets, and at Bowling Green and South Ferry; and in Brooklyn at Borough Hall, at Hoyt and Fulton Streets, at Flatbush Avenue and Fulton Street, and at the intersection of Flatbush and Atlantic Avenues.

Although line No. 2 will be during the immediate future but an extension of line No. 1, there is little doubt that before long it will be extended to either the west or south, or both. In that event, it may become desirable to stop some of the trains after they have passed the shopping district in Brooklyn and not necessarily to run all trains to Manhattan. This facility has been provided by incorporating in the plans a tail switching track west of the Borough Hall, so that trains coming from the east can be readily turned and sent back from this point.

Certain changes have been made in the specifications from those in Contract No. 1 in order to insure a shortening of the time required for keeping the streets open. To this end a clause has been inserted providing that on the portion of the route under Broadway between the point of beginning and the north end of Bowling Green, and that portion of the route in Brooklyn between Borough Hall and Flatbush Avenue, work shall not be begun at any point until a statement has been filed with the Engineer, showing that the ma-

material needed for construction at such point has been acquired and is on hand. When the construction has been begun the same shall be prosecuted with all possibly energy, with at least two shifts of eight hours each every working day. Certain minor changes were made in the specifications, the chief one of which was the insertion of the cement specifications in detail.

On July 21, the Board opened bids for this work when the following propositions were received:

First, a bid by the Rapid Transit Subway Construction Company in the sum of:

For construction.....	\$3,000,000
For terminals and real estate.....	1,000,000

This bid was accompanied by a letter stating that if the bid should be accepted the Company would undertake to build a line under Broadway from 42d Street to 14th Street for the nominal consideration of \$100,000.

Second, a bid by the Rapid Transit Subway Construction Company in the sum of:

For construction.....	\$2,000,000
For terminals and real estate.....	1,000,000

Third, a bid by Mr. John L. Wells, on behalf of the Brooklyn Rapid Transit Railroad Company, in the sum of:

For construction.....	\$7,000,000
For terminals and real estate.....	1,000,000

As the estimated cost of this work, exclusive of terminals, was from \$8,000,000 to \$10,000,000, it will be seen that all bids were under the actual cash cost of the work, the bids of the Rapid Transit Subway Construction Company being especially low. After consideration the Board decided to accept the second-named bid of the Rapid Transit Subway Construction Company, the other bid being too irregular to be entertained. The contract was executed on September 11. Actual work was commenced under this contract by beginning the excavation for a sewer on State Street on November 8. The total amount of new sewers to be built under this contract is 15,198 feet.

The plans for line No. 2 are annexed, showing the details of construction. At the close of the year the actual amount of work ac-

completed was confined to the sewer on State Street, although elaborate preparations were being made by the proposed sub-contractors to acquire plant and place orders for construction material.

On December 1 the Construction Company announced that, subject to the approval of the Board, it proposed to make the following sub-contracts:

Section No. 1. From Ann Street to Station 33+13.45 (Bowling Green)—to the Degnon-McLean Contracting Company, No. 21 Park Row, New York; who are to furnish all labor and materials, except that required for the track and the decoration and finishing of stations.

Section No. 2. Beginning at Station 33+13.45 and extending to Station 35, and beginning at Station 33+13.45 and extending around the loop about 2,060 feet—to Andrew Onderdonk, No. 40 Wall Street; who is to furnish all labor and materials, except that required for the track and the decoration and finishing of the station at South Ferry.

Section No. 2—A. From Station 35, Bridge Street, Manhattan, to Station 107, near Clinton Street, Brooklyn, including the East River tunnel—to Andrew Onderdonk, No. 40 Wall Street; who is to furnish all labor and materials, except that required for the track.

Section No. 3. From Station 107 to the terminus at Atlantic Avenue—to Messrs. Cranford & McNamee, No. 215 Montague Street, Brooklyn; who are to furnish all labor and materials, with the exception of the structural iron and steel and that required for the track.

The Rapid Transit Act having been amended during the year so as to extend the power of the Board to grant franchises for urban lines to railway corporations, the Pennsylvania Railroad, through a subsidiary company, known as the Pennsylvania, New York & Long Island Railroad Company, made application for the right to construct a railroad beneath the Hudson River, Borough of Manhattan, the East River and a portion of the Borough of Queens, with a large terminal station to be located in Manhattan between Seventh and Ninth Avenues and 31st and 33d Streets.

The purpose of this line is to afford a New York terminal for the Pennsylvania Railroad and for the Long Island Railroad. A franchise was granted by the Board and approved by the Board of Aldermen on December 16. A map and profile of the lines covered by this franchise are given in the appendix.

At the time of granting the franchise the complete engineering details of the design had not been determined. The grant, however, reserves to the Board the right that "all plans for, and the method of doing the work shall from time to time be subject to the approval of the Board."

The general provisions in regard to the details of construction and operation as prescribed by this franchise are:

1. The power to be used shall be electricity, or such other power (not involving combustion in the tunnel) as may be approved by the Board.

2. The plan and profile of the railroad are to be deemed a part of the franchise and shall be substantially followed. Deviations therefrom not inconsistent with the other provisions may be permitted by the Board.

3. The Company may construct its railways in tunnels containing one or more tracks, as may be found most advantageous.

4. Excavations necessary in the course of construction by the Tunnel Company shall be made without disturbing the surface of the streets or avenues, except the portions of 31st Street, Seventh Avenue, 33d Street, Eighth Avenue and Ninth Avenue, immediately in front of the terminal station and except in Queens Borough; provided, that the Board may, wherever elsewhere local conditions make excavations from the surface necessary for efficient construction, grant the right to make such excavations from the surface, subject to such conditions as the Board may prescribe.

5. No part of the structure of the railroad, except its terminals or stations, and except on the portion of 32d Street west of Ninth Avenue where the Tunnel Company is authorized to construct and operate four tracks, shall approach within five feet of the exterior line of any street or avenue, unless the abutting property shall be owned by the Tunnel Company, or unless the owner or owners of the property so abutting shall consent.

6. The uppermost part of any tunnel or station on any cross street is prohibited to come within 30 inches of the surface, which restriction will permit the City at any time to authorize the construction of a sub-conduit electric tramway.

7. The uppermost part of any tunnel or of the station beneath any longitudinal avenue shall not approach within 4 feet of the surface. This restriction permits the Board to lay out a subway on any such avenues similar in construction to the subways now being constructed.

8. The right to construct stations was granted at the terminal site between Seventh and Ninth Avenues and under 33d Street at Fourth Avenue. From the terminal station west the franchise grants the right to construct four tracks in either four separate or two double-track tunnels under 32d Street and 31st Street, and easterly from said station six tracks; that is, two tracks under 31st, 32d and 33d Streets in either single or double-track tunnels.

The railroad company is required to protect and maintain during construction all underground structures; make good to the City or other owner, damage to all property, and to keep paved with a smooth pavement portions of 31st and 33d Streets immediately adjacent to the station. It is empowered in addition to constructing the railway and stations above described, to construct and operate certain additional tracks under 31st, 32d and 33d Streets, and to maintain and operate along the route of the railway telegraph wires, and wires, cables, conduits, ducts and ways for the distribution of power, heat and light and other appurtenances, and to acquire and use private property for stations or station extensions, power plants, pumping stations, shafts for access to the surface and other purposes of the railroad.

The total length of railway to be constructed under this franchise is 4.2 miles, and the total length of main track, exclusive of side tracks, or track in the stations is 22.6 miles. The maximum gradient as shown by the profile is 1.82 per cent. The distance from the surface of the ground at Twelfth Avenue to the base of rail is 65 feet, and at Fifth Avenue 75 feet. At the Manhattan bulkhead line of the East River, the rail level is 88 feet below mean high water.

Following the application of the Pennsylvania Railroad Company, a similar application was made on behalf of the New York & Jersey Railroad Company, to construct a tunnel railroad having its eastern terminus in the block bounded by Christopher, West Tenth, Greenwich and Hudson Streets, and extending thence southerly along Greenwich Street to Morton Street, under Morton Street across West Street and under the Hudson River, to connect with railroads in the State of New Jersey.

This Company is the owner of the old Hudson River tunnel, work on which was begun as far back as 1874, and has been continued intermittently since then under various corporate organizations. The plans for the Hudson River tunnel contemplated two tunnels, each with an interior diameter of 18 feet, connecting New York with New Jersey. At the time the application above named was made, one of these tunnels had been continued from a shaft on the Jersey shore easterly a distance of 3914 feet, and the other a distance of 585 feet. The shaft was located about 200 feet west of the bulkhead line. The longer of these two tunnels was at that time within about 1700 feet of the Manhattan bulkhead line at the foot of Morton Street. A small section of tunnel had also been completed at the foot of Morton Street, from which it was proposed to work westerly. The new tunnel, however, being at a somewhat lower depth than the old tunnel, this piece of work will not be used.

The New York & Jersey Railroad Company proposes to complete these two tunnels and to continue the same to a terminus as described in their application.

The Board granted the application to lay down and construct the railroad with two tracks as described above, with power to maintain a terminal station; to run motor cars and carriages for the transportation of passengers and property; to maintain and operate along the line of the said railroad telegraph wires, and wires, cables, conduits, ducts and ways for the distribution of power, heat and light for the use of the railroad, and to acquire and use private property for stations or station extensions, power plants, pumping stations, shafts for access to the surface and other necessary purposes of the railroad.

In addition to certain payments described in the grant, the Board prescribed that no part of the structure of the railroad, except its terminal station, shall approach within five feet of the exterior line of any street, except streets it shall cross, unless the abutting property shall be owned by the Tunnel Company, or unless the owners of the property shall consent.

The uppermost part of any structure shall not approach nearer than 19 feet to the surface of any street; except that in Greenwich Street, north of the north line of Barrow Street, and in Christopher and West Tenth Streets opposite the terminal station, the top of the tunnel may come within not less than thirty inches of the surface of the roadway. This permits the use of longitudinal streets other than Greenwich Street to be subsequently used for subway construction according to the plans of the Rapid Transit Commission, and the use of all streets for electric conduit surface railways.

The Company is required to take care of and maintain all underground structures; to pave, and maintain the pavement of the portions of the streets contiguous to its terminal station, and to make good the damage done to all abutting property. It is also understood that the excavation necessary for the construction of the tunnel shall be made without disturbing the surface of the street, except the portions of Greenwich, Christopher and West Tenth Streets adjoining the terminal station; provided that the Board may, wherever elsewhere local conditions make excavations from the surface necessary for efficient construction, grant the right to make such excavations from the surface, subject to such conditions as the Board may prescribe.

The power used shall be electricity, or such other power (not involving combustion in the tunnel) as may be approved by the Board.

The plan and profile of the railroad were attached to the application of the grant, which map and profile are to be substantially followed, but deviations therefrom, not inconsistent with the other provisions, may be permitted by the Board.

All plans for, and the method of doing the work, shall from time to time be subject to the approval of the Board.

This franchise was granted by the Board, and on December 16 was approved by the Board of Aldermen.

Copy of the map and profile are attached to this report.

The question of the congestion at the Manhattan terminus of the Brooklyn Bridge was brought to the attention of the Board by the Mayor. Under directions of the Board, the Chief Engineer made a report to the Board, suggesting that a connection between the Brooklyn Bridge and the Williamsburg Bridge, which latter is now nearing completion, should be made in order that trains from Brooklyn could pass from one bridge to the other through a subway located under Centre Street and Grand Street. This report, however, dealt only with the running of trains on the Brooklyn Elevated system and did not deal with the congestion of the surface cars.

On September 11, the Mayor appointed a Commission, consisting of the Chief Engineer of this Board as Chairman, Mr. George B. Post, Architect, and Mr. J. C. Brackenridge, Chief Engineer of the Brooklyn Rapid Transit Railroad Company, to examine certain plans that were submitted by the Manufacturers' Association of Brooklyn, proposing methods for handling the surface cars at the Manhattan end of the bridge. This Commission, after due deliberation, decided that the plans proposed would not offer the relief hoped for, and suggested instead that additional loops be constructed east of the present loops, so that eight instead of four loops might be made serviceable, and submitted a plan whereby these loops could be constructed and efficiently operated. It was finally arranged between the Commissioner of Bridges and the Brooklyn Rapid Transit Company that the railroad company should construct these loops, and orders were given by that company for the work to be done.

This question of congestion at the Manhattan end of the Brooklyn Bridge is the most serious single problem in the whole question of local transit in the city of New York. The total number of passengers carried by the two lines of elevated tracks and two lines of surface tracks across the bridge amounts to about 120,000,000 per annum. As the length of railroad from one end of the bridge to the other is only 6,017 feet, this burden of traffic is undoubtedly the heaviest burden of traffic carried by any railway over a similar length of line in any part of the world.

The suggestion made by this Commission was stated to be a temporary expedient only, to mitigate as much as possible the terrible

congestion that must continue until new lines of transfluvial communication are established. The financial and commercial district of the city lying south of Canal Street is common to all boroughs. The Boroughs of Manhattan and The Bronx are connected with this district by four elevated railways, and five double-track surface railways; whereas the Borough of Brooklyn, with considerably more than 1,000,000 inhabitants, is served with but one elevated and one surface railway connection. The City has under construction two new bridges that will supply additional means of communication. Of these bridges, one is nearly completed; the other will require some years before it will be serviceable. It must be remembered that the cost of such bridges, when all the incidental expenses are taken into account—such as new streets, condemnation of property, interest during construction and loss of taxable values in property taken for approaches—will exceed \$30,000,000. On account of this great expense it is imperative that as many separate lines of travel as possible be made to converge to a bridge, for many such expensive structures cannot be built. Congestion then follows concentration. The other means of solving this particular problem, is to construct many and not few connecting lines, and thus secure distribution. This end can be achieved by building tunnels, at a cost for two tracks of about \$5,000,000 each.

This question and the laying out of a comprehensive plan for rapid transit for the whole city are now under consideration and investigation by your Engineer, in accordance with the instructions contained in the following letter:

May 9, 1902.

WM. BARCLAY PARSONS, Esq.,
Chief Engineer.

MY DEAR SIR—The public has come to fully recognize the wisdom of development of the rapid transit facilities of Greater New York and of the use of its street property for rapid transit purposes upon a general and far-seeing plan. Rapid transit franchises, it is now believed, ought to be granted with reference to a systematic treatment of the subject under the guidance or initiatory control of a single body like this Board, with a tenure sufficiently long to assure not only the adoption of a comprehensive programme, but

also, at least in part, its execution. This idea was embodied in the present rapid transit act, providing, as it did, not only for municipal construction of new rapid transit railroads, but also for the grant of rapid transit franchises to companies operating existing lines. The idea has been more clearly impressed upon the public mind by recent legislation. The amendment of section 32 (the so-called "Pennsylvania Railroad" act, recently approved by the Mayor and the Governor) has made clearer the power and, as I think, the duty of the Board, to prepare for the City a sound and liberal programme of rapid transit extension. The great public favor with which the veto by the Governor, upon the recommendation of the Mayor, of the so-called New York Central Terminal bill has been received, has rendered it still more improbable that the City will abandon the general theory of the rapid transit act.

When the present Board took up the study of the problem its jurisdiction was confined to the present boroughs of Manhattan and The Bronx, and it then proposed a general plan with a central route along Broadway to Fourteenth Street, and from that point with direct extensions towards the northern limits of the City, one on the east side, along Fourth and Park Avenues, and the other on the west side, along Broadway and the Boulevard. That plan was disapproved by the Appellate Division of the Supreme Court chiefly upon considerations of expense; and the maximum limit of \$35,000,000, which it was understood that the court might approve, compelled the Board to place the point of departure of the east side line from the main line as far uptown as One Hundred and Fourth Street. When the plan now under construction was adopted the Board was careful to announce that, because of the constraint thus placed upon its action, it formed only a part of a more comprehensive system which the Board intended to lay out as soon as the financial condition of the City should permit. In the hope that such financial ability is not far distant, the Board instructed you at its meeting held on the 1st instant to submit plans for an east side line connecting with the present rapid transit route at Forty-second Street and Park Avenue. This instruction did not imply a determination of the Board as to what should be the next rapid transit route adopted, but only that the necessities of the upper east side would have to be studied and considered, as would

also the further claims of Brooklyn and the claims of other boroughs.

The Board is almost ready to advertise the contract for the Brooklyn-Manhattan extension already adopted. It has, at the request of the Mayor, begun the consideration of a comprehensive terminal system intended to include the present Brooklyn Bridge and the bridges, Nos. 2 and 3, now under construction. It has received from the Pennsylvania Railroad Company and is now considering an application for the grant of a franchise for a tunnel railroad under the Hudson river, across the Borough of Manhattan, under the East river and connecting in the Borough of Queens with the Long Island Railroad system. Under the amendment to section 32 of the rapid transit act and without further legislation, as I am advised, it will also be possible, with a co-operation of the City authorities—upon which, I believe, we may count—for the Board, upon the application of the New York Central and Hudson River Railroad Company, to authorize an enlargement of the terminal facilities of that company so as to permit it to make the peremptorily needed change of motive power in the Park Avenue tunnel. I earnestly hope that such an application will presently be before the Board.

It is, therefore, clear that the public now has a right to expect from this Board the preparation of a general and far-reaching system of rapid transit covering the whole City of New York in all its five boroughs. It was in anticipation of that work that the Board in January last asked the Mayor and Comptroller for early information as to the extent to which the debt limit and other necessities of the City would permit rapid transit extension in addition to the Manhattan-Bronx and Brooklyn-Manhattan roads. When that information shall be received the Board will be better able to decide where the next rapid transit expenditure shall be placed.

The far-reaching plan I have suggested could not, of course, be carried out at once, or, perhaps, completely carried out for many years. But if such a plan be now wisely prepared and the streets of New York be dedicated to tunnel railroad purposes with a proper regard to the long, and, no doubt, splendid future of the City, two things may reasonably be expected. First, that rapid

transit construction will proceed upon the lines so laid down as rapidly as the means of the City and the amount of private capital ready for rapid transit investment will permit. And, second, that relatively unimportant franchises will not be granted in such way, or special routes be so devised, as to prevent or obstruct a permanent and sufficient programme.

It is my conclusion from all this that, in laying out the east side line, you should study the whole rapid transit situation of all five boroughs, and that your report should aid the Board to prepare and submit to the local authorities the comprehensive plan for the entire City which I have suggested, the same to be carried out in sections or installments, as financial conditions shall from time to time permit.

Yours respectfully,

(Signed) A. E. ORR, President.

In no other city has the burden of intra-urban railway traffic reached the proportions existing in New York. The paying passengers, exclusive of transfers, carried on the various surface and elevated lines in the City of New York amount to nearly 1,000,000,000 passengers per annum. The present facilities were designed to carry a much smaller number, and, in consequence, all of the present lines are seriously overtaxed. Great as is the present burden of traffic the coming years will show still larger totals, as in each year there is an increase over the preceding year. Whatever additions to or extensions of the present railway systems are made, should be made on a comprehensive plan, looking not only to the urgent needs of the present day, but the still more urgent needs that will arise in the future. If a comprehensive plan of additions and extensions is adopted, such a plan need not be constructed in whole at once, but each portion can be taken up in the order of its importance, as suggested in the letter of instruction from the President of the Board.

As an indication of what the present travel amounts to, the figures below, giving the total travel on all elevated and surface lines in the several boroughs, will be found interesting. These figures show not only the total volume of travel, but the increased rate of growth during the past three years.

TOTAL NUMBER OF PAYING PASSENGERS CARRIED IN THE
SEVERAL BOROUGHS OF NEW YORK ON THE SURFACE AND
ELEVATED RAILWAYS.

	1900	1901	1902
Boroughs of Manhattan and The Bronx.....	544,157,028	587,977,059	630,959,449
Borough of Brooklyn	243,733,635	269,229,428	282,874,250
Borough of Richmond.....	12,510,890	12,498,822	12,191,477
Borough of Queens	9,545,652	10,064,386	11,126,586
Total.....	809,947,205	879,769,695	937,151,762

On account of the general development of the work during the past year, it has been found necessary to materially increase the engineering staff. These increases, however, have been exclusively in the junior grades, as the organization of the staff from the grade of Senior Assistant Engineer to Chief Engineer has remained unaltered. At the close of the year 1901, there were 272 appointments on the engineering staff. At the close of the year 1902, there were 322 appointments, divided as follows:

Engineers	73
Rodmen	57
Axemen	32
Inspectors	126
Secretary	1
Clerks	12
Draughtsmen	21
	322

The changes that have taken place during the year 1902 in the matter of new appointments, promotions, resignations or retirements, are shown in the following table:

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
James Kearney	Assistant Engineer	Feb. 8, 1902..	.....	Transferred from Dept. of Public Parks.
Clarence W. Marsh	Assistant Engineer	Aug. 1, 1900..	Feb. 28, 1902..	Resigned.
James C. Meem	Assistant Engineer	Apr. 9, " ..	Mar. 10, " ..	Resigned.
Clarence D. Pollock	Assistant Engineer	May 21, " ..	Mar. 19, " ..	Transferred to Dept. of Public Works.
John D. Griffiths	Assistant Engineer	June 1, 1902..	.....	Promoted from Transitman.
Arthur E. Wenige	Assistant Engineer	June 1, " ..	.....	Promoted from Transitman.
Edmund M. Blake	Assistant Engineer	Oct. 25, 1900..	June 1, 1902..	Resigned.
Chas. A. Sullivan	Assistant Engineer	June 1, 1901..	July 15, " ..	Resigned.
David H. Ray	Assistant Engineer	Aug. 11, 1902..	Sept. 1, " ..	Resigned.
Max Feldman	Assistant Engineer	Sept. 13, " ..	.....	.....
Cornelius J. Gaffney	Assistant Engineer	Sept. 18, " ..	.....	Promoted from Rodman.
Justin Burns	Assistant Engineer	May 1, 1900..	Oct. 15, 1902..	Resigned.
Wm. H. Hunt	Draughtsman	Nov. 27, " ..	Mar. 1, " ..	Resigned.
Jacob Schniitt	Draughtsman	Aug. 1, 1902..	.....	Promoted from Rodman.
Wm. F. Steinmetz	Draughtsman	Sept. 11, " ..	.....	Promoted from Rodman.
M. J. Allen	Draughtsman	Oct. 1, " ..	.....	Promoted from Asst. Architectural Draughtsman.
John A. Gorman	Draughtsman	Oct. 1, " ..	.....	Promoted from Asst. Architectural Draughtsman.
Louis Sonn	Draughtsman	Oct. 1, " ..	.....	Promoted from Rodman.
A. I. Raisman	Draughtsman	Oct. 24, " ..	.....	Promoted from Asst. Engr. "B."
David E. Baxter	Draughtsman	Oct. 24, " ..	.....	Promoted from Mech. Dr'tsman.
John Cooperstock	Draughtsman	Nov. 7, " ..	.....	.....
Joseph L. Hunt	Draughtsman	Dec. 4, " ..	.....	.....
Frank G. Doran	Draughtsman	Dec. 12, " ..	.....	Promoted from Rodman.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
James G. McKinley	Draughtsman	Dec. 12, 1902 ..		
F. W. Horenburger	Draughtsman	Dec. 12, " ..		
Henry Kamp	Draughtsman	Dec. 12, " ..		
Thos. G. Gilroy	Draughtsman	Dec. 12, " ..		
Joseph Banzer	Rodman	Jan. 1, " ..	Jan. 23, 1902..	Resigned.
Leo C. Clarke	Rodman	Jan. 1, " ..		Promoted from Axeman.
A. E. Hoffman	Rodman	Feb. 15, " ..		Promoted from Axeman.
M. F. Corkery	Rodman	Feb. 15, " ..		Promoted from Axeman.
Wm. J. Keogh	Rodman	Feb. 15, " ..		Promoted from Axeman.
John F. Mause, Jr.	Rodman	Feb. 15, " ..		Promoted from Axeman.
Otto Bernhardt	Rodman	Feb. 15, " ..		Promoted from Axeman.
Chas. A. Wood	Rodman	Feb. 15, " ..		Promoted from Axeman.
John J. Welsh	Rodman	Feb. 15, " ..	Oct. 1, 1902..	Promoted from Axeman; trans- ferred to Bor. of Bronx.
John G. Horgan.....	Rodman	Feb. 15, " ..	Aug. 5, " ..	Promoted from Axeman; trans- ferred to Dept. Public Works.
Robt. Tighe	Rodman	Feb. 15, " ..	Nov. 7, " ..	Promoted from Axeman; trans- ferred to Bor. of Bronx.
Job C. Austin	Rodman	Feb. 25, " ..		Promoted from Axeman.
Wm. B. Caterson	Rodman	Apr. 3, " ..		
Durrell Lord	Rodman	June 23, 1900..	May 6, 1902..	Resigned.
John S. Reeve	Rodman	June 3, 1902..		
John J. Breen.....	Rodman	June 4, " ..	Aug. 6, 1902..	Transferred to Bor. of Richmond
Godfrey Branfuehr, Jr.	Rodman	July 15, " ..		Promoted from Axeman.
Louis Knezek	Rodman	July 28, " ..		
W. G. Southern	Rodman	July 28, " ..		
James R. Ferris.....	Rodman	July 28, " ..		

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Orman T. Babcock	Rodman	July 1, 1901..	July 31, 1902..	Transferred to Dept. of Water Supply, Brooklyn.
E. V. Lawrence	Rodman	Jan. 25, " ..	Sept. 1, " ..	Transferred to Bor. of Bronx.
Claude J. Rich	Rodman	Aug. 7, 1902..	.....	.....
James F. Sanborn	Rodman	Aug. 18, " ..	.....	.....
Bernard G. Barton	Rodman	Aug. 26, 1901..	Sept. 1, 1902..	Resigned.
I. F. Putney	Rodman	Mar. 1, " ..	Sept. 1, " ..	Transf'd to Bor. of Richmond.
Traugott F. Keller	Rodman	Sept. 8, 1902..	.....	.....
Chas. M. Cornelius	Rodman	Sept. 15, " ..	.....	.....
Otto Claussner	Rodman	May 4, 1900..	Sept. 16, 1902..	Resigned.
Thos. T. Craven	Rodman	Nov. 4, 1901..	Oct. 14, " ..	Resigned.
Roderick Ross	Rodman	Oct. 25, 1900..	Oct. 15, " ..	Transferred to Bor. of Bronx.
Wm. J. Dunsing	Rodman	June 1, " ..	Oct. 20, " ..	Resigned.
Chas. U. Stepath	Rodman	Oct. 1, " ..	Oct. 21, " ..	Resigned.
Thos. J. Kiernan	Rodman	Dec. 12, 1901..	Nov. 1, " ..	Transferred to Bor. of Bronx.
Tobias Hochlerner	Rodman	Nov. 5, 1902..	.....	.....
Joseph Goldberg	Rodman	May 5, 1900..	Dec. 1, 1902..	Resigned.
Alfred R. Loweth	Rodman	June 14, " ..	Dec. 21, " ..	Resigned.
Edwin F. Acker	Axeman	Mar. 4, 1902..	Aug. 7, " ..	Resigned.
Efingham Ferris	Axeman	Apr. 18, " ..	Aug. 8, " ..	Resigned.
Thos. E. Raymond	Axeman	Mar. 4, " ..	.....	.....
Maurice Welch	Axeman	Mar. 4, " ..	.....	.....
James Brogan	Axeman	Mar. 4, " ..	.....	.....
Aug. T. Weisse	Axeman	Mar. 4, " ..	.....	.....
Everett Agor	Axeman	Mar. 4, " ..	.....	.....
John T. Dowd	Axeman	Aug. 12, " ..	.....	Reinstated.
A. E. Comstock	Axeman	Sept. 16, " ..	.....	.....

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Thos. Chambers	Axeman	Sept. 16, 1902		
R. F. Knochenhauer	Axeman	Sept. 16, "		
Joseph A. Vertefeuille	Axeman	Sept. 16, "		
Edw. Pfortner	Axeman	Sept. 16, "		
Frank Berbert	Axeman	Sept. 16, "		
Wm. E. Haefner	Axeman	Sept. 16, "		
Constant W. Booth, Jr.	Axeman	Sept. 18, "		
C. G. Baxter	Axeman	Oct. 8, "		
Hugh F. Bresman	Axeman	Oct. 9, "		
Wm. T. Doyle	Axeman	Oct. 9, "		
Benj. E. Bemak	Axeman	Oct. 9, "		
Julius A. Lewis	Axeman	Nov. 6, "		
Walter A. O'Brien	Axeman	Nov. 11, "		
John P. Lonergan	Axeman	Nov. 11, "		
Robt. A. Kearns	Axeman	Nov. 17, "		
Stafford H. Ritchie	Axeman	Nov. 17, "		
Geo. S. Dillon	Axeman	Nov. 18, "		
Wm. A. Roffe	Axeman	Nov. 18, "		
Everett W. Horton	Axeman	Nov. 24, "		
J. Spencer Crosby	Axeman	Dec. 1, "		
Ernest B. McCready	Cement Tester	Apr. 1, "		
Wilbur A. Langdon	Cement Tester	May 12, "		
C. F. Gardner	Inspector of Steel	Mar. 11, 1901	July 1, 1902	Transferred to Building Dept.
Geo. R. Nauss	Inspector of Steel	July 1, 1902		
Benj. Maurice	Inspector of Steel	Aug. 8, "		
Thos. S. McPherson	Inspector of Masonry	Mar. 22, "		
John B. Conley	Inspector of Masonry	Mar. 28, "		

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Leroy D. Ball	Inspector of Masonry	Mar. 28, 1902..	June 3, 1902..	Resigned.
Thos. W. Carr	Inspector of Masonry	Mar. 31, "	"	
Thos. F. Duggan	Inspector of Masonry	Apr. 1, "	"	
Lawrence C. Manuell	Inspector of Masonry	Apr. 1, "	"	
M. Henahan	Inspector of Masonry	Apr. 1, "	"	
Ernest Wetter	Inspector of Masonry	Apr. 1, "	June 6, 1902..	Resigned.
Rollin B. Vose	Inspector of Masonry	Apr. 7, "	"	
Frank Nearing	Inspector of Masonry	Apr. 12, "	"	
Frank C. Fox	Inspector of Masonry	Apr. 16, "	"	Promoted from Axeman
Michael Bourke	Inspector of Masonry	Apr. 16, "	"	
Joseph M. Egan	Inspector of Masonry	Apr. 16, "	"	
Louis H. B. Haase	Inspector of Masonry	Apr. 18, "	"	
Thos. J. Byrne	Inspector of Masonry	Apr. 18, "	"	
John B. Sweeney	Inspector of Masonry	Apr. 18, "	"	
Drew Linard	Inspector of Masonry	Apr. 18, "	May 7, 1902..	Resigned.
Thos. Turner	Inspector of Masonry	May 3, "	"	
Joseph P. Kearney	Inspector of Masonry	May 6, "	"	
Thos. Costello	Inspector of Masonry	May 6, "	"	
John J. Devery	Inspector of Masonry	May 12, "	"	
Philip Schneider	Inspector of Masonry	May 14, "	"	
Thos. J. McDermott	Inspector of Masonry	May 14, "	"	
John J. Kennedy	Inspector of Masonry	May 14, "	"	
Geo. E. Heath	Inspector of Masonry	Apr. 18, 1901..	May 31, 1902..	Resigned.
Dennis Duggan	Inspector of Masonry	June 5, 1902..	"	
Thos. F. McCormick	Inspector of Masonry	June 10, "	"	
James A. Gearty	Inspector of Masonry	June 10, "	"	
Leo. D. McCormick	Inspector of Masonry	June 10, "	"	

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Henry W. Doherty	Inspector of Masonry	Nov. 11, 1900..	Aug. 1, 1902..	Resigned.
Clarence B. Riggs	Inspector of Masonry	Aug. 21, 1902..		
Fred Roffe	Inspector of Masonry	Aug. 21, "		
Alex. Stewart	Inspector of Masonry	Aug. 24, "		
F. R. Auspland	Inspector of Masonry	Aug. 29, "		
Oscar Wm. Horne	Inspector of Masonry	Aug. 30, "		
Edward L. Gill, Jr.	Inspector of Masonry	Apr. 19, 1901..	Sept. 1, 1902..	Resigned.
James Mulligan	Inspector of Masonry	Sept. 7, 1902..		
Henry C. Duncan	Inspector of Masonry	Sept. 16, "		
Chas. A. Brown	Inspector of Masonry	Oct. 1, "		
Thos. P. Murphy	Inspector of Masonry	Oct. 6, "		
Wm. Brooks	Inspector of Masonry	Oct. 31, "		
Edw. N. Raleigh	Inspector of Masonry	Nov. 1, "		
Robt. F. Higgins	Inspector of Masonry	Mar. 1, 1901..	Nov. 1, 1902..	Resigned.
Durrell Lord	Inspector of Masonry	Nov. 15, 1902..		
Elmer S. Van Aken	Inspector of Masonry	Sept. 20, 1900..	Nov. 16, 1902..	Discharged—lack of work.
Richard Black	Inspector of Masonry	May 1, 1901..	Dec. 2, "	Resigned.
Peter Looram	Inspector of Masonry	Oct. 10, 1900..	Dec. 8, "	Resigned.
Andrew McCarthy	Inspector of Masonry	Jan. 27, 1901..	Dec. 21, "	Transferred to Bor. of Bronx.
Wm. E. Guilfoyle	Clerk	Apr. 1, 1902..		Promoted from Stenographer.
Wm. E. Dalton	Junior Clerk	Apr. 25, "		Promoted from Office Boy.
Aug. C. Schmidt	Stenographer	June 25, "		
Robt. C. Moore	Stenographer	June 26, "		
Fred. W. Abell	Stenographer	July 28, "		
Hugh J. Canty	Stenographer	July 28, "		
Reuben S. Lind	Stenographer	Sept. 10, 1900..	July 16, 1902..	Resigned.
James E. Ray	Stenographer	Aug. 6, "	Aug. 7, "	Resigned.
Wm. Goldstein	Office Boy	June 9, 1902..		

As stated previously the executive officers of the staff remained unchanged during the year, the several positions being as follows:

George S. Rice.....	Deputy Chief Engineer
Albert Carr.....	Engineer First Division
Alfred Craven.....	Engineer Second Division
Beverly R. Value.....	Engineer Third Division
Eugene Klapp.....	Engineer Fourth Division
Calvin W. Hendriek.....	Engineer Sewer Division
St. John Clarke.....	General Inspector of Designs
W. A. Aiken.....	General Inspector of Material
M. J. Farrell.....	Private Secretary

During the year there were 214 casualties, of which 21 were fatal. Of the total number 199 were employés.

Reference to the report of the Auditor shows that work to the extent of \$24,407,907.17 has been vouchered to date, and that during the same period the total disbursements on account of engineering, including salaries, office rent, and all supplies, amounted to \$967,695.32, or less than 4% of the former. The engineering expenses, however, covered much work, such as the preparation of plans for the Brooklyn Extension (Contract No. 2) and the Brooklyn Bridge terminals, for which no construction vouchers had been presented.

In conclusion the Chief Engineer desires to express his obligations to all the members of his staff for their faithful, conscientious and energetic services, also to the Contractor and his engineers, and to the sub-contractors, for their willing and cheerful co-operation.

Respectfully submitted,

WM. BARCLAY PARSONS,
Chief Engineer.

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REPORT
OF THE
AUDITOR

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THE CITY OF NEW YORK,
BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS.

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Auditor's Office, January 1, 1903.

The Honorable Board of Rapid Transit Railroad Commissioners:

GENTLEMEN—I have the honor to submit herewith a report of the Auditor, in relation to the finances of the Board of Rapid Transit Railroad Commissioners, for the period January 1, 1902, to December 31, 1902, giving in general and in detail, viz.—

REQUISITIONS FOR THE GENERAL FUND: (Folio 324.) A statement showing the requisitions made upon the Board of Estimate and Apportionment for the authorization for the issue of Revenue Bonds for the requirements of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.

APPROPRIATIONS FOR THE GENERAL FUND: (Folio 325.) A statement showing the Appropriations made by the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.

DISBURSEMENTS OF THE GENERAL FUND: Statements showing the Disbursements of the General Fund made under the direction of the Rapid Transit Board, from January 1, 1902, to December 31, 1902, viz.:

Administrative and General Office. (Folio 326.)

Engineering. (Folio 327.)

Legal—A summary of General Fund Disbursements. (Folio 328.)

CORPORATE STOCK OF THE CITY OF NEW YORK: (Folios 329 to 336, inclusive.) A statement showing the issues of Corporate Stock of The City of New York, from January 1, 1902, to December 31, 1902, the proceeds thereof to be applied to the construction of the (Manhattan-Bronx) Rapid Transit Railroad.

DISBURSEMENTS FOR WORK DONE AND MATERIALS FURNISHED: (Folio 337.) A statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.

DISBURSEMENTS FOR EXTRA WORK DONE AND MATERIALS FURNISHED: (Folio 338.) A statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for Extra Work done and materials furnished under the contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902, in accordance with the resolution of the Board, adopted May 2, 1901, providing for the construction of a third track on the portion of the route extending along the Boulevard (now Broadway), from 103d to 137th Streets, in accordance with an agreement between the Contractor and the city, and the sureties to the said contract of February 21, 1900, dated May 2, 1901.

DISBURSEMENTS FOR REAL ESTATE: (Folios 339, 340.) A statement showing all the payments authorized under the direction of the Board of Rapid Transit Railroad Commissioners, to be made for Real Estate acquired for and in behalf of The City of New York, pursuant to the contract of February 21, 1900,

for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from February 21, 1900, to December 31, 1902.

PAYMENT OF INTEREST ON THE CORPORATE STOCK: (Folio 341.)

A statement showing the payments made under the direction of the City Comptroller for Interest due on the Corporate Stock issued by The City of New York for the construction of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902—A summary of Construction Fund Disbursements.

BALANCES: (Folio 342.) Statements showing the Yearly Balances of the General Fund and the Construction Fund.

CONTRACT AND CONSTRUCTION—BONDS AND SECURITY: (Folios 343 to 352, inclusive.) A transcript of general information relative to the Contract and Construction—Bonds and Security.

RECAPITULATION: (Folios 353 to 360 inclusive.)

Respectfully submitted,

H. A. D. HOLLMANN,

Auditor.

GENERAL FUND

REQUISITIONS

Statement of Requisitions made upon the Board of Estimate and Apportionment, for the authorization for the issue of Revenue Bonds, for the requirements of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.

January 9, 1902.	As stated on page 1348 of the minutes of the Rapid Transit Commission.....	\$576,000 00
March 13, 1902.	As stated on page 1415 of the minutes of the Rapid Transit Commission.....	37,500 00
Total amount of Requisitions made upon the Board of Estimate and Apportionment for the requirements of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902,		\$613,500 00

GENERAL FUND

APPROPRIATIONS

Statement showing the Appropriations made by the Board of Estimate and Apportionment, for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.

DATE	ISSUE OF REVENUE BONDS	PROCEEDS DEPOSITED IN THE CITY TREASURY	TOTAL
February 7, 1902. As stated on page 163 of the minutes of the Board of Estimate and Apportionment.	3 per cent. Bonds redeemable, 1903.	February 26, 1902.. \$271,905 66	\$271,905 66
March 14, 1902. As stated on page 407 of said minutes.....	" " " " ..	July 31, " .. 37,500 00	37,500 00
	" " " " ..	August 28, " .. 100,000 00	.....
	" " " " ..	October 21, " .. 50,000 00	.....
July 25, 1902. As stated on page 1524 of said minutes	" " " " ..	December 4, " .. 5,000 00	.....
	" " " " ..	December 11 " .. 50,000 00	.....
	" " " 1904..	January 13, 1903.. 99,094 34	304,094 34

Total amount of Appropriations made by the Board of Estimate and Apportionment, for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902... \$613,500 00

GENERAL FUND

DISBURSEMENTS

Statement showing the amount of Disbursements made under the direction of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.

ADMINISTRATIVE AND GENERAL OFFICE

Compensation of Commissioners.....	\$30,000 00
Salaries	7,219 92
Office Rental.....	2,000 04
Stationery, Printing and Supplies	3,484 48
Furniture.....	168 25
Stenography and Typewriting.....	46 70
Postage.....	10 22
Removal of Public Records, City Registers' Office.....	2,609 69
Sundry Contingent Expenses.....	36 80
Total amount of Administrative and General Office Disbursements	\$45,576 10

DISBURSEMENTS—Continued

ENGINEERING *

Salaries	\$416,856 23
Office and Telephone Rentals.....	10,816 89
Stationery, Printing and Supplies.....	2,716 60
Furniture.....	2,168 18
Telegraph Service.....	156 90
Locomobile Service.....	388 13
Lighting	267 92
Janitor Services.....	201 50
Engineering Instruments and Supplies.....	5,132 46
Maps, Plans, Prints and Photographic Supplies.....	3,603 85
Disbursements (Traveling expenses).....	3,386 08
Stenography and Typewriting.....	13 45
Postage	499 86
Inspections, Tests, and Analysis.....	1,322 11
Borings	1,150 64
Consulting Engineer's Services	1,600 00
Architectural Services and Disbursements	6,525 87
Model and Experimental Work.....	643 94
Sundry Contingent Expenses	939 18
Total Amount of Engineering Disbursements.....	\$458,389 79

*Engineering expenses cover much work, such as preparation of plans, etc., for the Brooklyn-Manhattan Railroad and the Brooklyn Bridge Terminals, for which no construction vouchers have been presented.

DISBURSEMENTS—Continued

LEGAL

ADVERTISING		
Invitations to Contractors for proposals to construct the Brooklyn-Manhattan Rapid Transit Railroad...	\$3 168	71
COUNSEL		
Fees	\$20,000	00
Disbursements, viz:		
Stenography and Typewriting.....	\$703	30
Printing	1,594	43
Traveling, and Contingent Expenses	233	02
For Searches	47	80
	2,578	55
		22,578 55
REAL ESTATE, SEARCH AND APPRAISAL		
Fees for services of search and the appraisal of various properties		300 00
SPECIAL COMMISSIONS		
Compensation for Commissioners appointed by the Appellate Division of the Supreme Court (in and for the First and Second Judicial Departments) to determine the advisability of constructing the Brooklyn-Manhattan Rapid Transit Railroad		7,500 00
Total amount of Legal Disbursements.....	\$33,547	26

GENERAL FUND

SUMMARY OF DISBURSEMENTS

January 1, 1902, to December 31, 1902

Administrative and General Office	\$ 45,576	10
Engineering	458,389	79
Legal	33,547	26
Total amount of General Fund Disbursements.....	\$537,513	15

CONSTRUCTION FUND

CORPORATE STOCK

Statement showing the issue of Corporate Stock of The City of New York, from January 1, 1902, to December 31, 1902, the proceeds thereof to be applied to the construction of the (Manhattan-Bronx) Rapid Transit Railroad.

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						Amount of Proceeds Credited	
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total		
7	Feb. 18	\$2,500,000 00	3¼%	Nov. 1 1951	1902							
					Feb. 20	7.71%	\$1,500,000 00	.....	\$115,650 00		
						8.24%	30,000 00	.....	2,472 00		
						7.72%	60,000 00	.....	4,632 00		
						7.20%	90,000 00	.....	6,480 00		
									\$1,680,000 00		\$120,234 00	\$1,809,234 00
					Feb. 21	7.17%	\$279,050 00	.....	\$20,007 89		
						7.20%	50,000 00	.....	3,600 00		
						7.50%	260,000 00	.....	19,500 00		
						8.6363%	330 00	.....	28 50		
						8.12%	100 00	.....	8 12		
	8%	10 00	.....	80							
					589,490 00		43,145 31	632,635 31				
Amounts carried forward.....							\$2,269,490 00		\$172,379 31	\$2,441,869 31		

CORPORATE STOCK — Continued

330

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						Amount of Proceeds Credited		
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total			
Amounts brought forward.....	1902							\$2,269,490 00		\$172,379 31	\$2,441,869 31		
www.libtool.com.cn					1902 Feb. 24	12.50%	\$20 00		\$2 50		49 75	499 75	
						12%	200 00		24 00				
					10.50%	50 00		5 25					
					10%	60 00		6 00					
					10%	120 00		12 00					
								450 00					
					Feb. 25	10%	\$10 00		\$1 00				
						8.53%	10,000 00		853 00				
						8.44%	10,000 00		844 00				
						8.29%	10,000 00		829 00				
						8.11%	10,000 00		811 00				
						8.01%	10,000 00		801 00				
						7.92%	10,000 00		792 00				
						7.59%	10,000 00		759 00				
						7.29%	10,000 00		729 00				
								150,000 00		11,160 00			
								230,010 00		17,579 00	247,589 00		
Feb. 28	11%	\$50 00		\$5 50									
					50 00		5 50	55 50					
Amounts carried forward.....							\$2,500,000 00		\$190,013 56	\$2,690,013 56			

Corporate Stock

CORPORATE STOCK — Continued

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK					Amount of Proceeds Credited	
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium		Total
Amounts brought forward.....								\$2,500,000 00		\$190,013 56	\$2,690,013 56
8	May 6	\$3,000,000 00	3½%	Nov. 1 1951	1902 May 8	8.50%	\$3,000 00		\$255 00		
						7.10%	1,000 00		71 00		
						7.05%	1,000 00		70 50		
						7%	1,500 00		105 00		
								6,500 00		501 50	7,001 50
					May 9	14%	\$50 00		\$7 00		
						8.121%	5,000 00		406 05		
						8%	50 00		4 00		
						7.851%	10,000 00		785 10		
						7.61%	10,000 00		761 00		
						7.51%	5,000 00		375 50		
						7.43%	100,000 00		7,430 00		
						7.17%	100,000 00		7,170 00		
						6.91%	100,000 00		6,910 00		
						6.65%	100,000 00		6,650 00		
								430,100 00		30,498 05	460,598 05
					May 10	7.75%	\$5 000 00		\$387 50		
						7.41%	60,000 00		4,446 00		
								65,000 00		4,833 50	69,833 50
Amounts carried forward.....								\$3,001,600 00		\$225,847 21	\$3,227,447 21

CORPORATE STOCK — Continued

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK					Amount of Proceeds Credited		
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium		Total	
	Amounts brought forward.....				1902			\$3,001,600 00		\$225,847 21	\$3,227,447 21	
	1902				May 12	25%	\$10 00	.....	\$2 50			
						23%	10 00	.....	2 30			
						22%	10 00	.....	2 20			
						21%	10 00	.....	2 10			
						20%	10 00	.....	2 00			
						16%	200 00	.....	32 00			
						15%	100 00	.....	15 00			
						14%	100 00	.....	14 00			
						12%	100 00	.....	12 00			
						10%	60 00	.....	6 00			
						7.75%	9,000 00	.....	697 50			
						7.50%	3,000 00	.....	225 00			
						7.25%	3,000 00	.....	217 50			
						7.11%	30,000 00	.....	2,133 00			
						6.61%	60,000 00	.....	3,966 00			
						6.50%	100,000 00	.....	6,500 00			
						6.431%	100,000 00	.....	6,431 00			
						6.420%	1,402,790 00	.....	95,971 47			
								1,798,400 00		116,231 57	1,914,631 57	
	Amounts carried forward.....							\$4,800,000 00		\$342,078 78	\$5,142,078 78	

CORPORATE STOCK — *Continued*

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						Amount of Proceeds Credited					
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total						
Amounts brought forward.....								\$4,800,000 00		\$342,078 78	\$5,142,078 78					
 A diagonal line is drawn from the top-left corner of this section to the bottom-right corner of the section. 					1902											
					May 13	7.95%	\$100,000 00		\$7,950 00							
						7.69%	100,000 00		7,690 00							
						7.43%	100,000 00		7,430 00							
						7.17%	100,000 00		7,170 00							
						6.91%	100,000 00		6,910 00							
						6.65%	100,000 00		6,650 00							
						6.626%	100,000 00		6,626 00							
								700,000 00		50,426 00	750,426 00					
					9	June 26	\$3,000,000 00	3½%	Nov. 1 1951.	June 27	6.447%	\$2,000 00		\$128 94		
											6.432%	2,000 00		128 64		
											6.417%	2,000 00		128 34		
											6.402%	2,000 00		128 04		
													8,000 00		513 96	8,513 96
										June 28	6.25%	\$13,500 00		\$843 75		
								13,500 00		843 75	14,343 75					
					June 30	7%	\$60,000 00		\$4,200 00							
						5.229%	1,816,400 00		94,979 56							
						6.126%	500,000 00		30,630 00							
								2,376,400 00		129,809 56	2,506,209 56					
Amounts carried forward.....								\$7,897,900 00		\$523,672 05	\$8,421,572 05					

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Corporate Stock

CORPORATE STOCK—Continued

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						Amount of Proceeds Credited							
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total								
Amounts brought forward.....	1902							\$7,897,900 00		\$523,672 05	\$8,421,572 05							
					1902													
					July 1	9%	\$100 00		\$9 00									
						5.75%	1,500 00		86 25									
								1,600 00		95 25	1,695 25							
					July 2	6%	\$500 00		\$30 00									
						5.56%	200,000 00		11,120 00									
						5.40%	200,000 00		10,800 00									
						6.15%	100,000 00		6,150 00									
								500,500 00		28,100 00	528,600 00							
					July 3	5.25%	\$100,000 00		\$5,250 00									
								100,000 00		5,250 00	105,250 00							
					10	Nov. 11	\$4,000,000 00	3½%	Nov. 1 1952	Nov. 12	7%	\$200,000 00		\$14,000 00				
													6.75%	200,000 00		13,500 00		
													6.50%	100,000 00		6,500 00		
													5.299%	500,000 00		26,495 00		
															1,000,000 00		60,495 00	1,060,495 00
												Nov. 13	5.299%	\$405,680 00		\$21,496 98		
													6.16%	1,000,000 00		61,600 00		
															1,405,680 00		83,096 98	1,488,776 98
Amounts carried forward.....							\$10,905,680 00		\$700,709 28	\$11,606,389 28								

CORPORATE STOCK—Continued

No.	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						Amount of Proceeds Credited
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total	
Amounts brought forward.....	1902						\$10,905,680 00		\$700,709 28	\$11,606,389 28	
					1902						
					Nov. 14	7%	\$1,000 00		\$70 00		
						6.16%	100,000 00		6,160 00		
						6%	15,000 00		900 00		
						6.40%	240,000 00		15,360 00		
						6.42%	25,000 00		1,605 00		
						6.94%	25,000 00		1,735 00		
								406,000 00		25,830 00	431,830 00
						Nov. 15	8.50%	\$1,200 00		\$102 00	
							6.16%	68,000 00		4,188 80	
							7%	50 00		3 50	
								69,250 00		4,294 30	73,544 30
						Nov. 17	7.65%	\$100,000 00		\$7,650 00	
							7.25%	50 00		3 62	
							7.23%	200,000 00		14,460 00	
							7.02%	200,000 00		14,040 00	
							5.95%	80,000 00		4,760 00	
							6.50%	185,000 00		12,025 00	
							6.16%	100,000 00		6,160 00	
							6%	2,000 00		120 00	
			867,050 00		59,218 62	926,268 62					
Amounts carried forward.....						\$12,247,980 00	\$796,052 20	\$13,085,032 20			

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Corporate Stock

CORPORATE STOCK—Continued

No	Date of Sale	Issue	Interest Rate	Maturity	ISSUE OF STOCK						
					Date	Rate of Premium	Amount Issued	Total	Amount of Premium	Total	Amount of Proceeds Credited
Amounts brought forward.....	1902							\$12,247,980 00		\$790,052 20	\$13,038,032 20
					Nov. 18	5.40%	\$250,000 00		\$13,500 00		
								250,000 00		13,500 00	263,500 00
					Nov. 19	5.50%	\$2,000 00		\$110 00		
								2,000 00		110 00	2,110 00
			Nov. 21	7.50%	\$50 00		\$1 50		110 00	2,110 00	
							20 00		1 50	21 50	

Total Amount of Corporate Stock Issued..... \$12,500,000 00

Total Amount of Premium on the Issue of Corporate Stock..... \$803,663 70

Total Amount of Proceeds applicable to the construction of the (Manhattan-Bronx) Rapid Transit Railroad of The City of New York, from January 1, 1902, to December 31, 1902..... \$13,303,663 70

CONSTRUCTION FUND

DISBURSEMENTS

Statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for work done and material furnished under contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad of The City of New York, from January 1, 1902, to December 31, 1902.

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Requisition	To Date		Payments Authorized				To Whom			Amount	
	1902		1902				John B. McDonald, Contractor				
18.....	To January	31	February 13	As stated on page 1394 of the minutes of the Rapid Transit Commission.				" " " " " " " " " " " "			\$927,000 00
19.....	February	28	March 13	As stated on page 1416 of said minutes.				" " " " " " " " " " " "			511,000 00
20.....	March	31	April 10	"	"	"	1451	"	"	"	930,000 00
21.....	April	30	May 15	"	"	"	1522	"	"	"	1,145,000 00
22.....	May	31	June 12	"	"	"	1353	"	"	"	1,227,000 00
23.....	June	30	July 10	"	"	"	1467	"	"	"	1,232,000 00
24.....	July	31	August 14	"	"	"	1717	"	"	"	1,172,000 00
25.....	August	31	September 11	"	"	"	1725	"	"	"	1,164,000 00
26.....	September	30	October 16	"	"	"	1805	"	"	"	907,000 00
27.....	October	31	November 13	"	"	"	1850	"	"	"	698,000 00
28.....	November	30	December 11	"	"	"	1881	"	"	"	915,000 00
29.....	December	31	January 15	1903				" " " " " " " " " " " "			608,000 00

Total amount paid to *John B. McDonald, Contractor*, for work done and materials furnished under contract dated February 21, 1900, from January 1, 1902, to December 31, 1902..... \$11,436,000 00

DISBURSEMENTS—Continued

EXTRA WORK

Statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board to be made to *John B. McDonald, Contractor*, for extra work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad of The City of New York, from January 1, 1902, to December 31, 1902, in accordance with the resolution of the Board adopted May 2, 1901, providing for the construction of a third track on the portion of the route extending along the Boulevard (now Broadway), from 103d to 137th Streets, in accordance with an agreement between the Contractor and the city, and the sureties to the said contract of February 21, 1900, dated May 2, 1901.

Requisition	To Date		Payments Authorized				To Whom	Amount
	1902	1902	1902					
5.....	To January	31	February	13	As stated on page 1395 of the minutes of the Rapid Transit Commission.	John B. McDonald, Contractor.....	\$29,000 00	
6.....	February	28	March	13	As stated on page 1417 of said minutes.	" " " "	14,000 00	
7.....	March	31	April	10	" " " 1452 " "	" " " "	21,000 00	
8.....	April	30	May	15	" " " 1523 " "	" " " "	39,000 00	
9.....	May	31	June	12	" " " 1554 " "	" " " "	21,000 00	
Ducts*.....	May	31	June	25	" " " 1606 " "	" " " "	400,000 00	
10.....	June	30	July	10	" " " 1669 " "	" " " "	22,000 00	
11.....	July	31	August	14	" " " 1718 " "	" " " "	41,000 00	
12.....	August	31	September	11	" " " 1726 " "	" " " "	44,000 00	
13†.....	{ September	30						
	{ October	31						
	{ November	30						
14†.....	{ December	31						

Total amount paid to *John B. McDonald, Contractor*, for extra work done and materials furnished under contract dated February 21, 1900, in accordance with the resolution of the Rapid Transit Board, adopted May 2, 1901, from January 1, 1902, to December 31, 1902.....

\$631,000.00

* Subject to litigation.

† Payments deferred.

DISBURSEMENTS—Continued

REAL ESTATE

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made for Real Estate acquired, for and in behalf of The City of New York, under provision of the contract with *John B. McDono'd, Contractor*, dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from February 21, 1900, to December 31, 1902.

YEAR	DISBURSEMENTS	AMOUNT	
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	ADVERTISING		
1901	*Advertising notices of application for the appointment of Commissioners by the Supreme Court, First Judicial District, to condemn easements in Broadway, between 122d and 135th Streets, Borough of Manhattan, N. Y.....	\$8,121	60
	STENOGRAPHY AND TYPEWRITING		
	*Services rendered the Commissioners of Appraisal to condemn easements in Broadway, between 122d and 135th Streets, Borough of Manhattan, N. Y.	493	85
	DISBURSEMENTS		
	*Compensation of Clerk to the Commissioners of Appraisal to condemn easements in Broadway, between 122d and 135th Streets, Borough of Manhattan, N. Y.	900	00
1902	Compensation of Clerk to the Commissioners of Appraisal to condemn easements in Broadway, between 122d and 135th Streets, Borough of Manhattan, N. Y.	1,200	00
	Amount carried forward	\$10,715	45

REAL ESTATE—Continued

Amount brought forward.....									\$10,715	45
Location	Ward	Block Number	Lot Number	Description	Owner or Lessee	Deed of Conveyance	Payment Authorized	Title		
Southwest corner of Park avenue and 42d Street, Borough of Manhattan, N. Y. . .	19th	33	1276	Rapid Transit Easement in perpetuity, viz.: Parcel of land situate 95 feet on Park avenue distant 105 feet on 42d street, thence on the arc of a circle 146 feet to point of beginning, with right to maintain and operate a railroad through said subway, etc. . .	The Subway Realty Company of New York	To The City of New York by deed dated June 25, 1902, recorded in the office of the Register, October 17, 1902, in Sec. 5, Liber 85, page 377 of records; said deed being in the custody of the City Comptroller.	As per resolution adopted by the Rapid Transit Board, October 23, 1902, as stated on page 1811 of the minutes of said Board.	Title being insured by the Lawyers' Title Insurance Company of New York, by title policy No. 58969 dated October 17, 1902, in custody of the City Comptroller. Fee.	\$140,000	00
									191	72
Total amount paid for Real Estate acquired under provision of the contract with <i>John B. McDonald, Contractor</i> , dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from February 21, 1900, to December 31, 1902. . .									\$150,907	17

* Legal Disbursements Auditors' Report of January 1, 1902.

DISBURSEMENTS—Continued

INTEREST ON CORPORATE STOCK

Statement showing the payments made under the direction of the City Comptroller, for interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.

No	For What	Due	Amount
4	The payment of interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad	May 1, 1902	\$211,913 99
5	The payment of interest due on the Corporate Stock issued by The City of New York for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad	November 1, 1902	335,117 42
	Total amount in interest paid on the Corporate Stock issued by The City of New York for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902		\$547,031 41

CONSTRUCTION FUND

SUMMARY OF DISBURSEMENTS

	Amount
For work done and materials furnished, pursuant to contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902	\$11,436,000 00
For extra work done and materials furnished, pursuant to agreement dated May 2, 1901, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902	631,000 00
†For Real Estate acquired under provision of the contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from February 21, 1900, to December 31, 1902	150,907 17
For interest due on Corporate Stock issued by The City of New York, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902	547,031 41
Total amount of Construction Fund disbursements, from January 1, 1902, to December 31, 1902	\$12,764,938 58

† Includes amount of \$9,515.45, disbursed in 1901.

GENERAL FUND—BALANCES

Statement showing the yearly balances of the General Fund, 1901-1902.

Year	Appropriations		Disbursements	Surplus applicable with the current appropriation
1901	\$25,575 84	Unexpended Balance of the General Fund, December 31, 1901.....	\$16,060 39	
		†Legal Disbursements chargeable to the (Real Estate) Construction Fund (Refunded) ..	9,515 45	\$25,575 84
1902	613,500 00	Appropriations made by the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902		
1902	.....	Administrative and General Office Disbursements.....	\$45,576 10	
		Engineering Disbursements.....	458,389 79	
		Legal Disbursements.....	33,547 26	\$75,986 85
		Unexpended Balance of the General Fund, December 31, 1902.....	\$101,562 69	
	\$639,075 84		\$639,075 84	\$101,562 69

CONSTRUCTION FUND—BALANCES

Statement showing the yearly balances of the Construction Fund, 1901-1902.

Year	Amount of Proceeds of Corporate Stock Issued		Disbursements	Surplus applicable with the proceeds of the Current Stock Issue
1901	\$385,747 56	Unexpended Balance of the Construction Fund, December 31, 1901.....		\$385,747 56
1902	13,303,663 70	Amount of Proceeds of Corporate Stock issued by the City of New York for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.....		
1902	.....	Disbursements, viz. (Manhattan-Bronx) Rapid Transit Railroad:		
		For work done and materials furnished.....	\$11,436,000 00	
		*For extra work done and materials furnished.....	631,000 00	
		For Real Estate (including refund to General Fund of \$9,515.45, as above) ..	150,907 17	
		For Interest on the Corporate Stock.....	547,031 41	\$538,725 12
		Unexpended Balance of the Construction Fund, December 31, 1902.....	\$24,472 68	
	\$13,689,411 26		\$13,689,411 26	\$924,472 68

*Payment deferred by the City Comptroller, pending an appropriation of funds by the Board of Estimate and Apportionment, to pay for the extra work done and materials furnished.

†Charged to General Fund in 1901, and reimbursed by charge to Construction Fund in 1902, pursuant to Rapid Transit Act.

CONTRACT AND CONSTRUCTION.

BROOKLYN-MANHATTAN RAPID TRANSIT RAILROAD.

Being a transcript of general information relative to the contract and construction of the Brooklyn-Manhattan Rapid Transit Railroad.

REQUISITION. www.libtool.com.cn

On September 12, 1902, a certified copy of a resolution of the Board of Rapid Transit Railroad Commissioners, adopted at a meeting of the said Board on September 11, 1902 (as stated on page 1728 of the minutes of 1902, of the Rapid Transit Board), making requisition upon the Board of Estimate and Apportionment for the sum of Three Million Dollars, being the entire estimated cost for Construction and for Real Estate, for Terminals, etc., of the proposed Brooklyn-Manhattan Rapid Transit Railroad, was presented by the Honorable Edward M. Grout, Comptroller, and pursuant to the same and the provisions of chapter 4 of the laws of 1891, and the acts amendatory thereof, the said Board of Estimate and Apportionment at the stated meeting held on September 12, 1902, authorized the issue from time to time as may be required in the manner provided by law, Corporate Stock of The City of New York to an amount not exceeding the sum of \$3,000,000.00, to be applied to the purpose described in the said requisition of the Rapid Transit Board (as stated on page 1789 of the minutes of 1902, of the Board of Estimate and Apportionment).

CONTRACT.

Proposals received and opened at the meeting of the Board of Rapid Transit Railroad Commissioners, July 21, 1902 (as stated on page 1675 of the minutes of 1902, of the Rapid Transit Board).

Contract awarded to The Rapid Transit Subway Construction Company, Contractor, at the meeting of the Board of Rapid Transit Railroad Commissioners, July 24, 1902 (as stated on page 1704 of the minutes of 1902, of the Rapid Transit Board).

CITY OF NEW YORK.

DEPARTMENT OF FINANCE.

Contract No. 6431.

Dated July 21, 1902.

Filed December 11, 1902.

(The Board of Rapid Transit
Department of Railroad Commissioners
of the City of New York.)

Statement of Estimate and Account in the matter of the Contract for fully constructing and equipping the Brooklyn-Manhattan Rapid Transit Railroad, and to put the same in operation and thereafter to use, maintain and operate the same under a lease thereof from the City of New York, for the term of thirty-five years with a right of a renewal of the lease for a further term of twenty-five years as provided in the contract.

THE RAPID TRANSIT SUBWAY CONSTRUCTION COMPANY, *Contractor.*

TIME LIMIT.

"The entire Railroad shall be completely constructed and equipped ready for immediate full and continuous operation within three years from the date of the delivery of the contract, Provided such period shall be extended to four years, if in the opinion of the Rapid Transit Board, the Contractor shall not be able, with reasonable diligence, to earlier complete the work. The construction of the portions of the Railroad not under the East River shall be completed within 2½ years from the date of delivery of the said contract. In the event of delay in such complete Construction and Equipment beyond the period so prescribed, or in completion of such portion of the Railroad not under the East River, and in case any such delay shall not be excusable, the price to be paid the Contractor shall be reduced as follows: From the several amounts which shall become payable to the Contractor after the expiration of any such period for work completed or materials furnished thereafter, there shall be deducted and retained by the City as liquidated damages for such delay one per cent. thereof for each and every month after the expiration of the said period until such amounts are severally certified to be due and payable. But in case the Contractor shall be delayed by injunction or by strike or by any interference of public authority, and in case the Contractor cannot, notwithstanding such injunction, strike or interference, with reasonable diligence make up for the delay so occasioned by speedier work when the Contractor shall not be so interfered with, then the said date for completion shall be extended to a date later than the expiration of the said period by the amount of time of such delay, Provided, however, that no period of such delay shall be deemed to begin until written notice thereof shall be given by the Contractor to the Rapid Transit Board."

"In the event that the Construction and Equipment shall be completed as aforesaid ready for immediate full and continuous operation within 3 years from the date of the delivery of the contract, then the price to be paid the Contractor shall be increased at the rate of one per cent. upon the total amount thereof for every month to elapse between the date of such completion and the expiration of such period of three years."

RENTAL.

"The annual rental to be paid by the Contractor under the lease, after completion, will, except as provided in the contract, amount to the interest paid by the City on its bonds for cost of construction (including interest during construction, but excluding bonds issued to pay for certain easements on the line) and in addition one per cent. on such cost of construction, with provision for contingent abatement or reduction of such one per cent."

EXTRA WORK.

"The Rapid Transit Board shall have the right, during the progress of the work, to amplify the plans, to add explanatory specifications, and to furnish additional specifications and drawings within the limits of the general purview of the work. The Board shall also have the right for any part of the Railroad to require additional work to be done or additional materials to be furnished, or both, within the general purview of a rapid transit railroad as described in the copy of the routes and general plan, or, within such general purview to require work or materials specified or provided for to be omitted. If such additional work or materials shall be required, then the reasonable value thereof shall be additionally paid to the Contractor. If work or materials specified or provided for shall be required to be omitted, then a reasonable deduction shall be made in the manner provided from the amount to be paid to the Contractor for construction, Provided, however, that the amount of work and materials called for by the contract shall not be diminished without the consent of the Contractor so as substantially to alter the general character or extent of the work as proposed."

CITY LIEN ON EQUIPMENT.

"The City shall also have a first lien upon the equipment as further security for the faithful performance by the Contractor of the covenants, conditions and agreements of the contract on its part to be fulfilled and performed. Such lien shall arise immediately upon the acquisition by the Contractor of any part of the equipment for use on or in connection with the said railroad or any part of it, or intended for such use, whether or not such equipment be set up or delivered upon or at the railway."

ESTIMATE.

Estimated cost for Construction, and for Real Estate, for Terminals, etc., of the Brooklyn-Manhattan Rapid Transit Railroad, pursuant to the contract with The Rapid Transit Subway Construction Company, dated July 21, 1902.

The full amount sufficient to pay the entire estimated expense of executing said contract on the part of The City of New York.....	\$2,000,000 00
Additional, for Real Estate, and for Terminals, etc..	1,000,000 00
	<hr/>
Total	\$3,000,000 00

SECURITY.

Amount in Cash. For Construction pursuant to the Contract, deposited with the City Comptroller, September 11, 1902.....	\$1,000,000 00
Amount in Securities. A continuing deposit of Securities in lieu of cash, for Rental and also for Construction, deposited with the City Comptroller, September 15, 1902.....	\$1,000,000 00

SECURITIES.

Statement of Securities deposited with the Comptroller of The City of New York, by *The Rapid Transit Subway Construction Company*, as a continuing deposit of Securities in lieu of the deposit of One Million Dollars in cash, in accordance with the contract for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad.

BONDS AND STOCK REGISTERED IN THE NAME OF "THE COMPTROLLER OF THE CITY OF NEW YORK, IN TRUST AS SECURITY FOR THE RAPID TRANSIT SUBWAY CONSTRUCTION COMPANY, BROOKLYN-MANHATTAN RAPID TRANSIT RAILROAD CONSTRUCTORS."

\$200,000	3½% Corporate Stock of The City of New York for New East River Bridge. Gold. Tax Exempt. Registered.
	Principal payable November 1, 1929.
	Interest payable May 1 and November 1.
200,000	3½% Corporate Stock of The City of New York for Docks and Ferries. Gold. Tax Exempt. Registered.
	Principal payable November 1, 1929.
	Interest payable May 1 and November 1.
200,000	3½% Consolidated Stock of The City of New York for Redemption of Bonds and Stock maturing in the year 1896. Gold. Tax Exempt. Registered.
	Principal payable November 1, 1922.
	Interest payable May 1 and November 1.
200,000	3% Additional Water Stock of The City of New York. Gold. Tax Exempt. Registered.
	Principal payable October 1, 1905.
	Interest payable April 1 and October 1.
142,000	3% Additional Water Stock of The City of New York. Gold. Tax Exempt. Registered.
	Principal payable October 1, 1907.
	Interest payable April 1 and October 1.
58,000	3% Consolidated Stock of The City of New York, for Bridge over the Harlem River. Gold. Tax Exempt. Registered.
	Principal payable November 1, 1907.
	Interest payable May 1 and November 1.

\$1,000,000

BONDS ON CONTRACTS FOR CONSTRUCTION.

Naming Sub-Contractor, Sub-Section Limits, Surety and Amount of Bonds assigned to The City of New York by The Rapid Transit Subway Construction Company, Contractor.

Section No.	Sub-Section Limits	Name of Sub-Contractor	Surety	Amount of Bonds
1.	Beginning at Station O near the intersection of Park Row and Broadway and extending along Broadway, Bowling Green, Battery Place, State Street and Battery Park to Station 33, 13.45 feet in Battery Park.	Degnon-McLean Contracting Company	Degnon-McLean Co. as principal, and Bankers' Surety Co., \$100,000, Empire State Surety Co., \$100,000.....	\$200,000
2.	Beginning at Station 33, 13.45 ft in State Street and extending to Station 35, and beginning at Station 33 13.45 0 in State Street and extending around the Loops and including Station in Loop, as shown on principal Contract No. 2, Contract Drawing No. 2A2	Andrew Onderdonk.....	Andrew Onderdonk as principal, and Walston H. Brown & Bros.....	50,000
2-A.	Beginning at a point designated as Station 35 in State Street, Borough of Manhattan, and extending to a point designated as Station 106-86, Borough of Brooklyn, New York City, the same being the East River Tunnel and approaches.....	Andrew Onderdonk.....	Andrew Onderdonk as principal, and Walston H. Brown & Bros.....	200,000
3.	Beginning at a point designated as 106 87, near Clinton Street in the Borough of Brooklyn, and extending to Station 161 08 on Atlantic Avenue and on Flatbush Avenue, in said Borough....	Cranford & McNamee.....	Walter V. Cranford and John McNamee as principals, and The U. S. Fidelity and Guaranty Co.....	100,000
Total Amount of Sub-Contractors' Bonds assigned to The City				\$550,000

SECURITIES.

Statement of the Securities deposited by the *Rapid Transit Subway Construction Company* at the time of execution of the contract of February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, and including supplementary securities deposited September 25, 1902, as additional security for the performance of the provisions of the Bond for Rental and Construction, remaining in the custody of The Comptroller of The City of New York, December 31, 1902.

BONDS AND STOCK REGISTERED IN THE NAME OF "THE COMPTROLLER OF THE CITY OF NEW YORK, IN TRUST AS SECURITY FOR JOHN B. McDONALD, RAPID TRANSIT RAILROAD CONSTRUCTOR."

\$270,000 3% Illinois Central Railroad Company, St. Louis Division and Terminal First Mortgage Gold Bonds (Nos. 80 to 99, inclusive, 1510 to 1596, inclusive, 2646, 2652 to 2657, inclusive, 3486 to 3536, inclusive, 3587 to 3618, inclusive, 3626 to 3681, inclusive, 4155, and 4318 to 4333, inclusive, for \$1,000 each).

Principal payable July 1, 1951.

Interest payable January 1 and July 1.

100,000 3% School House Bonds of The City of New York.

Principal payable November 1, 1908.

Interest payable May 1 and November 1.

200,000 3% Dock Bonds of The City of New York.

Principal payable November 1, 1924.

Interest payable May 1 and November 1.

100,000 3% Additional Water Stock of The City of New York.

Principal payable October 1, 1907.

Interest payable April 1 and October 1.

100,000 3% Dock Bonds of The City of New York.

Principal payable November 1, 1914.

Interest payable May 1 and November 1.

\$770,000 *Amount carried forward.*

SECURITIES.—Continued.

\$770,000 *Amount brought forward.*

250,000 3½% Corporate Stock of The City of New York for
the New Aqueduct.

Principal payable October 1, 1919.

Interest payable April 1 and October 1.

*5,000 3½% Corporate Stock of The City of New York for
the repaving of streets.

Principal payable November 1, 1940.

Interest payable May 1 and November 1.

\$1,025,000

* Deposited September 24, 1902.

SECURITIES.

Statement of the Securities deposited by the *Rapid Transit Subway Construction Company*, January, 1901, under provision of the contract of February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, and including supplementary securities deposited September 24, 1902, as security for Construction and Equipment, remaining in the custody of The Comptroller of The City of New York, December 31, 1902.

BONDS AND STOCK REGISTERED IN THE NAME OF "THE COMPTROLLER OF THE CITY OF NEW YORK, IN TRUST AS SECURITY FOR JOHN B. McDONALD, RAPID TRANSIT RAILROAD CONSTRUCTOR."

- \$30,000 3% Additional Water Stock of The City of New York.
Principal payable October 1, 1905.
Interest payable April 1 and October 1.
- 20,000 3% Consolidated Stock of The City of New York for acquiring lands for Mulberry Bend Park.
Principal payable November 1, 1924.
Interest payable May 1 and November 1.
- 50,000 3% Dock Bonds of The City of New York.
Principal payable November 1, 1925.
Interest payable May 1 and November 1.
- 15,000 3½% Consolidated Stock of The City of New York for the New East River Bridge.
Principal payable November 1, 1918.
Interest payable May 1 and November 1.
- 30,000 3½% Corporate Stock of The City of New York for the New Aqueduct.
Principal payable October 1, 1919.
Interest payable April 1 and October 1.
- 25,000 3½% Corporate Stock of The City of New York for School Houses and Sites therefor in the Boroughs of Manhattan and The Bronx.
Principal payable November 1, 1940.
Interest payable May 1 and November 1.
- \$170,000 *Amount carried forward.*

SECURITIES.—Continued.

\$170,000 *Amount brought forward.*

100,000 3½% Corporate Stock of The City of New York for the Uses and Purposes of the Department of Docks and Ferries.

Principal payable November 1, 1928.

Interest payable May 1 and November 1.

237,000 3½% Corporate Stock of The City of New York for the Construction of the Rapid Transit Railroad.

Principal payable November 1, 1950.

Interest payable May 1 and November 1.

*30,000 3½% Corporate Stock of The City of New York for the repaving of streets.

Principal payable November 1, 1940.

Interest payable May 1 and November 1.

COUPON BONDS.

250,000 3% Chicago & Alton Railroad Company Refunding 50 years Gold Bonds (Nos. 15115 to 15364, inclusive, for \$1,000 each).

Principal payable October 1, 1949.

Interest payable April 1 and October 1.

251,000 3% Illinois Central Railroad Company, Litchfield Division, First Mortgage Gold Bonds (Nos. 751 to 1,000, inclusive, and 1,500, for \$1,000 each).

Principal payable January 1, 1951.

Interest payable January 1 and July 1.

\$1,038,000

* Deposited September 24, 1902.

RECAPITULATION

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS

1902

GENERAL FUND

REQUISITIONS

Total amount of Requisitions made upon the Board of Estimate and Apportionment, for the requirements of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.....	<u>\$613,500 00</u>
--	---------------------

APPROPRIATIONS

Total amount of Appropriations made by the Board of Estimate and Apportionment, for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1902, to December 31, 1902.....	<u>\$613,500 00</u>
--	---------------------

DISBURSEMENTS

Total amount of Administrative and Office Disbursements.....		\$45,576 10
Total amount of Engineering Disbursements.....		458,389 79
Total amount of Legal Disbursements.....		<u>33,547 26</u>
Total amount of General Fund Disbursements, from January 1, 1902, to December 31, 1902.....		<u>537,513 15</u>

UNEXPENDED BALANCE

Unexpended Balance of the General Fund to December 31, 1902.....	<u>\$75,986 85</u>
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CONSTRUCTION FUND

CORPORATE STOCK

Total amount of Corporate Stock issued by The City of New York, the proceeds thereof to be applied to the construction of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902..	<u>\$12,500,000 00</u>
--	------------------------

PREMIUM

Total amount of Premium on the issues of Corporate Stock, from January 1, 1902, to December 31, 1902.....	<u>803,663 70</u>
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PROCEEDS

Total amount of Proceeds of the issues of Corporate Stock, applicable to the construction of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.....	<u>\$13,303,663 70</u>
Amount carried forward.....	<u>\$13,303,663 70</u>

CONSTRUCTION FUND—Continued

Amount brought forward. \$13,303,663 70

DISBURSEMENTS

For work done and materials furnished, pursuant to contract dated February 21, 1900, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.	\$11,436,000 00
*For extra work done and materials furnished, pursuant to the said contract of February 21, 1900.	631,000 00
†For Real Estate acquired for and in behalf of The City of New York, pursuant to the said contract of February 21, 1900. . . .	150,907 17
For Interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the (Manhattan-Bronx) Rapid Transit Railroad, from January 1, 1902, to December 31, 1902.	547,031 41
 Total amount of Construction Fund Disbursements, from January 1, 1902, to December 31, 1902.	 12,764,938 58

UNEXPENDED BALANCE

Unexpended Balance of the Construction Fund to December 31, 1902.	\$538,725 12
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*Payment deferred by the City Comptroller, pending an appropriation of funds by the Board of Estimate and Apportionment, to pay for the extra work done and materials furnished.

†Includes amount of \$9,515 45, charged to the General Fund (Legal Disbursements), in 1901, and reimbursed by charge to the Construction Fund in 1902.

1894-1902

GENERAL FUND

REQUISITIONS

Total amount of Requisitions made upon the Board of Estimate and Apportionment for the requirements of the Board of Rapid Transit Railroad Commissioners during the period of 1894. Amount of Requisitions.....		\$5,000 00
1895.	" " "	89,434 75
1896.	" " "	66,947 93
1897.	" " "	94,482 21
1898.	" " "	42,943 37
1899.	" " "	27,625 33
1900.	" " "	246,393 28
1901.	" " "	423,521 60
1902.	" " "	613,500 00
		<hr/>
		\$1,609,848 47
Aggregate appropriation in excess of the amount of the original requisition of September 24, 1895, necessary for the requirements of the Rapid Transit Board. (Auditors' report of January 1, 1902.).....		1,816 31
		<hr/>
		\$1,611,664 78
Amount of the original requisitions of November 18, 1897, and April 7, 1898, remaining unappropriated, it appearing that the aggregate appropriations already made sufficed to satisfy the purposes of the Rapid Transit Board. (Auditors' report of January 1, 1902.).....		20,302 59
		<hr/>
Total amount of Requisitions made upon the Board of Estimate and Apportionment from 1894 to 1902, inclusive..		<u>\$1,591,362 19</u>

1894-1902—Continued
www.libtool.com.cn
 GENERAL FUND

APPROPRIATIONS

Total amount of Appropriations made by the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners during the period of 1894. Amount of Appropriations.		\$5,000 00
1895.	" " "	53,795 88
1896.	" " "	102,135 60
1897.	" " "	66,009 59
1898	" " "	53,380 91
1899.	" " "	27,625 33
1900.	" " "	246,393 28
1901.	" " "	423,521 60
1902.	" " "	613,500 00
Total amount of Appropriations to the General Fund, from 1894 to 1902, inclusive.		\$1,591,362 19
<i>Amount carried forward.</i>		\$1,591,362 19

1894-1902—Continued

Amount brought forward..... \$1,591,362 19

DISBURSEMENTS

Total amount of Disbursements made under the direction of the Board of Rapid Transit Railroad Commissioners during the period of: _____

	Administrative and General Office	Engineering	Legal	Total
..1894. Amount of Disbursements	\$2,929 10	\$1,271 34	\$28 30	\$4,228 74
..1895. " " "	6,048 49	26,250 29	25,688 13	57,986 91
..1896. " " "	35,372 34	17,628 82	31,437 53	84,058 69
..1897. " " "	5,230 06	21,395 86	38,925 73	65,551 65
..1898. " " "	4,521 15	17,930 31	29,519 13	51,970 59
..1899. " " "	2,826 94	3,698 00	20,551 30	27,076 24
..1900. " " "	53,866 33	161,047 23	27,356 19	242,269 75
..1901. " " "	39,023 86	348,258 30	31,861 62	419,143 78
..1902. " " "	45,576 10	458,389 79	33,547 26	537,513 15
	\$195,594 37	\$1,055,269 94	\$238,935 19	

Total amount of General Fund Disbursements, from 1894 to 1902, inclusive..... \$1,489,799 50

UNEXPENDED BALANCE

Total unexpended Balance of the General Fund on December 31, 1902..... \$101,562 69

General Fund Disbursements, 1894-1902

1894-1902

CONSTRUCTION FUND.

CORPORATE STOCK

Total amount of Proceeds credited of the Corporate Stock issued by The City of New York for the construction of the (Manhattan-Bronx) Rapid Transit Railroad during the period of: ———

		Proceeds
1900. Amount of Stock issued.	\$1,000,000 00	
" " Premium.	105,400 00	
		\$1,105,400 00
1901. Amount of Stock issued.	\$11,000,000 00	
" " Premium.	635,361 46	
		11,635,361 46
1902. Amount of Stock issued.	\$12,500,000 00	
" " Premium.	803,663 70	
		13,303,663 70

Total amount of Proceeds applicable to the construction of the (Manhattan-Bronx) Rapid Transit Railroad, from 1900 to 1902, inclusive. \$26,044,425 16

Amount carried forward. \$26,044,425 16

1894-1902—Continued

CONSTRUCTION FUND

Amount brought forward..... \$26,044,425.16

DISBURSEMENTS

Total amount of Disbursements made in the construction of the (Manhattan-Bronx) Rapid Transit Railroad during the period of: _____

	Work and Materials	*Extra Work and Materials	Real Estate	Interest on Corporate Stock	Total
1900. Amt. of Disbursements..	\$1,685,000 00	.....	.....	.....	\$1,685,000 00
1901. " " "	10,343,000 00	\$162,000 00	\$ 9,515 45	\$165,013 90	10,679,529 35
1902. " " "	11,436,000 00	631,000 00	141,311 72	547,031 41	12,755,423 13
	\$23,464,000 00	\$793,000 00	\$150,907 17	\$712,045 31	

Total amount of Construction Fund Disbursements from 1900 to 1902, inclusive..... \$25,119,952 48

UNEXPENDED BALANCE

Total unexpended Balance of the Construction Fund on December 31, 1902..... \$924,472 68

*Payment deferred by the City Comptroller, pending an appropriation of funds by the Board of Estimate and Apportionment, to pay for the extra work done and materials furnished.

Construction Fund Disbursements, 1900-1902

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS

THE CITY OF NEW YORK

SUMMARY OF DISBURSEMENTS

1894-1902

Total amount of General Fund Disbursements	\$1,489,799 50
Total amount of Construction Fund Disbursements	24,257,000 00
Total Disbursements for Real Estate acquired by the City.	150,907 17
Total amount of Interest paid on Corporate Stock.....	712,045 31
<hr/>	
Total amount disbursed by the Board of Rapid Transit Railroad Commissioners, from June 18, 1894, to Decem- ber 31, 1902.....	\$26,609,751 98
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FINALE

I N D E X

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Accidents; death of Major Shaler, Sub-Contractor.....	240, 241
dynamite explosion, Murray Hill Tunnel.....	87, 89, 223, 238
fall of rock " " " 	89, 223-225, 238
record of	318
Act; interpretation of by Counsel <i>re</i> new legislation as affect-	
ing Board's jurisdiction.....	14-20
provisions of Sec. 32.....	20-23, 30, 301
Alberger Condenser Company; contract for Condensing Equipments....	294
Allis-Chalmers Company; contract for Engines.....	294
American Bridge Company; contract for structural steel.....	294
Appropriations by Board of Estimate and Apportionment,	
General and Construction Funds.....	325, 343
Babcock & Wilcox Company; contract for Boilers.....	294
Beekman, Henry R., Counsel; date of service.....	99
Beginning of Construction, Contract No. 2 (Brooklyn-Man-	
hattan R. R.).....	83, 300
Bids for Contract No. 2 (Brooklyn-Manhattan R. R.).....	77-84, 300
Board; legislation affecting.....	14-20 30-45
report of Contract Committee, Brooklyn-Manhattan	
R. R.	69-77
New York & Jersey R. R.	46-52
Pennsylvania, N. Y. &	
L. I. R. R.	32-39
communications to Board of Aldermen transmitting	
New York & Jersey R. R. Franchise.....	52-54
Pennsylvania, N. Y. & L. I. R. R. Franchise.....	39-44
resumé of work 1894 to date.....	11-14
Boardman, Albert B., Counsel; election of.....	99
Boardman, Platt & Soley, Counsel; election of.....	99
Bogue, Virgil B.; member of Joint Committee of Engineers.....	225
Bonds; amount of Sub-Contractors', and sureties for.....	348

Brackenridge, J. C.: member of Commission, Brooklyn Bridge Terminal	306
Bradley, William; details of sub-contracts.....	244, 276, 277, 282
Brooklyn Bridge; <i>re</i> congestion at Manhattan Terminal.....	55-62, 306, 307
Brooklyn-Manhattan Railroad; see Contract No. 2.	
Brooklyn Rapid Transit Company; terms of bid for Con- tract No. 2.....	77-82, 300
Burrows, Bion L., Secretary; election of.....	95
Cars; contracts for.....	206
type of, etc.....	295, 296
Cast-Iron and Steel; manufacture and tests of.....	284-288
number of tons erected and delivered.....	266, 267
Cement; application of Portland Cement grout, Murray Hill Tunnel...	224
briquettes broken, results of.....	291
quality of	289, 290
tests of	289-291
total shipment, and consumption of.....	288
Central Park Tunnel; details of construction.....	248, 268, 269
Certificate of Board to New York & Jersey R. R.....	201-216
" " " " Pennsylvania, N. Y. & L. J. R. R.....	177-198
Certificate of Incorporation of Interborough Rapid Transit Company	87, 143-155
Changes in Plans.....	84-87, 227, 228
Circuit Court; opinion of, Fowler "bi-transit" Patent Suit.....	121, 122
" " Huntington Suit.....	127-133
" " Underground Railroad Co. Suit.....	109-120
City Hall Loop; details of construction.....	231, 232
Claffin, John, Commissioner; appointment and election of.....	97
Coler, Bird S., Comptroller; former <i>ex-officio</i> member of Board.....	98
Commissioners and Staff.....	97-99
Concrete, Portland & Natural Cement; No. of Cu. Yds.....	266, 267
reinforced.....	225, 226, 299
sewer construction, No. of Cu. Yds.....	272
Conduits, Electric, Constructed.....	222
Connections and Extensions; see Extensions.	
Construction; beginning of Bk'lyn-Manhattan R. R.....	83, 300
corporate stock issued for, and interest payments.....	329-336
estimated cost of, with terminals and real estate.....	346
special difficulties encountered.....	221, 222, 241, 242
use of reinforced concrete.....	225, 226, 299
Construction and General Funds; appropriation by Board of Estimate and Apportionment....	325
statement of yearly balances.....	342

Contract No. 2 (B'klyn-Manhattan R. R.); approval of by	
Appellate Div., Supreme Court	68, 297
award of, etc., 68-84, 296, 301	
bids submitted	77-84, 300
changes in specifications	299
length of railway	297
location of stations	299
report of Committee on	
Contracts	69-77
route of	297
securities deposited	347, 349, 350-352
sub-contracts	301
time limit of	344
work begun	83, 300
Contracts for Cars	296
" " Power House and Equipment	294, 295
Contractor; payments to, for work done and materials furnished	337
payments to, for extra work done and materials furnished	338
securities required from	347, 349, 350-352
Cooper, Theodore; member of Joint Committee of Engineers	225
Corporate stock issued for construction	329-336
Counsel; opinion of, <i>re</i> Penna. R. R. Tunnel Bill	20-23
" " " legislation affecting Board	14-20
Cunningham & Kearns; details of sub-contracts	273, 274, 275, 277, 278
Custodis, Alphons, Company; contract for Masoury Chimneys	294
Degnon-McLean Contracting Co.; details of	
sub-contracts	231, 233, 241, 273, 274, 280, 282
Delafield, Lewis L., Secretary; date of service	99
Department of Designs; work of	292
" " " Inspection of Material; work of	284-292
Disbursements; administrative and General Office	326
engineering	318, 327
for work done and materials furnished	337
for extra work done and materials furnished	338
for real estate	339, 340
for interest on corporate stock issued	341
legal	328
summary of, General and Construction Funds	328, 341
Ducts Laid; No. of Lin. Ft.	266
Duncan & Hutchinson, Consulting Electrical Engineers	295

Grout, Edward M., Comptroller; <i>ex-officio</i> member of Board.....	98
Harlem River Tunnel; details of construction.....	222, 223, 252, 253
Heins & La Farge, Consulting Architects.....	226, 231
Holbrook, Cabot & Daly; details of sub-contracts.....	235, 275, 281
Hollmann, H. A. D., Auditor; election of.....	99
Hunt, R. C., Superintendent, Sees. 13 and 14.....	259, 261
Inman, John H., Commissioner; date of service.....	98
Interborough Rapid Transit Company; assignment of leasing part, Manhattan- Bronx Contract ...	87, 159-173
certificate of incor- poration.....	87, 143-155
Iron and Steel; manufacture and tests of.....	284-288
number of tons erected and delivered.....	266, 267
Jerome Avenue Extension.....	65
Jesup, Morris K., Prest. Chamber of Commerce; <i>ex-officio</i> mem- ber of Board.....	98
Jewett Car Company; contract for cars.....	296
Kemp, Prof. James F.; member of Joint Committee of Engineers.....	225
Langdon, Woodbury, Commissioner; election of.....	98
Legislation; <i>re</i> New York Central Terminal Bill.....	15-20
“ Pennsylvania Tunnel Bill.....	15-20
provisions of Sec. 78, Greater N. Y. Charter.....	20-23, 30
Length, etc., of Pennsylvania, N. Y. & L. I. R. R.....	303
Length of Brooklyn-Manhattan R. R. (Contract No. 2).....	297
Lenox Avenue Extension.....	84
Lindenthal, G., Commissioner of Bridges; <i>re</i> Brooklyn Bridge Terminal	55
List of accidents.....	318
“ extra work ordered.....	229, 230
“ sub-contractors, Contract No. 2 (Brooklyn-Manhattan R. R.)...	301
“ sub-section limits, Contract No. 2 (B'klyn-Manhattan R. R.)...	301
Lists (see also Tables and Schedules)	
Litigation; Barney Abutter's Suit.....	92, 135-139
Barney Taxpayers' Suit.....	91, 123-126
Fowler “bi-transit” Patent Suit.....	92, 93, 121, 122
Huntington Abutter's Suit.....	92
Huntington Suit.....	91, 92, 127-133
Huntington Taxpayers' Suit.....	92
March, James E., Suit.....	89, 90, 103-107
Underground Railroad Co. Suit.....	90, 109-120
Low, Seth, Mayor; former Commissioner, now <i>ex-officio</i> member.....	97
McCabe & Bro.; details of sub-contracts.....	259
McMullen & McBean; details of sub-contracts.....	252

- Masonry, brick, pedestal and cut stone; No. of Cu. Yds. 266, 267
 rubble and brick, sewer construction; No. of Cu. Yds. 272
- Mayor's Memo. on Pennsylvania Railroad Tunnel Bill. 25-30
- Municipal Explosives Commission; appointment of. 89
- Murray Hill Tunnel; details of construction. 238-241, 268
- National Conduit & Cable Company; contract for cable equipment. . . . 295
- Naughton & Company; details of sub-contracts. 243, 275, 282
- New York & Jersey R. R. Franchise; authorization of. 12-14, 46-54
 details of construction
 and operation. 304, 305
 report of Committee on
 Contracts 46-52
 communication on, to Board
 of Aldermen 52-54
 schedule of annual pay-
 ments 48
 text of Franchise. 201-216
- New York Central Terminal Bill; legislation relative to. 15-20
- Norton, Wm. F.; details of sub-contracts. 277
- Norton & Dalton; details of sub-contracts. 278
- One Hundred and Fifty-fifth Street Tunnel; details of construc-
 tion. 259, 260, 269
- Opinion of Counsel on legislation affecting Board. 14-20
 re Pennsylvania R. R. Tunnel Bill. 20-23
- Opinion of Court in Barney Abutter's Suit. 135-139
- “ “ Taxpayers' Suit 123-126
- “ Fowler “bi-transit” Patent Suit. 121, 122
- “ Huntington Suit 127-133
- “ March, James E., Suit. 103-107
- “ Underground Railroad Co. Suit. 109-120
- Opinions of Court (see also Litigation).
- Orr, Alexander E.; appointment of as President, etc. 97
 re comprehensive plan, future rapid tran-
 sit 65-68, 307-310
 “ additional Brooklyn Rapid Transit. 63, 64
- Parsons, Wm. Barclay; election of as Chief Engineer. 99
 Chairman of Commission, Brooklyn
 Bridge Terminal 306
 re comprehensive plan, future rapid
 transit 65-68, 307-310
 report on Brooklyn Bridge Terminal, etc. 55-62, 306
 “ “ Explosives 87-89
- Passenger Travel; surface and elevated railways, B'klyn Bridge. 306
 “ “ “ “ Greater N. Y. 310, 311
- Pierce, John; contract for Superstructure of Power House. 294

- Pennsylvania, N. Y. & L. I. R. R. Franchise: authorization of . . . 12-14, 30-45
 details of construction and operation . . . 302, 303
 report of Committee on Contracts . . . 32-39
re hours of labor and rate of wages . . . 45
 communication to Board of Aldermen . . . 39-41
 schedule of annual payments . . . 34
 text of Franchise . . . 177-198
 opinion of Counsel on preliminary legislation . . . 20-23
 legislation relative to . . . 15-30
 length, etc. of railway . . . 303
- Pennsylvania Railroad Tunnel Bill; Mayor's memo . . . 25-30
- Percentage of Work Completed . . . 219, 220
- Pilkington, James; details of sub-contracts . . . 273, 274, 275, 278, 283
- Plaza, 5th Street and Fourth Avenue . . . 86, 236
- Portland Cement Grout; use of . . . 224
- Post, George B.; member of Commission, Bk'lyn Bridge Terminal . . . 306
- Power House and Sub-Stations . . . 292-294
- Progress on Manhattan-Bronx Railroad; see Work.
- Rapid Transit Act; see Act.
- Rapid Transit Board; see Board.
- Rapid Transit Commissioners and Staff . . . 97-99
- Rapid Transit Future Plans; see Extensions and Connections.
- Rapid Transit Subway Construction Co.; award of Contract No. 2 . . . 83, 300
 securities deposited . . . 347, 349, 350-352
 terms of Bid . . . 83, 84, 300
- Real Estate Acquired for Power House and Sub-Stations . . . 293
- Reinforced Concrete Construction . . . 225, 226, 299
- Repaving Street and Park Surface; No. of Sq. Yds. . . . 266, 267
- Report of Chief Engineer on Brooklyn Bridge Terminal . . . 55-62, 306
 " Explosives . . . 87-89
- Report of Contract Committee on Brooklyn-Manhattan R. R. . . . 69-77
 " N. Y. & Jersey R. R. Franchise . . . 46-52
 " Penna., N. Y. & L. I. R. R. Franchise . . . 32-39
- Requisitions of Contractor for work done and material furnished . . . 84
- Requisitions upon Board of Estimate and Apportionment, General and Construction Funds . . . 324, 343

Restoring Street and Park Surface and Repaving; No. of Sq. Yds.	266, 267
Rives, George L., Commissioner; date of service	256, 258, 266
Roberts, E. P.; details of sub-contracts	256, 258, 266
Robins Conveying Belt Co.; contract for Coal and Ash Equipment	294
Rodgers, John C.; details of sub-contracts	251, 254, 278, 283
Route of Brooklyn-Manhattan R. R.	297
Ryan & Parker; contract for Foundation Work	294
Schedule of Annual Payments, N. Y. & Jersey R. R. Franchise	48
" " " " Penna., N. Y. & L. I. R. R. Franchise	34
Section No. 1; progress of work	231-233
" " 2; " " "	233-235
" " 3; " " "	235-237
" " 4; " " "	238-241
" " 5-A; " " "	241-243
" " 5-B; " " "	243, 244
" " 6-A & 6-B; " " "	244-248
" " 7; " " "	248-250
" " 8; " " "	251, 252
" " 9-A; " " "	252-254
" " 9-B; " " "	254-256
" " 10; " " "	256
" " 11; " " "	257, 258
" " 12; " " "	258, 259
" " 13 & 14; " " "	259-266
" " 15; " " "	266
Sewer Division; work of	269, 272
Sewers; Bleecker St. and Connections	274
Broadway (47th St. to 60th St.)	282
" (60th St. to 104th St.)	282
" (104th St. to 125th St.)	283
" (from 135th St. North)	283
" East Side, 84th St. to 86th St.	276
Bronx Siphon	270
Canal Street	273
Centre St. and Elm St. (Post Office to Great Jones St.)	280
constructed in concrete	271
East 9th Street	274
" 10th "	274
" 22d "	274
" 31st "	275
" 41st "	275
" 149th "	283
Fifty-ninth St. and Columbus Circle	275
Forty-second St. and Broadway (41st St. to 47th St.)	282
Lafayette Place and 4th Ave. (Gt. Jones St. to 33d St.)	281

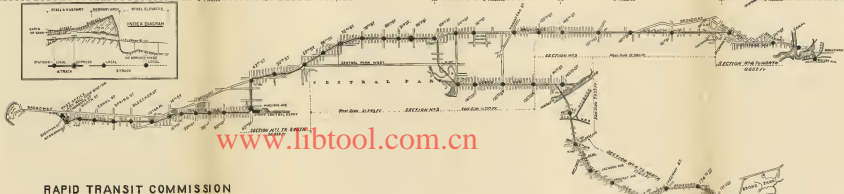
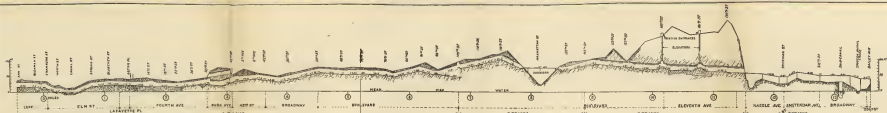
Sewers—Continued.

Lenox Avenue.....	277
Lenox Avenue (from 135th St. North).....	283
“ “ (from 135th St. South).....	283
Lenox Avenue Extension.....	270, 279
Leonard Street.....	273
Marion Street.....	274
Mulberry Street.....	273
One Hundred and Forty-ninth St. and Railroad Ave.....	278
One Hundred and Forty-second St. and Lenox Ave.....	278
Pearl and Duane Streets.....	273
Seventy-second St. and Broadway.....	276
Sixty-fifth St. and Broadway.....	276
Spring Street.....	274
total length of new sewers, Brooklyn-Manhattan R. R.....	300
West 45th Street.....	275
“ 54th “.....	275
“ 81st “.....	276
“ 96th “.....	277
“ 108th “.....	277
“ 110th “.....	271, 277
“ 115th “.....	278
“ 124th “.....	278
“ 142d St. and Broadway.....	278
“ 157th Street.....	279
Worth Street.....	273
Shaft Excavation: No. of Cu. Yds.....	266
Shaler, Ira A.; details of sub-contract.....	238
fatal accident to.....	246, 241
Shaw Electric Crane Co.; contract for Electric Traveling Cranes.....	294
Shepard, Edward M., Counsel; election of.....	99
Shields, John; details of sub-contracts.....	257, 278, 283
Smith, Charles Stewart, Commissioner; election of.....	98
Specifications; changes in <i>re</i> Contract No. 2.....	299
Standard Underground Cable Co.; contract for Cable Equipment.....	295
Starin, John H., Vice-President; appointment of.....	97
Stations; amount of money expended to Dec. 31, 1902.....	266
Brooklyn-Manhattan R. R. (Contract No. 2).....	299
City Hall Station, as designed.....	231, 232
Columbus Circle and 50th St. Stations, completion of.....	243, 244
designs of and special features.....	226, 227
terminal station bet. 7th & 9th Aves. and 31st & 33d Sts.....	301-303
“ “ Christopher and Greenwich Sts.....	304, 305
Steel and Cast-Iron; manufacture and tests of.....	284-288
number of tons erected and delivered.....	266, 267

Tunnel Construction; Central Park Tunnel.....	248, 249, 268, 269
East River.....	298, 299
Fort Washington Tunnel.....	260, 261, 269
Harlem River.....	222, 223, 252, 253
Hudson River and East River, Boroughs	
Manhattan and Queens.....	301-303
Hudson River to Jersey, from Christopher	
and Greenwich Sts.....	304, 305
Murray Hill Tunnel.....	235, 241, 248
155th Street Tunnel.....	259, 260, 269
Secs. 4, 13 & 14, Engineers directing and	
supervising.....	268, 269
Tunneling; No. of Cu. Yds.....	266, 267
Vault Lights; No. of Cu. Yds.....	266, 267
Van Wyck, Robert A., Mayor; former <i>ex-officio</i> member of Board.....	98
Viaduct, East Side.....	256
Manhattan Valley.....	258, 259
West Side.....	266
Wason Manufacturing Co.; contract for cars.....	296
Water, Drain and Gas Pipes laid; No. of Lin. Ft.....	266, 267
Water Mains and Gas Pipes readjusted.....	221, 222, 245
Waterproofing; No. of Sq. Yds.....	266, 267
Webster, Albert L.; member of Joint Committee of Engineers.....	225
Westinghouse Electric & Mfg. Co.; contract for equipment,	
Power House and Sub-Stations.....	294, 295
West Side Extension.....	86
Work; extra, ordered.....	228, 229
general progress of, in 1902.....	84-88
percentage of, completed.....	219, 220
progress of, on Section No. 1.....	231-233
" " " " " 2.....	233-235
" " " " " 3.....	235-237
" " " " " 4.....	238-241
" " " " " 5-A.....	241-243
" " " " " 5-B.....	243, 244
" " " " " 6-A & 6-B.....	244-248
" " " " " 7.....	248-250
" " " " " 8.....	251, 252
" " " " " 9-A.....	252-254
" " " " " 9-B.....	254-256
" " " " " 10.....	256
" " " " " 11.....	257, 258
" " " " " 12.....	258, 259
" " " " " 13 & 14.....	259-266

Work— <i>Continued.</i>	
progress of, on Section No. 15.....	266
“ “ “ Sewer Division.....	269-272
time of completion.....	219
total amount done by each sub-contractor.....	266
“ “ extra work done by each sub-contractor.....	267

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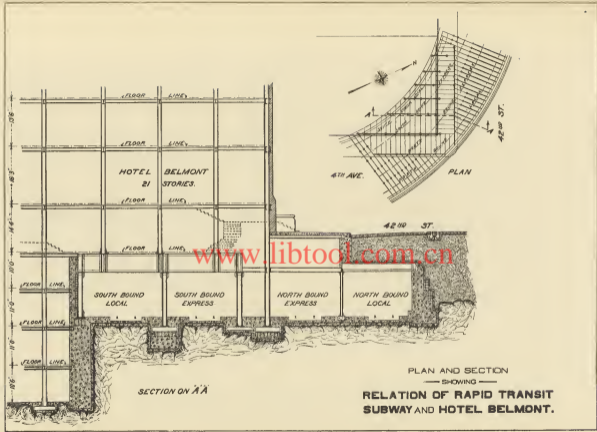
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MAP AND PROFILE
 OF
RAILWAY
 SHOWN BY CONTRACT DRAWINGS
 DATED APRIL 7th 1898

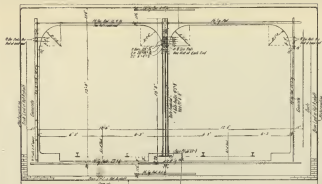
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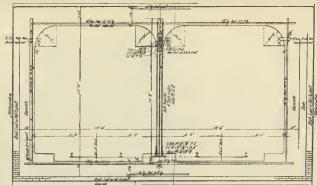
John B. Thompson, Chief Engineer







Section A-A

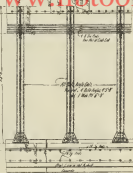


Section B-B

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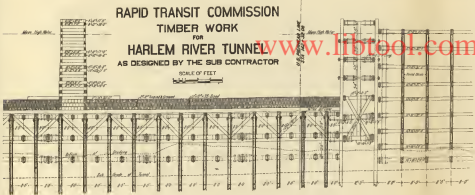
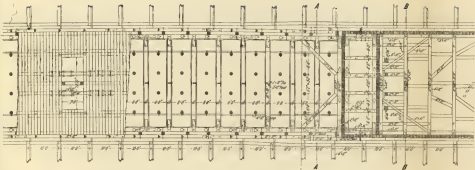


Section C-C



Section D-D

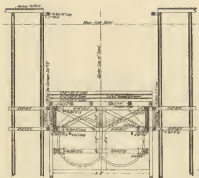
**CONCRETE STEEL CONSTRUCTION
ON
LENOX AVENUE.**



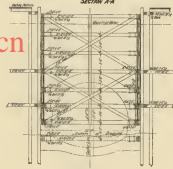
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 FOR
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 AS DESIGNED BY THE SUB CONTRACTOR

SCALE OF FEET
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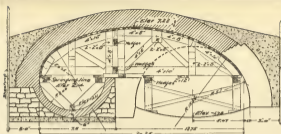


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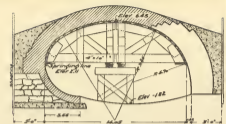


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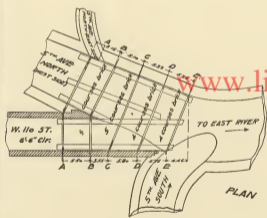




SECTION A-A.



SECTION D-D.



PLAN

NEW WORK SHOWN THICK
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M A N H A T T A N

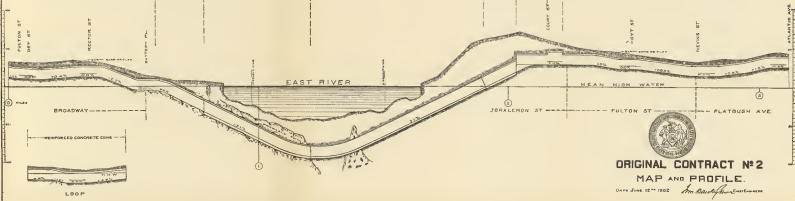
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ORIGINAL CONTRACT N° 2
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DATE JUNE 12TH 1902 *Am. Bridge Co. ENGINEER*

ORIGINAL CONTRACT N^o 2

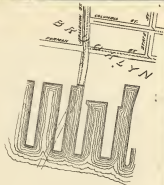
CONTRACT DRAWING N^o 2 B 1

DATE JUNE 12th 1898



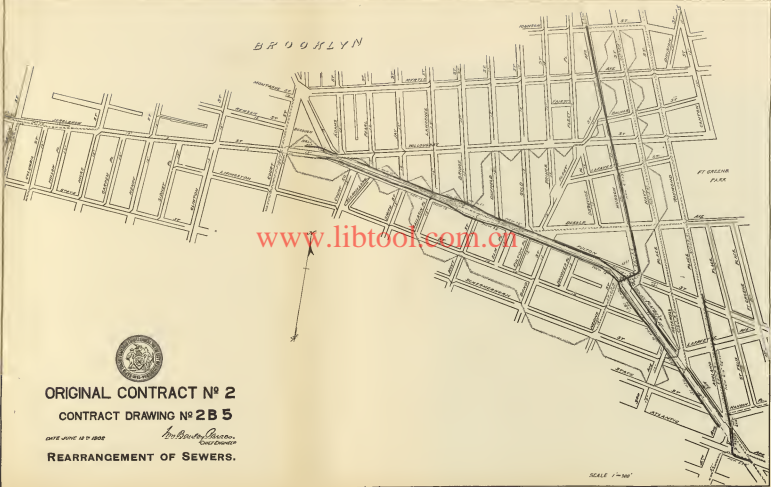
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CITY ENGINEER

REARRANGEMENT OF SEWERS.



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BROOKLYN



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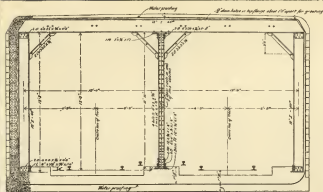
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CONTRACT DRAWING NO 2B 5

DATE JUNE 18 1898

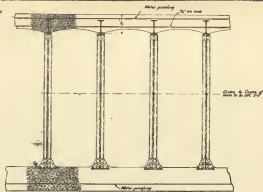
Geo. B. S. S. S.
CHIEF ENGINEER

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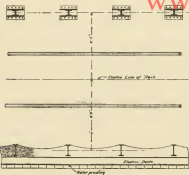
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CROSS SECTION



LONGITUDINAL SECTION



SOLE PLATE

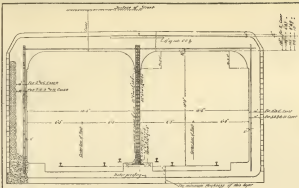
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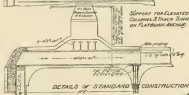
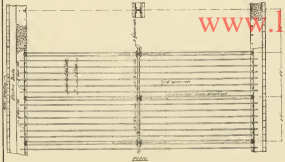
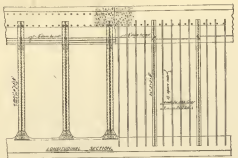
DETAILS OF STANDARD CONSTRUCTION.
ORIGINAL CONTRACT N° 2
CONTRACT DRAWING N° 2 C 5

DATE JUNE 12th 1908

Tom Brown, Esq.
 CIVIL ENGINEER



CROSS SECTION.



ORIGINAL CONTRACT N^o 2
 CONTRACT DRAWING N^o 2C 6



DATE JAN 27 1905

Geo. B. Davis
 CIVIL ENGINEER

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Hudson Co

MAP AND PROFILE
of the route of the
PENNSYLVANIA NEW JERSEY AND NEW YORK RAILROAD COMPANY
and of the
PENNSYLVANIA NEW YORK AND LONG ISLAND RAILROAD COMPANY

Charles Smith
1851

Wm. H. Miller
1851

Borough of Queens

Borough of Manhattan

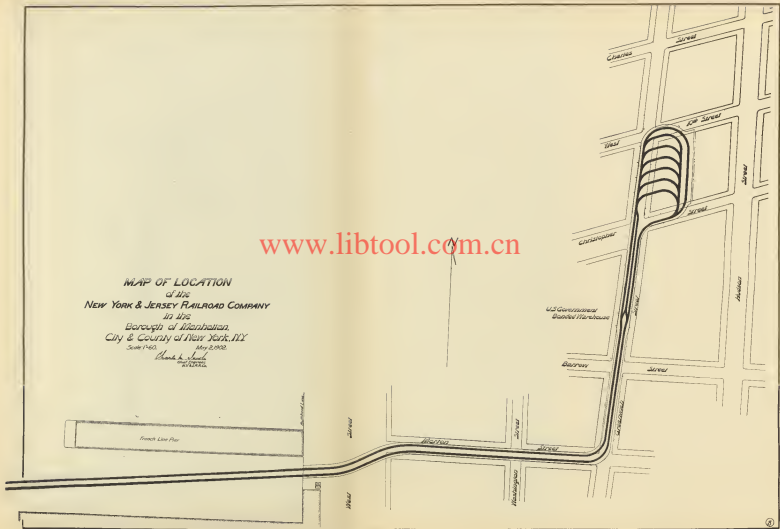
East River

Scale of Feet
1" = 100'
1" = 1000'
1" = 10000'
1" = 100000'

Notes:
1. The ground level is shown by a dotted line.
2. The proposed grade is shown by a solid line.
3. The proposed grade is shown by a solid line.
4. The proposed grade is shown by a solid line.

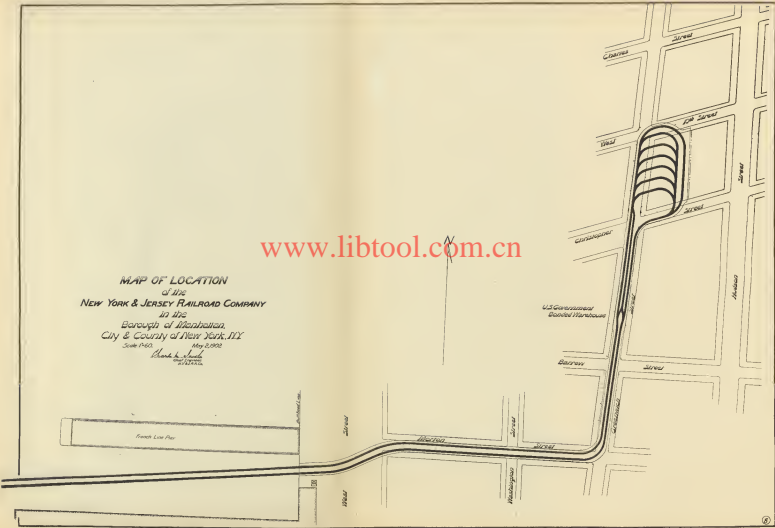
MAP OF LOCATION
of the
NEW YORK & JERSEY RAILROAD COMPANY
in the
Borough of Manhattan,
City & County of New York, N.Y.
Scale 1"=60' May 2, 1902
Franklin & Johnson
NEW YORK

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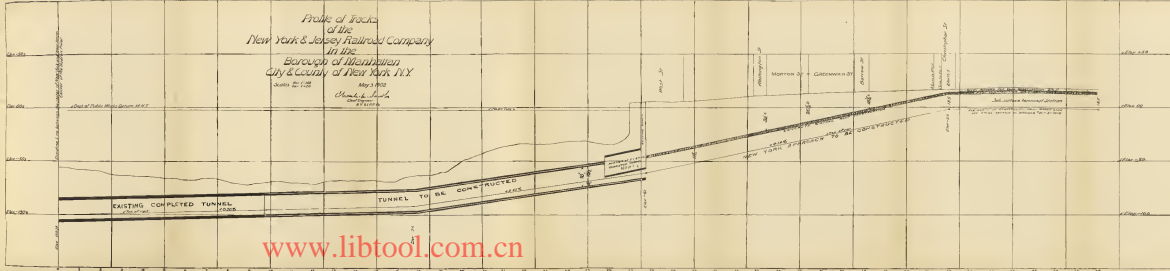
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MAP OF LOCATION
of the
NEW YORK & JERSEY RAILROAD COMPANY
in the
Borough of Manhattan,
City & County of New York, N.Y.
Scale 1:60, May 2, 1902
Charles & Joseph
ENGINEERS



Profile of Tracks
of the
New York & Jersey Railroad Company
in the
Borough of Manhattan
City & County of New York N.Y.

Scale 1" = 100'
May 3 1902
Charles E. Smith
Chief Engineer
N.Y. & N.J. R.R. Co.



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