

ANSWERS TO QUESTIONNAIRE  
of  
HON. GEORGE S. SILZER  
GOVERNOR OF NEW JERSEY,

Transmitted to James P. Dolan under  
letter dated September 15th, 1923  
prepared by

NEW JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION,,  
as they relate to  
THE HUDSON RIVER VEHICULAR TUNNEL.

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## QUESTIONNAIRE

Name and description of work.

Date when construction was started.

Date when construction is expected to be completed.

Original estimate of cost.

Information regarding General & Engineering Organization.

Name and salary of Chief Engineer

Name and compensation of Consulting Engineers, architects and others in advisory capacity. Name and salaries of principal assistants.

Engineering and Clerical staff: Give for each employee the following information, classified as to a. Clerical office force b. engineering office force c. field force d. Inspectors at fabricating plants.

Name

title and definition of duties. Salary. Since when in service. brief record of previous experience.

What is the average monthly amount of general and engineering expenses for the last 6 months.

What is the total amount of general and engineering expenses to date

What is the estimated cost for general and engineering expenses to date

What is the estimated cost for general and engineering expenses from date to completion of work

What is the original engineers estimate for general and engineering expenses

In case actual expenses to date plus estimated expenses to completion of work exceed original estimate by more than 10% give reasons for difference

Information regarding construction contracts

Give for each principal contract the following information:

Description of work. Name of Contractor. Date of award of contract.

Specified date of completion. How many bids were received. What was the range of the bids. If contract not awarded to lowest bidder give reasons therefor. Schedule of contract prices and quantities.

Estimate of cost at contract prices. Original engineers estimate of cost. If difference between two previous items exceeds 10% give reasons therefor.

Percentage of contract work completed to date.

Payments made under contract to date.

Description of extra work, if any, and reasons for ordering same.

Cost of extra work ordered. Payments on extra work to date. Is progress of execution of contract satisfactory. Give reasons for delays, if any

Information regarding real estate.

Original estimate of cost of real estate and damages. Estimated cost of acquisition. Cost of real estate acquired and damages paid to date.

Estimated cost of real estate yet to be acquired and damages to be paid.

Cost of acquisition to date. If actual cost exceeds corresponding original estimate by more than 10% give reasons therefor.

Total cost:

Total expenditures to date. Total estimated cost of originally contemplated work contracted for, at contract prices. Total estimated cost of originally contemplated work not contracted for. Total cost of two previous items.

Total cost of additional work. Grand total estimated cost upon completion.

Original estimate of cost. Difference between two previous items. If difference is more than 10%, analyze same as to principal causes.

1. NAME AND DESCRIPTION OF WORK.

New Jersey Interstate Bridge and Tunnel Commission engaged in construction of extensions of State Highway System by two projects.

- 1. Hudson River Vehicular Tunnel.
- 2. Delaware River Bridge.

1. Hudson River Vehicular Tunnel is the first subaqueous vehicular tunnel in the Americas; consisting of two tubes under the Hudson River. The North Tube with entrance on Broome Street, Manhattan, and exit at 14th Street, Jersey City, and the South Tube with entrance on 12th Street, Jersey City, and exit at Canal, Varick and Vestry Streets, Manhattan.

Statistics

Tunnel Lengths

Total length of Tunnel	9,250 feet
Distance between Portals	8,330 "
Distance between River Shafts	3,375 "
Length Under-river Portion	5,480 "

Capacity

Number of Roadways	2
Roadway widths (under-river portion)	20 feet
Headroom	13 ft. 6 in.
Estimated hourly capacity (in both directions)	3,800 vehicles
Estimated maximum daily capacity	46,000 "
Estimated yearly capacity	15,000,000 "
Maximum up-grade	3.6%
Maximum down-grade	4.05%

Construction Data

Maximum depth to top of tunnel below M.H.W.	72 feet
Maximum depth of roadway below M.H.W.	93 "
Estimated quantities	
Excavation	496,500 cu.yds.
Cast-iron Tunnel Lining (under-river portion)	115,000 tons
Concrete	129,400 cu.yds.
Ventilation Shafts	7

Ventilation

Method - Transverse distributed.

Air will be discharged and removed continuously throughout the length of the tunnel - no longitudinal movement of air.

Ventilation provides for changing air 40 times per hour.

Total amount of fresh air to be supplied to the tunnel per minute - 3,600,000 cubic feet.

Carbon monoxide to be limited to 4 parts in 10,000.

## 2. DATE WHEN CONSTRUCTION STARTED.

Contract #1 - New York Land Shafts - begun Oct.12, 1920, finished Dec. 1, 1921.

Contract #3 - New York Under-River Portion - begun Mar.31, 1922.

Contract #4 - (Includes Contract #2) - New Jersey Land Shafts and Under-River Portion - begun Mar.31, 1922.

Contract #5 - New York Approach Section - begun Aug. 20, 1923.

## 3. DATE WHEN CONSTRUCTION IS EXPECTED TO BE COMPLETED.

If funds are available from both States to put subsequent contracts in force at the times they should be started after the Commissions have decided the questions yet to be determined, construction will be completed in the fall of 1926.

## 4. ORIGINAL ESTIMATE OF COST.

Several Estimates were made by various Engineers for the States. The final preliminary estimate made in December 1919 amounted to \$28,669,000.

## 5. INFORMATION REGARDING GENERAL &amp; ENGINEERING ORGANIZATION.

## NAME AND SALARY OF CHIEF ENGINEER.

Clifford M. Holland \$20,000.

## NAME AND COMPENSATION OF CONSULTING ENGINEERS, ARCHITECTS AND OTHERS IN ADVISORY CAPACITY.

Consulting Engineer - Professor William H. Burr	\$150. per diem
" " - Col. Geo. L. Watson	\$150. " "
" " - Frederick C. Noble	\$150. " "
Assistant to Commissions and Consulting Engineer - Frank M. Williams	\$800. per month
Consulting Architect - Hon. Sullivan W. Jones, State Architect of New York	No compensation.

Consultant	on Ventilation - Arthur C. Willard,	\$50. per diem at	Urbana, Ills.
"	"	"	"
"	"	"	"
Consulting Physician - Dr. Edward Levy		\$100. " " at N.Y. City	
Consultant on Inspection of Materials -		\$3,600 per annum	
	George L. Lucas	\$2,400. " "	
Counsel -	Hon. Emerson L. Richards	No salary.	

NAMES AND SALARIES OF PRINCIPAL ASSISTANTS  
(Engineering Department)

Engineer of Construction - Milton H. Freeman	\$8,000. per annum
Engineer of Designs - Ole Singstad	\$8,000. " "
Assistant to Chief Engineer E. Morgan Barradale	\$7,000. " "

ENGINEERING AND CLERICAL STAFF: GIVE FOR EACH EMPLOYEE THE FOLLOWING INFORMATION, CLASSIFIED AS TO a. CLERICAL OFFICE FORCE b. ENGINEERING OFFICE FORCE c. FIELD FORCE d. INSPECTORS AT FABRICATING PLANTS.

NAME, TITLE AND DEFINITION OF DUTIES. SALARY. SINCE WHEN IN SERVICE. BRIEF RECORD OF PREVIOUS EXPERIENCE.

(So much of the above as can be tabulated has been set up in a table, the balance will be found after the table).

For Table see Appendix No.1.

Definitions of the duties of the various positions of the Engineering Department are as follows:- see Appendix No.2.

A brief record of previous experience is found on the information provided in copies of the applications attached hereto. Further investigation of the references has been by telephone communication with the persons to whom the applicant reported on previous work.

6. WHAT IS THE AVERAGE MONTHLY AMOUNT OF GENERAL AND ENGINEERING EXPENSES FOR THE LAST SIX MONTHS?

If it is intended in this question to segregate the General and Engineering Expenses so that the average for each can be obtained, this cannot be answered at this time as all expenses on the project are paid through the Executive Office where no such segregation is made. The reports of the Treasurer show that the average monthly amount of expenses for Administration and Engineering for the last six months, April 1933 to September 1933, amounts to \$19,998.92. This represents one-half of the expenses, being the share paid by New Jersey.

and also includes the salary of the Secretary, which is paid entirely by New Jersey, the New York Commission having its own Secretary.

7. WHAT IS THE TOTAL AMOUNT OF GENERAL AND ENGINEERING EXPENSES TO DATE?

As stated above, no segregation has been made between General and Engineering Expenses. The report of the Treasurer shows that the amount of money expended to date for expenses, both Administration and Engineering, which includes salaries of the Executive force, the Engineering Department, Consultants, Rent, Supplies, Equipment, Printing, Special Investigations, Traveling Expenses, Services, Surveys, Title Searches, etc., amounts to the sum of \$697,023.59. This represents, with the exception of such items as salary of Secretary and <sup>and other expenses</sup> traveling expenses of Commissions, which are paid entirely by New Jersey, one-half of the expenses on the project, the other half being paid by the State of New York.

8. WHAT IS THE ESTIMATED COST FOR GENERAL AND ENGINEERING EXPENSES TO DATE?

This question would seem to indicate that an estimate was made of the General and Engineering Expenses by periods, either monthly or otherwise. This was not and could not be done. The only estimate that was made of these expenses was in the 1919 Preliminary Estimate, where a percentage of the estimated cost was set up as general or "Administration" expenses and another as "Engineering" expenses. This, of course, could not be segregated as to periods as no time table could be worked out in advance, as so many conditions precedent existed over which the Commissions had no control. There is therefore no estimate of cost for general and engineering expenses to date.

9. WHAT IS THE ESTIMATED COST FOR GENERAL AND ENGINEERING EXPENSES FROM DATE TO COMPLETION OF WORK?

This question is predicated on the same premises as the preceding question, and as no segregation has been made it cannot be answered directly.

The bases of estimating general or "Administration" expenses and "Engineering" expenses are 2% of "Tunnel Construction" and "Equipment" for "Administration" expenses, and 6% of the same items for "Engineering" expenses. These percentages are both extremely low for construction work of this character as experience has shown in comparable projects that engineering costs <sup>alone</sup> run from 7% to 17%. The Engineering costs on this project to date are less than 4% of original estimate of cost.

10. WHAT IS THE ORIGINAL ENGINEERS ESTIMATE FOR GENERAL AND ENGINEERING EXPENSES? IN CASE ACTUAL EXPENSES TO DATE PLUS ESTIMATED EXPENSES TO COMPLETION OF WORK EXCEED ORIGINAL ESTIMATE BY MORE THAN 10% GIVE REASONS FOR DIFFERENCE.

It is assumed the question means the Preliminary Estimate of 1919 made by the Chief Engineer in his final investigation report, wherein the figures are given as follows:

Tunnel Construction	\$22,262,000.00
Equipment	705,000.00
Engineering, in which is included design, supervision and inspection, estimated at 6% of the cost of construction and equipment	1,378,000.00
Administration - estimated at 2% of the same	459,000.00

The Preliminary Estimate also carries an additional 5% for each item.

As no estimate has been made from date to completion of work as stated in answer to preceding Question No.9, it cannot be said whether these expenses will be exceeded by more than 10%. However, the ratios used in the Preliminary Estimate having been adopted as the bases of estimates of expenses, it is to be expected that the actual amounts will vary as the costs of "Tunnel Construction" and "Equipment" may vary. There are a number of reasons for this being so.

The cost of Tunnel Construction and Equipment will vary as the decisions of the Commissions are made from time to time changing the details of construction. Many of these decisions are based upon findings of the Tunnel

Gases Investigations, the negotiations of agreements with the Erie Railroad Company, the D.L.& W.R.R. and the City of New York Dock Department, all of which were after the Preliminary Estimate of 1919. These call for re-design and increased capacity of air ducts, shafts and machinery, location of tunnels and shafts. Other decisions will be based on decisions of the Commissions yet to be made affecting the plazas and other features. These decisions call for more design and supervision than originally anticipated, but it is expected that any additional cost will be well within the 8% of construction and equipment costs which were allowed, being 6% for "Engineering" and 2% for "Administration."

11. INFORMATION REGARDING CONSTRUCTION CONTRACTS.

GIVE FOR EACH PRINCIPAL CONTRACT THE FOLLOWING INFORMATION.  
 DESCRIPTION OF WORK. NAME OF CONTRACTOR. DATE OF AWARD OF CONTRACT. SPECIFIED DATE OF COMPLETION. HOW MANY BIDS RECEIVED. WHAT WAS RANGE OF BIDS. IF CONTRACT NOT AWARDED TO LOWEST BIDDER, GIVE REASONS THEREFOR. SCHEDULE OF CONTRACT PRICES AND QUANTITIES.  
 ESTIMATE OF COST AT CONTRACT PRICES. ORIGINAL ENGINEERS ESTIMATE OF COST. IF DIFFERENCE BETWEEN TWO PREVIOUS ITEMS EXCEEDS 10% GIVE REASONS THEREFOR. PERCENTAGE OF CONTRACT COMPLETED TO DATE. PAYMENTS MADE UNDER CONTRACT TO DATE. DESCRIPTION OF EXTRA WORK, IF ANY, AND REASONS FOR ORDERING SAME. COST OF EXTRA WORK ORDERED. PAYMENTS ON EXTRA WORK TO DATE. IS PROGRESS OF EXECUTION OF CONTRACT SATISFACTORY? GIVE REASONS FOR DELAYS, IF ANY.

Contract No.1 - Land Shafts - Manhattan.

Description of Work.- Construction of two shafts, one in vicinity of Canal and Washington Streets and the other in the vicinity of Spring and Washington Streets. To construct the shaft in Canal Street, it was necessary to by-pass the existing Canal Street Sewer which involved building about 200 feet of new concrete sewer 8 feet by 16 feet. The work also included the care and support of buildings, vaults, sewers, pipes, railroads and other surface, subsurface and overhead structures, the maintenance of traffic and the restoration of pave-

ments and other surfaces. Contractor furnished air compressing plant and Engineer's Field Office and services. The shafts were steel concrete shafts, having walls 5' 1-1/2" thick and were 42'4" by 47'. The Canal Street Shaft was 60' deep and the Spring Street shaft 53'7".

Name of Contractor.- Holbrook, Cabot and Rollins Corporation.

Date of Award of Contract.- October 1, 1920.

Specified Date of Completion.- Twelve months from order to begin work.

How many bids were received?- Five (5).

What was the range of the bids?- From \$650,802.50 to \$1,244,220.00.

If contract not awarded to lowest bidder give reasons therefor. Contract was awarded to lowest bidder.

Schedule of contract prices and quantities. See table annexed as Appendix No. 2-A.

Estimate of cost at contract prices. \$650,802.50

Original Engineer's estimate of cost. No segregation or division of the project was made for the purpose of the Preliminary Estimate in 1919 as the estimate was based upon the project as a whole. After the contract plans, specification and contract for Contract No.1 were prepared, the Engineer made an estimate <sup>at this time</sup> of the cost of the work to be done under that contract. This estimate amounts to \$593,191.00 and is the original estimate made by the Engineer for the work contemplated under that contract. It is therefore the amount that is inserted in answer to this question.

If difference between two previous items exceeds 10%, give reasons therefor. Difference is less than 10%.

Percentage of contract work completed to date. 100%. Contract completed Dec.1, 1921, including plant removed and site cleared. Accepted by Commissions Dec.7, 1921.

Payments made under Contract to date. \$643,195.24.

Description of extra work, if any, and reasons for ordering same. There is no extra work on this contract,

but included in the work are certain things which are not susceptible of classification under the schedule items. Payments for these is provided under Schedule Item 300, to which attention is directed as to the method of arriving at the means of payment. Additional work under Chief Engineer's orders are taken care of under this Item 300, and the work performed under these work orders are set forth under Item 300, as will be seen in the final estimate on Contract No.1, attached hereto and made a part hereof, amounting to \$13,306.78.

Cost of extra work ordered. \$13,306.78 as above stated.

Payments on extra work to date. \$13,306.78 as above stated.

Is progress of execution of contract satisfactory? Extremely satisfactory as work was done within contract time, extended for causes not within the Contractor's control.

Give reasons for delays, if any. No delays, work conducted in highly satisfactory manner.

**CONTRACT NO.3. TUNNELS BETWEEN THE CANAL STREET AND SPRING STREET SHAFTS AND A POINT ABOUT SIX HUNDRED FEET WEST OF THE NEW YORK PIERHEAD LINE - AND RIVER SHAFT - NEW YORK.**

Description of Work.- The contract provides for the construction of a portion of two tunnels and a river shaft. The tunnels begin at the Canal Street and Spring Street Shafts, respectively, and extend in a westerly direction a distance of approximately two thousand (2,000) feet to a point about six hundred (600) feet west of the New York pier-head line. The river shaft is located about one hundred (100) feet

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east of the pierhead line. The work also includes the care and support of all surface, subsurface and overhead structures, the maintenance of traffic and the restoration of such structures, if disturbed by tunneling operations. The contract includes provisions for an adequate plant, the use of compressed air, the Contractor's responsibility for damage to property or injury to persons, the necessity of maintaining street traffic, the difficulties to be encountered in tunnel excavation, the methods required in erecting and bolting the tunnel lining and in sinking the shaft near the pierhead line. The tunnels are of cast iron 29' 6" in diameter, made up of rings 2' 6" in length. Each ring is composed of 14 segments and a key segment bolted together. Each "A" and "B" segment is six feet long and weighs 1-1/2 tons. After the completion of the cast-iron tubes an inner lining of concrete will be placed under the contract. The river shaft is a double shaft through which the two tubes will pass. The shaft is 37 feet long and 93 feet wide and will be sunk to an elevation of 107 feet below Mean High Water. The upper portion of the shaft when completed will be within a new pier structure to be erected by the City of New York and will serve in part as a protection to the tubes between the bulkhead and the pierhead line. The two tunnels will pass through about 800 feet of rock in addition to the other materials such as silt, gravel, sand and mud. The shaft will rest in bed rock and approximately 30 feet of rock will be passed through in sinking it. The plant structures include a powerhouse for the compressed air and hydraulic power required in excavation and erection, a gantry over Canal, Spring, West and the Marginal Street, and the conversion of Pier 35 into quarters for the Contractor's working force and for the receipt and disposal of materials.

Name of Contractor. Booth & Flinn, Limited.

Date of Award of Contract. March 28, 1922.

Specified date of Completion. April 26, 1925.

How many bids were received? Three.

What was the range of the bids? This contract with Contract No.4 were advertised together, and bids were received under two forms. In Form "A" the bidder stated his prices for each contract without dependence upon the award of the other contract. In Form "B" the bidder stated his prices for the work proposed in case he should be awarded both Contracts. There were three bidders, of whom two submitted proposals under both Forms "A" and "B", while the third bid only under Form "B". The award was made under Form "B", which resulted in a saving to the States of \$128,000.

Range of Bids Form "A"	-	\$7,263,623.00
		\$7,984,673.70
Range of Bids Form "B"	-	\$7,199,623.00
		\$8,568,296.00

If Contract not awarded to lowest bidder give reasons therefor. The contract was awarded to the lowest bidder.

Schedule of Contract Prices and quantities. See table annexed as Appendix No.3.

Estimate of Cost at Contract Prices. \$7,199,623.00

Original Engineer's Estimate of Cost. No separate estimate was made of the work contemplated within this contract at the time of making the preliminary estimate of 1919, as is stated in answer to the same question under Contract No.1. After the completion of the contract drawings, specification and form of contract, an estimate was made by the Chief Engineer of the work contemplated thereunder. This estimate was made

under Form "A" and amounted to \$8,014,962.00.

If difference between two previous items exceeds 10% give reasons therefor. Difference does not exceed 10%.

Percentage of Contract Work completed to date.

As there are so many operations involved in this contract which are not comparable, it is difficult to make a basic percentage. The total length of tunnel to be built is 4,025 feet, of which 60% has been completed in the erection of cast-iron lining.

The river shaft has been constructed and sunk 90 feet below M.H.W., leaving about 18 feet of rock still to be excavated; this makes about 80%.

Plant work, which is very extensive, is 100% complete.

The delivery of cast-iron rings is about 80% completed.

No concrete lining can be placed until the compressed air work is completed.

The contract as a whole is about 55% completed.

Payments made under Contract to date.

\$3,514,308.69 which with retained percentage make the value of work to date \$4,100,071.56.

Description of extra work, if any, and reasons for ordering same.

There is no extra work on this contract, but included in the work are certain things which are not susceptible of classification under the Schedule Items as stated in answer to the same question under Contract No.1. There will be found on the last partial estimate for work under this contract, attached hereto and made a part hereof, items amounting to \$25,493.76, of which \$16,233.50 was for additional work to safeguard the tunnel structure from disaster because of its passing the cofferdam being constructed by the

City of New York in its sewage treatment plant located in West St. near Canal St., within a very few feet of the South Tunnel. This protection proved satisfactory and sufficient, and the tunnel passed the dangerous place without further delay or injury.

Cost of extra work ordered. \$25,493.76

Payments on extra work to date. \$25,493.76 less 10% retained percentage.

Is progress of execution of Contract satisfactory? Yes, highly satisfactory. The Contractor is of good standing and ability and is making every effort to push the work to an early and satisfactory conclusion. It is anticipated that the contract will be completed within contract time.

Give reasons for delays, if any. The only delay of importance was due to the construction of a sewage treatment plant by the City of New York in West Street near Canal Street. It was found necessary to stop shield driving until extra protective measures could be taken to prevent a catastrophe. This delay caused a stoppage of work for two weeks.

Tunneling operations under the City streets and through the bulkhead were necessarily slow because of the thin cover over the tunnel and the enormous shields in use. However, the work was successfully done without accident to person or property and to the great credit of those doing the actual work.

CONTRACT NO. 4- TUNNEL BETWEEN A POINT ABOUT ONE THOUSAND FEET WEST OF THE RIVER BULKHEAD NEAR THE LINE OF TWELFTH STREET, JERSEY CITY, AND A POINT ABOUT SIX HUNDRED FEET WEST OF THE NEW YORK PIERHEAD LINE - TWO LAND SHAFTS AND TWO RIVER SHAFTS. NEW JERSEY-NEW YORK.

Description of Work.- The contract provides for the construction of a portion of two (2) tunnels, two (2) land shafts and two (2) river shafts. The tunnels begin about one thousand feet west of the present

bulkhead in the Erie Railroad yards, Jersey City, and extend in an easterly direction to within about six hundred feet of the New York pierhead line where the junctions are made with the two tunnels being constructed under Contract No.3. The two land shafts which were to have been constructed under Contract No.2 are also under this contract and are located about one hundred forty feet west of the present bulkhead line in the railroad yards. The two river shafts are located about one hundred feet west of the New Jersey pierhead line as established in 1913. The work also includes the care and support of all surface, subsurface and overhead structures and their restoration if disturbed by tunneling operations. The contract includes provisions for an adequate plant, the use of compressed air, the prosecution of the work in a railroad terminal yard, the Contractor's responsibility for damage to property or injury to persons, the difficulties of tunneling operations, the sinking of the shafts near the bulkhead and pierhead lines. The two tunnels are of cast-iron rings as described under Contract No.3, and the inner lining of concrete is the same. The two land shafts are similar to those sunk in Manhattan under Contract No.1. Each shaft is a double steel-walled caisson, the reinforced concrete being placed between the steel walls and are six feet thick. Each shaft is 43 feet long, 47 feet wide and 69 feet deep. The two river shafts are similar steel concrete shafts. Each shaft is 37 feet 6 inches long, 50 feet 6 inches wide and 113 feet 6 inches deep. Each river shaft rests on a rectangular field of 42 steel concrete piles sealed in bed rock 250 feet below mean high water. These piles are 3/8-inch steel casings 24 inches in diameter, filled with steel reinforced concrete, and are cut off and capped at an eleva-

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tion of 107 feet below mean high water. The upper portions of the river shafts, when completed, will be within a new pier structure to be erected by the Erie Railroad Company, which will also serve as a protection to the tubes between the bulkhead and pierhead lines. The plant structures include a powerhouse at 12th and Provost Streets, Jersey City, for the compressed air and hydraulic power required in excavation, the erection of tunnel iron, and the sinking of the river shafts. A smaller plant was also required for sinking the two land shafts. A gantry is built over the railroad tracks and pier of the Erie Railroad Company to minimize interference with terminal yard operations and on this structure is built the quarters for the Contractor's workmen required by law, as well as the Engineer's Field Office.

Name of Contractor. Booth & Flinn, Limited.

Date of award of contract. March 26, 1922.

Specified date of completion. May 26, 1925.

How many bids were received? Three.

What was the range of the bids? This Contract with Contract No.3 were advertised together and bids were received under two forms. In Form "A" the bidder stated his prices for each contract without dependence upon the award of the other contract. In Form "B" the bidder stated his prices for the work proposed in case he should be awarded both contracts. There were three bidders, of whom two submitted proposals under both Forms "A" and "B", while the third bid only under Form "B". The award was made under Form "B", which resulted in a saving to the States of \$126,000.00.

Range of Bids under Form "A" - \$12,196,100.50  
 \$13,889,987.70

Range of Bids under Form "B" - \$12,132,100.50  
 \$13,878,969.50

If contract not awarded to lowest bidder, give reasons therefor. The contract was awarded to the lowest bidder.

Schedule of Contract Prices and Quantities. See table annexed as Appendix No.4.

Estimate of cost at Contract Prices. \$12,132,100.50

Original Engineer's Estimate of Cost. As stated in answer to similar question under Contract No.3, no estimate was made of the work contemplated within this contract at the time of making the preliminary estimate of 1919. After the completion of the contract drawings, specification and form of contract, an estimate was made by the Chief Engineer of the work contemplated thereunder. This estimate was made under Form "A" and amounted to \$13,007,008.00.

If difference between two previous items exceeds 10%, give reasons therefor. Difference does not exceed 10%.

Percentage of contract work completed to date. As there are even more operations involved in this contract than in Contract No.3, which are not comparable, it makes it difficult arrive at a basic percentage. The total length of tunnel to be built is 9,672 feet, of which 10% has been completed in the erection of cast-iron lining. This is broken up into four sections - two eastward and two westward. To save costs in erecting the fourth shield, one westward bore will be completed before the second is begun, which means a maximum of three tunnel headings at one time under this contract. The two land shafts had

to be completed before any shields could be erected, the land shafts are 100% completed.

The pile foundations for the river shafts are 100% completed.

The north river shaft is sunk to grade and is 98% completed.

The south river shaft is 45% erected and is being sunk.

Three of the shields are 100% completed and in operation.

The plant is 100% completed.

The delivery of cast-iron rings is about 80% completed.

No concrete lining can be placed until the compressed air work on either side of the land shafts is finished. The contract as a whole is about 40% completed.

Payments made under contract to date. \$4,129,433.61, which, with retain percentages, makes the value of work to date \$4,549,288.64.

Description of extra work, if any, and reasons for ordering same. As already stated in connection with

Contracts 1 and 3, there is no extra work, but additional work orders are taken care of under Item 300 for work not susceptible of classification. Information with respect to these will be found in the estimate for work under Contract 4 to date, totaling \$4,391.66.

Cost of extra work ordered. \$4,391.66

Payment on extra work to date. \$4,391.66 less 10% retained percentage.

Is progress on execution of contract satisfactory? Yes, as stated in response to same question under Contract No.3.

Give reasons for delays, if any. There have been no serious delays, but several causes have contributed to slower progress than was at first expected. It is anticipated that this will be made up in the under-river tunneling. No work could be begun in the Erie Railroad

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property until the Agreement with that Company was completed. The Commission found that a long period of time had been consumed by a former Commission in making out an agreement which could not be brought into being as it was predicated on the cooperation of the municipal authorities of Jersey City. This Commission found that such cooperation could not be relied upon and therefore proceeded to make a workable agreement with the Erie. This agreement was completed on May 26, 1922 and work begun immediately. In sinking the land shafts an undiscovered crib bulkhead was encountered. There was no record of its existence and the borings did not disclose it. This added materially to the hazards and problems of this work and made it take a much longer time to complete than originally contemplated. This bulkhead, consisting of piles and large chunks of granite, also made progress in the two tunnels eastward very difficult, slow and hazardous work. Fortunately, both shields are now beyond this crib. The progress of the shields eastward leads to confident anticipation of greater progress on this phase of the work than was estimated.

CONTRACT NO. 5 - TUNNELS BETWEEN THE CANAL STREET SHAFT AND THE EAST SIDE OF HUDSON STREET AND BETWEEN THE SPRING STREET SHAFT AND THE NORTH SIDE OF DOMINICK STREET - NEW YORK.

Description of Work. This contract provides for the construction of a portion of two (2) tunnels which begin at the Canal Street shaft and the Spring Street shaft, respectively, and extend in an easterly direction, the one under Canal Street to the easterly side of Hudson Street and the other under Spring Street to Hudson Street, thence curving southerly to the north side of Dominick Street. It also

provides for the care and support of all surface, subsurface and overhead structures which include the New York Central Railway, trolleys, elevated railroad, the Canal Street sewer, as well as the many service lines beneath the surface of the streets. It also provides for adequate plant, maintenance of traffic, access to buildings, safeguarding buildings and other structures and underpinning where necessary.

Name of Contractor. Rodgers & Hagerty, Inc.

Date of award of contract. July 17, 1923.

Specified date of completion. July 28, 1925.

How many bids were received? Five.

What was the range of the bids? \$3,467,413.50 to \$5,566,082.75

If contract not awarded to lowest bidder give reasons therefor. The contract was awarded to lowest bidder.

Schedule of contract prices and quantities: Schedule attached as Appendix No.5.

Estimate of cost at contract prices. \$3,467,413.50

Original Engineer's Estimate of cost. As stated in answer to this question under Contracts Nos. 1 and 3, no estimate was made of the work under this contract in the preliminary estimate of 1919. After the contract drawings, specification and form of contract had been prepared, the Chief Engineer made an estimate of the work thereunder amounting to \$3,382,462.00.

If difference between two previous items exceeds 10%, give reasons therefor. Difference does not exceed 10%.

Percentage of contract work completed to date. As this work was begun on August 20, 1923, the

Contractor has been chiefly engaged in preparing site for plant, razing buildings, etc. The closest approximation gives 3%.

Payments made under contract to date. \$47,636.10, which, with the retained percentage, make the value of work \$52,929.00.

Description of extra work, if any, and reasons for ordering same. None.

Cost of extra work ordered. None.

Payments on extra work to date. None.

Is progress of execution of contract satisfactory? Yes.

Give reasons for delays, if any. No delays, hence no reasons.

## 12. INFORMATION REGARDING REAL ESTATE.

Original estimate of cost of real estate and damages. Real Estate and Easements, net cost \$2,500,000.

As 5% was added to all items as contingencies, this figure should be put in at \$2,625,000. Attention is called to the Final Preliminary Report dated December 31, 1919, wherein these figures were used as it was hoped that re-sale of rights in some parcels would result in a return to the States and thereby reduce the costs of acquiring lands and easements, estimated to cost from \$3,100,000. to \$3,700,000.- down to the net figures first above stated. When these estimates were made, they were based on 1919 assessed valuations which have been materially increased up to the time of acquiring the lands. Further, the values used in Jersey City are found to be entirely too low as purchases have shown. The relation between cost of acquiring and the assessed value in Jersey City is not comparable with past experience and a much higher ratio must be used as the assessed values appear to be so low. The lands to be acquired are not comparable with those estimated in the 1919 figures, as the Erie Railroad and

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Lackawanna Railroad negotiations are very much more extensive and call for much larger areas than the original tunnel plans.

The original entrance plaza in New Jersey, as shown on the Engineer's preliminary designs, called for only one block of land which was estimated at its apparent value from the assessment list. The Erie Agreement which this Commission found basically laid down but not completed because of the attitude of Jersey City officials increased materially the plaza arrangement and necessarily the cost of real estate. The original exit plaza called for but a narrow strip of land on the north side of 14th St., but the same reasons and later developments have brought the Commission to believe that adequate plazas will require more real estate than the original plans of the Engineer. The plans found by this Commission have been deemed inadequate and it has adopted the report of the Joint Plaza Committee of the Commissions recommending a greater plaza development when the Legislature gives the Commission unquestioned authority to proceed in the matter. Relying upon the opinion of the Attorney General of the State of New Jersey, the Commission feels that it would not be justified in proceeding until its right to do so is expressly given by the Legislature through such laws as may be found necessary to clearly define the line of demarcation between jurisdiction of this Commission and the State Highway Commission. This Commission has already made overtures to the State Highway Commission for a conference with the thought that plans could be mutually agreed upon for recommendation to the Legislature so that full authority would be given this Commission to proceed with plaza development as already recommended.

Estimated cost of acquisition. This question is indefinite as to time and therefore no answer can be given. The original estimate is given above. An estimate at this time must be based upon supposition as no further decisions can be made until the questions raised by the Attorney General have been answered by the Legislature.

Cost of Real Estate acquired and damages paid to date.

The financial statement prepared by the Secretary from the books of the Treasurer up to September 30, 1923, shows that New Jersey has expended for the acquisition of lands, permanent easements, temporary easements and other charges under the terms of the Erie Agreement, the agreement with the New York Dock Department and contributions to the New York Real Estate fund, the sum of \$1,490,336.25. The question of the actual acquisition of real estate under the law is placed upon the Commission representing the State in which the real estate is located, as the machinery of acquisition is dependent upon the law of the State wherein the lands are situated. New Jersey has therefore made contribution to the Real Estate fund under the condemnation<sup>law</sup> of the State of New York, where funds must be deposited before actual acquisition is made. However, practically all of the 62 parcels in New York City have been acquired or are in process of acquisition through the machinery of the New York condemnation law. The sum above set forth shows moneys actually expended by New Jersey, some of which, however, has not yet been turned over to property owners as the machinery of condemnation has not been completed, but the funds are in the hands of the depository fixed in the law so that they may be drawn upon in these proceedings.

Estimated cost of Real Estate yet to be acquired and damages to be paid. No estimate of the cost of Real Estate yet to be acquired and damages to be paid can be made as the final policies of the Commission are dependent upon the Legislature giving authority to proceed with the plans of the Plaza Committee as approved by the two Commissions. This is also dependent upon the availability of funds for this purpose, as the methods of financing in the two States are different.

Cost of acquisition to date. No distinction is made in the segregation of funds for acquisition. Therefore the amount given is the same as the amount in answer to the second question above, \$1,490,336.25.

If actual cost exceeds corresponding original estimate by more than 10%, give reasons therefor. If the actual cost exceeds the amount set up in the preliminary estimate of 1919, it will be due to several causes - first, the preliminary estimate, as explained in answer to a previous question, was a net cost based upon re-sale values for certain rights in properties to be acquired; it will further be due to a distinct change of plan, as the preliminary estimate of 1919 was based upon minimum plazas as set forth above.

### 13. TOTAL COST.

Total expenditures to date. The financial statements of the Treasurer and Secretaries, respectively, show total expenditures from July 1, 1919 to September 30, 1923 in an amount of \$6,008,514.09, made out of appropriations and the proceeds of the bond issue.

Total estimated cost of originally contemplated work contracted for, at contract prices. It is assumed that the purpose is to compare the work actually contracted for with that part which was

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originally contemplated within these limits when the 1919 Preliminary Estimate was made. If this is correct, it will be impossible to answer at this time as no estimate was made in 1919 showing in detail the comparative quantities of each part of the work so that differences in quantities on each unit or section of the project can be picked out and set up for the purpose of ascertaining wherein each actual quantity varies. There are also certain matters which have been developed in the progress of the work which could not have been in contemplation at the time of the preliminary estimate. Examples of this may be taken as follows:-

- (a) It could not have been foreseen that the tunnel gases investigations would dictate a 29'6" diameter instead of 29' as originally planned, to take care of the ventilation requirements. Yet this increases quantities for excavation, weight of iron lining, etc., which are material in establishing the answer to this question.
- (b) No one in 1919 could foresee that the negotiations between the Commissions and the Erie R.R. would result in the location of the land shafts in New Jersey where they are actually located. Yet this location with the results of the Tunnel Gases Investigations result in a 30' 4" tunnel instead of a 29' tunnel as originally planned, and quantities of excavation, etc., naturally vary.

Traffic counts were made at the time of preparing data for the preliminary report, and the records of traffic counts of previous years were studied and given full consideration. Estimates based upon this information were made of street traffic, as it is necessary to provide means for integrating the tunnel traffic with the street traffic. The traffic counts at the junction of Canal, Varick and Vestry Streets, in New York City, which is the exit of the South Tunnel, show an increase in vehicular traffic at that

point of 100% over 1919, when the preliminary estimate was made. This increase is far beyond figures that could be estimated from the curves plotted on previous information. It also adds materially to the plaza development problem in that the complete use of the tunnel is dependent upon the proper integration of tunnel traffic with street traffic.

There has been a marked rise in construction costs since the preliminary estimate of 1919 was made. This has been evidenced by a number of lettings within the last year, wherein costs of construction have overrun in excess of 20%.

Total estimated cost of originally contemplated work not contracted for. This question is the same as the preceding except that it applies to work yet to be contracted for. This Commission, when it came into office, found the general principles, dimensions and other important particulars, as well as the general plans, contract plans and specifications, as established by the acts of its predecessors that most of the details necessarily had to follow as they have. This Commission has brought these into actual fruition by negotiating the necessary agreements and contracts which have resulted in starting the Contractors to work and obtaining the lands and easements necessary to put the Contractors in possession, so they could proceed promptly with their work. No changes could have been made by this Commission in the general designs of the tunnel to lessen costs, as the controlling factors in the tunnel plans were already fixed. The project is a contiguous whole, and while the actual construction is broken up into sections for many reasons of advantage, it was estimated as a whole in 1919.

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Total cost of two previous items. As the two questions cannot be answered by figures, no total can be arrived at.

Total cost of additional work. None except as shown under questions related to construction contracts.

Grand total estimated cost upon completion. These figures are dependent upon estimates to be made of a number of matters which are still to be considered and determined by the two Commissions. Among these undecided questions are found:-

(A) More adequate plaza arrangements on both sides of the river are under consideration and no decision can be made on this question as the Deputy Attorney General assigned as Counsel to this Commission has given an opinion to the effect that this Commission has no authority to proceed beyond a point within the Commission's recommendations. This Commission is desirous of making adequate plaza provision and believes that the incoming Legislature will re-define the limits between the duties of this Commission and the State Highway Commission which will permit this Commission to proceed with its full determination if funds are available for its use.

(B) Study is being given to a tile lining for the tunnel as the Chief Engineer has reported the advantages of such a lining as is demonstrated by its use in certain European tunnels.

Original estimate of cost. Preliminary Estimate of 1919, \$28,669,000.00

Difference between two previous items. As no absolute figures can be given under the second proceeding answer, the difference between the two previous items cannot be given in figures.

If difference is more than 10%, analyze same as to principal causes. Re-design called for by the outcome of the Tunnel Cases Investigations, the location of structures appurtenant to the tunnel under the Erie Railroad Agreement, the New York Dock Department agreement and the agreement to be negotiated with the E.L. & N.A.R. Company.

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Change of general plans brought about by the subsequent negotiation of these important agreements, as well as studies which are being made of lining, plaza development and other important factors.

APPENDIX NO.1.

IN SALARY SCHEDULE BELOW GIVEN ONE-HALF ONLY IS PAID BY NEW JERSEY, EXCEPT IN CASE OF SECRETARY DOLAN.

Name.	Title	Salary	Clerical Office Force	Eng'g. Office Force	Field Office	Inspectors at fabricating plants.	Since When in Service.
James P. Dolan	Secretary	\$5000	Yes				5/24/21
M. Markowitz	Ch. Clerk	3100	Yes				4/1/20
H.F. Costello	Bookkeeper	1950	Yes				12/11/22
D.J. Jeffers	Clerk	1350	Yes				7/12/20
W.A. Halligan	Hearing Steno.	2850	Yes				7/16/19
H.J. Rusk	Title Examiner	3500	Yes				3/16/21
M.M. McLaughlin	Title Examiner	3200	Yes				10/24/21
Lucie Driscoll	Stenographer	1500	Yes				9/23/20
Viola Johnson	Stenographer	1650	Yes				11/17/21
F.A. Snyder	Asst. Engr. of Construction	5200		Yes			10/19/21
M.I. Killmer	Resident Engr.	4800			Yes		8/1/19
C.S. Gleim	" "	4800			Yes		8/12/19
R.M. Beck	Asst. Engr.	3600			Yes		7/1/19
C.L. Crandall	" "	3600			Yes		10/27/19
J. Mechanic	" "	3600			Yes		11/1/19
R.S. Moore	" "	3600			Yes		3/1/21
H.L. King	" "	3600			Yes		3/21/21
R.M. Burkhalter	" "	3600			Yes		10/2/22
H. H. Haggard	" "	3600			Yes		4/10/22
F.A. Rossell	" "	3300			Yes		1/20/21
A.H. Anderson	" "	3300			Yes		3/10/22
A.H. Jorgenson	" "	3600			Yes		8/27/23
K.K. Clarke	" "	3000			Yes		10/27/19
H. F. Pfau	" "	3000			Yes		10/18/22
F.H. Berger	" "	3000			Yes		11/11/22
A.E. Steere	" "	3000		Yes			4/16/23
J.J. Krieg	" "	2550			Yes		6/1/20
J.G. McTernan	" "	2550			Yes		9/5/22
F.J. White	" "	2550			Yes		9/18/22
P. L. Hazard	" "	2550			Yes		10/18/22
W.F. Barck	" "	2400			Yes		1/24/21
G.R. Acker	" "	2400			Yes		8/25/22
R.G. Baker	" "	2400			Yes		11/9/22
B.E. Dyer	" "	2400			Yes		11/16/22
T. Darrow	" "	2400			Yes		12/1/22
C.F. Richardson	" "	2400			Yes		1/9/23
H.C. Wolter	" "	2400			Yes		1/15/23
F.L. Fuller	" "	2400			Yes		4/2/23
L.J. Maguire	" "	2250			Yes		10/1/20
J.H. Blum	" "	2250			Yes		11/9/22
A.W. Schwab	" "	2250			Yes		2/10/21
G.H. Eckerson	" "	2250			Yes		1/2/23
H.J. Paletz	" "	2250			Yes		1/8/23
J.P. Simmons	" "	2250			Yes		6/14/23
S.F. Greenhalgh	" "	2100			Yes		6/28/20
E.P. Hubschmitt	" "	2100			Yes		8/16/22
A.J. Faulkner	" "	2250			Yes		10/1/23
J.A. Lee	" "	2250			Yes		4/2/23

Name	Title	Salary	Eng'g. Office Force	Field Office	Inspectors at fabricating plants	Since When in Service
V.J. Smith	Asst. Engr.	\$2250		Yes		7/9/19
L.J. Josten	Inspector	3000			Yes	4/24/22
F.B. Hulse	"	2400		Yes		3/16/21
P.E. Helms	"	2400			Yes	8/1/22
J.F. Severn	"	2400			Yes	9/1/22
W.D. Jones	"	2400			Yes	9/12/22
J.C. Miller	"	2400			Yes	10/2/22
V.G. Matchett	"	2400			Yes	10/17/22
G.A. Beckwith	"	2250			Yes	2/8/23
J.J. Maley	"	2100			Yes	5/10/23
C.S. Galbraith	Jr. Engr.	2100		Yes		10/1/23
P.F. McBride	" "	1950		Yes		8/22/23
E.C. Hallock	" "	2100		Yes		12/9/20
J.E. Condotti	" "	2100		Yes		5/22/23
F.A. Kemman	" "	2100		Yes		5/28/23
F.B. Foster	" "	2100		Yes		6/11/23
W.H. Francisco	" "	1950		Yes		4/16/23
J.J. Zapf	" "	1950		Yes		12/15/22
N. Brodell	" "	1800		Yes		8/17/23
E.S. Barron	" "	1800		Yes		8/7/22
E.B. Fontaine	" "	1800		Yes		10/25/22
B.F. Biemann	" "	1800		Yes		11/3/22
V.L. Riley	" "	1800		Yes		3/8/23
J.M.C. VanHulsteyn	" "	1800		Yes		6/25/23
W.C. Thompson	" "	1800		Yes		8/6/23
S.H. Cohen	" "	1800	Yes			7/2/23
N.J. Naughten	" "	1800		Yes		6/27/23
M.C. Lieb	" "	1650		Yes		11/23/22
W. C. Beames	" "	1500		Yes		8/27/23
J.C. Fisher	" "	1500		Yes		9/5/22
H.J. Kelly	" "	1500		Yes		12/21/22
W. Gould	" "	1500		Yes		1/29/23
O. Mulford	" "	1500		Yes		6/1/23
D.X. Ellett	" "	1500		Yes		6/18/23
H.S. Ertner	" "	1500	Yes			6/18/23
H.G. Decancq	" "	1500		Yes		9/5/23
J.B. Saxe	" "	1500		Yes		6/20/23
D.E. Foley	" "	1500		Yes		8/9/23
J.L. Parker	" "	1500	Yes			6/25/23
W.H. Stringfellow	" "	1500		Yes		6/25/23
C.J. McNally	" "	1500		Yes		6/25/23
J.D. Munro	" "	1500		Yes		6/25/23
L.A. Galimpin	" "	1500		Yes		6/25/23
R.R. Oram	" "	1500		Yes		7/2/23
A.H. Weis	" "	1500		Yes		7/2/23
C.M. Gregg	" "	1500		Yes		7/16/23
M.C. Lowenberg	" "	1350		Yes		9/5/23
E.J. Peck	" "	1350		Yes		3/26/23
O.E. Lokofsky	" "	1350		Yes		7/16/23
H.D. Bastow	Photographer	2400		Yes		9/1/22
P.T. Gillespie	Attendant	1200		Yes		1/1/21
J.H. Eggers	"	1200		Yes		9/1/22

Name	Title	Salary	Eng'g. Office Force	Field Office	Inspectors at fabricating plants	Since When in Service.
M. Cunningham	Attendant	\$1200		Yes		12/18/22
F.P. Derham	Stenographer	1500		Yes		5/7/23
E.R. Elliott	Clerk	900		Yes		7/2/23

Name	Title	Salary	Eng'g. Office Force	Designing Department	Since When in Service.
R. Smillie	Designing Engr.	\$5200		Yes	10/2/19
O.L. Brodie	Asst. " "	4200		Yes	8/21/19
E. Welle	" " "	4200		Yes	5/1/20
J.C. Imhoff	" " "	3750		Yes	7/14/19
A.C. Davis	Mech. Engr.	4800		Yes	8/11/19
J.N. Dodd	Electrical "	4800		Yes	11/16/22
E. Owre	Architect	4000		Yes	12/16/21
B. Robinson	Architectural Designer	3600		Yes	4/23/23
C.A. Goldberg	"	3300		Yes	5/28/23
C.W. Murdock	Asst. Engr.	3450		Yes	8/13/19
O.F. Bellows	" "	3450		Yes	6/14/20
E.P. Neuschwander	" "	3300		Yes	6/16/20
J.H. Dugan	" "	3300		Yes	7/21/20
L.R. Shellenberger	" "	3150		Yes	10/31/21
H.G. Cruthers	" "	3000		Yes	9/16/19
C.E. Johnson	" "	3000		Yes	10/19/20
T.P. Kilian	" "	3000		Yes	11/3/21
R.F. Schaefer	" "	3000		Yes	3/29/22
D. Robertson	" "	3000		Yes	3/28/22
M.A. Eisenstadt	" "	3000		Yes	5/17/23
O. Newman	" "	2850		Yes	7/16/19
H.G. Babcock	" "	2850		Yes	7/14/19
M. Cohen	" "	2400		Yes	7/15/19
H.M. Sackrider	Draftsman	2250		Yes	7/8/19
W.C. Sands	"	2100		Yes	12/3/20
L.M. Martin	"	1950		Yes	9/16/19
M.K. Cohn	"	1950		Yes	11/1/20
G.A. Hansen	"	1500		Yes	4/17/22
E.L. Cochrane	Asst. Engr.	3600	Yes		11/10/20
C.J. Ryan	Secy. to Ch. Engr.	2550	Yes		2/1/21
H.A. Hastings	Clerk	2250	Yes		7/23/19
M. Sebiri	Stenographer	2100	Yes		4/1/20
G.R. McCall	Stenographer	1950	Yes		3/15/20
W.J. Monahan	Stenographer	1800	Yes		7/20/21
A. Robinson	Stenographer	1800	Yes		5/3/22
L. Ducksten	File Clerk	1650	Yes		12/1/22
A. McCarthy	Switchb. Op.	1200	Yes		9/1/20
H. Hempel	" "	1200	Yes		9/14/23
J.A. Kenny	Messenger	900	Yes		2/8/21
T. Griffin	Page	780	Yes		10/9/23
E. Murphy	Chauffeur	2250	Yes		11/14/22
H.L. Leffingwell	"	1900	Yes		8/7/23

DEFINITION OF POSITIONS  
TO ACCOMPANY ENGINEERING BUDGET NO. 10.

CHIEF ENGINEER: In chief administrative charge of the engineering organization; determines the general policies of the organization under the direction of the Commissions; has final responsibility for the preparation of reports, estimates, designs, and specifications, and for the construction, maintenance and operation of all engineering work under the direction of the Commissions.

ENGINEER OF CONSTRUCTION: In responsible charge of the work of the Construction Division, and reports to the Chief Engineer.

ENGINEER OF DESIGNS: In responsible charge of the work of the Designs Division, and reports to the Chief Engineer.

ASSISTANT TO CHIEF ENGINEER: In responsible charge of the administrative duties of the Engineering Department of a non-technical character, including the preparation of contracts and reports, and reports to the Chief Engineer.

CONSULTING PHYSICIAN: Examines all applicants for positions, makes all re-examinations required by law for compressed air work, and advises the Chief Engineer on matters of health and working conditions.

CONSULTING INSPECTOR OF MATERIALS: Advises regarding the materials of construction, with particular reference to the interpretation of the specifications and inspection at the plants.

ASSISTANT ENGINEER OF CONSTRUCTION: Assistant to the Engineer of Construction and in responsible charge of the Department in the absence of the Engineer of Construction. Reports to the Engineer of Construction.

RESIDENT ENGINEER: In responsible charge of the construction organization on either side of the river; exercises independent engineering judgment and assumes responsibility in studies and computations necessary for the preparation of reports and estimates and the carrying out of the terms of the contract for the work under his immediate supervision. Reports to the Engineer of Construction.

DESIGNING ENGINEER: Assistant to the Engineer of Designs and in responsible charge of the Department in the absence of the Engineer of Designs. Reports to the Engineer of Designs.

ASSISTANT DESIGNING ENGINEER: In responsible charge of designs; exercises engineering judgment and assumes responsibility in studies and computations necessary for the preparation of reports and detail designs; in charge of squads conducting special branches of design work. Reports to the Engineer of Designs.

MECHANICAL ENGINEER: In responsible charge of design covering the mechanical features, as well as ventilation; exercises engineering judgment and assumes responsibility in studies and computations necessary for the preparation of reports and detail designs; reports to the Engineer of Designs.

ELECTRICAL ENGINEER: In responsible charge of designs, covering the electrical features of the work, including the motive power for the ventilation equipment, exercises engineering judgment and assumes responsibility in studies and computations necessary for the preparation of reports and detail designs; reports to the Engineer of Designs.

ARCHITECT: In responsible charge of designs; exercises architectural judgment and assumes responsibility in architectural studies and computations necessary for the preparation of reports and detail designs of the architectural features and development of the tunnel; reports to the Engineer of Designs.

ARCHITECTURAL DESIGNER: Responsible for minor subdivisions of designs under the direction of the Architect.

ASSISTANT ENGINEER: Responsible for the conduct of the work of a minor subdivision of the organization. Various duties:-in responsible charge of work in each tunnel heading, collecting and compilation of data for specific items of engineering studies; taking immediate charge of field surveys, designs and construction of detail work; laying out and developing work from specifications; supervision of work of the office, drafting, computing, cost-accounting forces, etc.; and conducting specific tests or investigations of apparatus, construction materials or processes. Reports either directly to Resident Engineer or a senior Assistant Engineer.

INSPECTOR: In immediate charge of detail parts of the work under construction, supervising it step by step and submitting detail reports; also inspecting and checking the manufacture of materials of construction. Reports to an Assistant Engineer.

DRAFTSMAN: Under immediate supervision, to prepare working drawings where design is furnished; to plot and prepare maps; to design simple structures; to make computations and to trace and letter maps. Reports to Architect or Assistant Designing Engineer.

JUNIOR ENGINEER: Under supervision, to perform work involving the use of surveying, measuring and drafting instruments; to take charge of parties on survey or construction work; to design details from the sketches or specifications; to compute and compile data for reports and records; to inspect or investigate minor details of the work; and to perform routine tests of apparatus, construction materials or processes.

PHOTOGRAPHER: To take photographs, miscellaneous and record, and take and analyze samples of compressed air in tunnel headings.

ATTENDANT: To perform such work as is necessary in maintaining the field office building in a clean, healthful and orderly condition; to have supervision over the preparation of foods as required by law; and to maintain the field office and its appurtenant baths, toilets, hospital lock and locker room throughout the twenty-four hours of the day.

STENOGRAPHER: To perform the duties usually required of this position, in taking dictation, transcribing to typewriter and performing such clerical duties as he may be called upon from time to time to perform.

CLERK: Under the supervision of the immediate superior, to perform all the duties of a clerical nature as called upon.

SECRETARY TO CHIEF ENGINEER: To perform the duties of a secretary and stenographer under the immediate supervision and direction of the Chief Engineer.

SWITCHBOARD OPERATOR: To operate the telephone switchboard at the General Office of the Engineering Department throughout the twenty-four hours of the day.

FILE CLERK: Under supervision of the Office Engineer, in charge of the files of the Engineering Department, attending to all correspondence, incoming and outgoing, placing record papers in their proper places in the files, and furnishing file service to all members of the organization requiring such records in the preparation of their data, reports and correspondence.

PAGE: To perform duties of a minor clerical character, run errands from the General Office of the Engineering Department, and to relieve the switchboard operator during office hours.

MESSENGER: To perform regular messenger service between the General Office of the Engineering Department and the New York Field Office and the New Jersey Field Office.

CHAUFFEUR: To drive the Commissions' car, on call of the Chief Engineer throughout the twenty-four hours of the day.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

---

Name **George Acker**

Address **at present c/o Lackawanna Bridge Co., Buffalo, N.Y.**  
**will furnish you with new address when I leave here.**

Telephone

Age **45**

U.S.Citizen?

Education **High School**

Experience **Foundry & Structural Shop**

**Have been in the inspection business since 1905, with different concerns and with the Submarine Boat Corporation, Newark Bay Shipyard, Newark, N.J., since November 21st, 1917**

Salary Expected **I am getting \$200.00 dollars per month at the present time and wish to leave the salary question an open one until such time when I would be called upon as salaries will not increase.**

Date **October 7th, 1920.**

**Will send you change of address as often as I should change places**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Albert H. Anderson**

Address **74 Boxford St., Lawrence, Mass.**

Telephone **3043-J**

Age **28**

U.S.Citizen?

Education **Graduate C.E. M. I.T.**

Experience **5 years tunnel work, N.Y. City**  
**1 years survey work, United Fruit Co.**  
**1 year railroad work, location and preliminary Keilhauer**  
**and Rodezho, Guatemala, C.A.**

Salary Expected **\$200.00**

Date **May 2, 1921**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Henry G. Babcock**

Address **Fanwood, N.J.**

Telephone **1486 J. Fanwood**

Age **32**

U.S.Citizen?

Education **C.E. Degree, Columbia, 1908**  
**1915-1917 Work at Union Theol. Semy. N.Y.C.**

Experience **Oct. 1908-April 1909-Asst. in Drawing-Columbia University**  
**May 1909-Jan. 1911 -Hydroelectric Plans & Estimates**  
**Resident Engr. Construction Hydroelectric Plant at High Falls,N.Y.**  
**(Walter S. Morton)**  
**May 1911 Hazen & Whypple - Reservoir survey**  
**June 1911 to Aug. 1911 N.Y.C. & H. R.R.-Computer on earthwork**  
**Sept. 1911 to Feb. 1913-American Smelt. & Ref. Co.,Perth Amboy,N.J.**  
**Outside Engr. on Construction (Plan Enlargement)**  
**June 1915 - Sept. 1915- Public Service Comm. N.Y.C. Subway Cons.**  
**Section Engr. at time resignation.**  
**June 1917-Apr.1919-11th Engrs.(U.S.) France(Water Supply Report**  
**(Weir Constructinn & Meas.**  
**(Bridge Stresses & Rein-**  
**(forcement.**

Salary Expected **\$1800.00**

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Baker, Roy G.**

Address **526 West 151st St., New York City**

Telephone

Age **35**

U.S.Citizen?

Education **B. S. at St. Lawrence University**  
**B.S. IN C. E. at Clarkson College of Engineering**

Experience **One year section engineer on railroad location and construction**  
**Two years as chief of party on construction of barge canal at**  
**Utica, N.Y.**  
**Two years section engineer on construction of elevated railroad**  
**and tracks, New York City**  
**Two years in army**  
**One year first assistant to division engineer, Transit Comm.,**  
**New York City**  
**Two years supervising engineer for contractor**  
**Last salary \$100. per week**

Salary Expected **\$45 per week(up)**

Date **Sept. 26, 1922**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **W. F. Barck**

Address **1122 Hudson St., Hoboken, N.J.**

Telephone **1089 R**

Age **33 yrs.**

U.S.Citizen?

Education **Equivalent to three years of a college course in civil engineering**

Experience **The past 3½ years I held a commission in the United States Army, on active duty as an Engineer Officer. Started as a Second Lt. Engrs., promoted to 1st Lt. Engrs., at end of first training camp. Prepared tables of equipment and supply for special engineer battalions, made survey to complete topographic survey for R.R. terminal and storage yard Montior, France. In charge of the supply (18 depts. 1½ acres of storage) and transportation (120 motor vehicles) service for an organization of 5 battalions, and supervised the building construction including a 200 K.W. power plant and installation of water, sewer and electric light systems, for a plant occupying 5½ acres. Promoted to Capt. Engrs., November, 1918. Directed a service for training of 2500 college students in military engineering, worked on organization, personnel and equipment tables for special engineer units to be organized during 1921.**

**For 8½ yrs. prior to May 1917, I was engaged in municipal and Federal Government surveying and drafting, have been in charge of field and office work.**

**Spent 2 yrs. on building and dock construction as assistant to superintendent, and on subway construction as rod and instrument man, put in lines and levels for excavation work, placing concrete, erection of and checking steel.**

**Recently elected an Assc. M. A. Soc. C.E.**

~~Salary expected~~

Reference **J. P. Hogan, 84 Pine St., City. Tel. John 5434**  
**A. J. Shamberg, 149 Broadway, City.**  
**J. H. Rostock, Asst. Engr., U.S.ENGR.OFFICE, Army Bldg.,**  
**City, Tel Bd. 7500**  
**Maj. E. F. Robinson, H.C., 22nd Engrs., 168th St. & Bway.,**  
**City**

~~DATE~~

Salary expected **\$3,300. a year**

Date **December 29, 1920**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name E. Morgan Barradale

Address 110 Prospect St.- So. Orange, N.J.

Telephone 643-M-So.Orange.

Age 37

U.S.Citizen? Yes.

Education Graduate So. Orange High School - 1903  
" Yale College 1907 B.A.  
" N.J. Law School 1910 L.L.B.  
Summer School - Northwestern University - 1921.

Experience 4-yrs. with Municipal Engineer - So. Orange.  
Admitted to N.J.Bar. Attorney-1910 - Counsellor - 1913.  
Executive Secretary, U.S.Fuel Admin.(N.J.) Nov.1917-Mar.1919.  
Asst. " N.J.Interstate Bridge & Tunnel Comm.1919-1920.  
Secretary " " " " " " 1920-1921.  
" Legislative Comm. for Survey of Municipal Finance 1915-1917.  
Instructor N.J.Law School - 1911-12.

Salary Expected \$6000.-

Date July 1-1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Eric S. Barron**

Address **658 Park Place, Brooklyn, New York**

Telephone **Prospect 4170**

Age **25 years**

U.S. Citizen?

Education **Graduate Polytechnic Institute of Brooklyn  
with Degree of Civil Engineer - June 1922**

Experience **Surveying and Plotting for Mr. J. T. Withers and  
Mr. L. Barron during summer vacations.**

Salary Expected **\$1500. per year**

Date **July 12, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Henry Denton Bastow**

Address **137 Union Ave., Jamaica, N.Y.**

Telephone **546 W. Jamaica**

Age **43**

U.S.Citizen?

Education **High School**

Experience **as photographer (Official) for period of construction of  
job on Penn. R.R. tunnels, North River division (six years)**

Salary Expected **Fifty dollars per week**

Date **July 24th, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Walden C. Beames**

Address **125 - 20th St., Elmhurst, L.I., N.Y.**

Telephone **Havemeyer 3350 - Extension 33**

Age **21 years, 3 months**

U.S.Citizen?

Education **two years college - Union College**

Experience **None excepting college work**

Salary Expected **\$1500.**

Date **Aug. 27, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Ronald M. Beck

Address 46 Nye Ave., Newark, N.J.

Telephone Waverly 4885

Age

U.S. Citizen?

Education Boston polytechnic Institute  
Newark Technical Institute  
Extension Courses

Experience 1 yr. Ford Bacon & Davis Senior Engr. Valuation & Reports  
6 yrs. Public Service Ry. Track layouts, surveys, design, estimates, etc.,  
Caisson Foundation, Compressed Air, Vehicular Tunnel, test piles, bor-  
ings, triangulation and design.  
1½ yrs. Erie Railroad Company. Ch. of Party, Field work and design  
  
1 yr. Louisville Sewerage Comm-Ch. of Party & Asst. Supt., Conc. Sewer  
2½ yrs. Penn. Tunnels and Hudson Manhattan Tunnels, Compressed Air.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name George A. Beckwith

Address 208 Carroll St., Paterson, New Jersey

Telephone Lambert 2077-W

Age 54 yrs.

U.S. Citizen?

Education Graduate Civil Engineer from Columbia College class 1890

Experience Employed by The Paterson Iron Co. of Paterson, N.J. and its successor, The Paterson Iron & Steel Forge Co., till destroyed by fire, 1902. Manufactured heavy marine forgings for ocean liners, forgings from 1000 to 42,000 lbs. being produced, was Manager for five years, John W. Ferguson, Pres., James W. Cooke, Treas., letter enclosed. General Foreman, Ramapa Iron Works, Niagara Falls, N.Y., 8 $\frac{1}{2}$  years. Inspection of castings under my supervision-Geo. R. Huse, Supt., letter enclosed Construction Inspector over eight years with the Passaic Valley Sewerage Commission of New Jersey, supervising the construction of special reinforced concrete structures, pumping station, chambers, etc., installing of large valve castings, detail inspection of all cast iron pipe to 36" dia. 12 ft. long, required for nine river crossing, J. Ralph Van Dyne, Chief Engineer, letter enclosed.

Salary Expected Will accept twenty-one hundred Dollars per year as Inspector of castings at works, with hopes of a concrete inspectorship on retaining walls, etc., when available.

Date February 3, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Oscar F. Bellows**

Address **118 North Allen St., Albany, N.Y.**

Telephone **West 289 R**

Age **45**

U.S.Citizen?

Education **Graduated Brown University, 1895, degree Ph.B.  
After one more year special work, 1896, degree of C.E.  
(Specialized on civil engineering courses throughout)**

Experience **1 year in Pittsburgh Principal Asst. Engr., in charge of drafting room, prelim. design of Canal project.  
3 yrs. in Des. Engr.'s office Rochester on monthly and final estimates, Barge Canal.  
2 years in charge of construction residency 14 miles  
4 million dollars worth of work Barge Canal.  
6 years with U. S. Government in quartermasters department in charge of building construction.  
1 year topographical draftsman U. S. Fish Commission, Washington, D.C.  
3 years with sanitary engineer in Providence.**

Salary Expected **\$3500. per annum**

Date **Can report in 10 days or two weeks after notification, provided am not in Court of Claims at trial of case when there might be a few days delay.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Frank H. Berger**

Address 6919-19th Ave., Brooklyn, N.Y.

Telephone Bensonhurst 8951

Age 42

U.S.Citizen?

Education Pratt Institute, '99, Cooper Union '03 C.E.

Experience Oct.1904-March 1909 - With Public Service Commission of New York City as Rodman and Assistant Engineer, principally engaged in the supervision of the construction of a portion of the New York Subway.

April 1909- Feb.1914 - With New York Board of Water Supply as Assistant and Section Engineer engaged in the supervision of the construction of three miles of the Catskill Aqueduct including a full capacity blow-off one and a half miles long, together with gate chamber and head works, also the making of partial and final estimates, progress reports, keeping cost data, etc.

Apr. 1914 - March 1917 - Resident Engineer with the New York Municipal Railway in charge of construction of Sea Beach Subway and Broadway and Myrtle Avenue elevated line reconstruction.

Mar. 1917- to date -- Office Engineer for the Chile Exploration and Bradon Copper Company, engaged in making up estimates, writing specifications, reviewing tenders, and making recommendations for purchase of all the material involved in the construction and operation of two large copper mining and re-duction plants; also making digests, keeping cost data, and carrying on routine correspondence in connection with the above work.

Salary Expected \$200.00 per month

Date Oct. 17, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Bernhard F. Biemann**

Address **1243 Theriot Ave., Bronx**

Telephone

Age **21**

U.S.Citizen?

Education **Graduate of New York University  
Civil Engineering 1922**

Experience

July 1921 - September 1922	Several Months of summer surveying work
June to September 1921	Acting gang boss - Western Electric Company (Installing Dept.)
1921- 1922	Newspaper writing
June to September, 1920	Salesman

Salary Expected **\$1500.**

Date **September, 26, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
 and  
 NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
 Office of Chief Engineer, Room 614, Hall of Records,  
 New York City.

Name **Nathan Brodell**

Address 190 Hewes St., Brooklyn, NY

Telephone Williamsburgh, 1614

Age 27

U.S.Citizen?

Education Graduate engineer Carnegie Inst. of Tech.  
 4 yr. day course - degree B.S. in Engineering, Pittsburgh, Pa. 1921

Experience 2 years Pennsylvania R.R. Pgh Div. Pgh. Pa.  
 4/4/17-4/1/19 Draftsman, Surveyor, S.O. Klingler, Chief Draftsman  
 In charge of party of 4. Surveyed and plotted all surveys, etc.,  
 in office.  
 1 year Hallinger Consolidated Gold Mines, Timmons, Ont., Can.  
 Underground surveyor, estimate on reserves  
 7/6/21 - 6/1/22 Mr. J. B. Bowry - Supt.  
 Summer vacations spent in surveying for private engineers in Pgh.

Salary Expected \$165.00 per month

Date August 16, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Orrin Lawrence Brodie

Address 56 Crary Ave., Mount Vernon, N.Y. (temporary to Sept. 5th)  
240 Fiske Ave., Staten Island, N.Y. (after Sept. 5th, 1919)

Telephone 889R, Mount Vernon, c/o Hathaway

Age 40

U.S. Citizen?

Education Public School and High School, Pittsburgh, Pa., (Graduate)  
Columbia University, Graduate C.E., 1901

Experience 1894-95 (Summers)-Chainman prelim. Surveys, Pittsburgh Belt Line, R.R.  
1901-1902- Instructor (summer) surveying school, Columbia University  
Then Inspector concrete, masonry walls and abutments, N.Y.C & H. R.R.R.  
surveys in winter.  
1902-1902 - Instrumentman, Pa., N.Y. & L.I.R.R. (Pa. Tunnels) East River  
Section.  
1903-1906 - Asst. Engr. charge of Repairing-Staten Island Streets, Office  
Pres. Borough of Richmond (Bega as Topo. Draftsman)  
1906-1914 Asst. Engr. and Asst. Designing Engr., N.Y. Board of Water  
Supply, mainly in preparation of contract drawings and specifications  
working drawings, etc., for Contracts 3, 9, and 39, respectively,  
Main Dams, Ashokan Reservoir, Kensico Dam and Substitute Supply Works  
and Silver Lake Reservoir and Port of Richmond Conduit. Also on special  
studies, reports, etc., hydraulic and structural. Joint Authority with  
Dr. C.E. Morrison of "Masonry Dam Design" (Wiley)  
1914-1917- Assoc. Efficiency Engr., Efficiency Staff, Commr. of Accts.,  
N.Y. City Studies and installation of work control methods and procedures  
leading to rational system of budget making and estimate economics in  
Departments of Education (Building Bureau) and Street cleaning, mainly.  
1917-1918 - Asst. to Consulting Engr. to Borough President of Manhattan  
Technical and administrative matters.

~~Subsequent Experience~~ March 1918 to July 1919 Engineer in charge of Highways, grading and  
surface drainage, Government Nitrate Plant No. 2 ( Air Nitrates Corp.)  
at Muscle Shoals, Alabama, directed a force in this work aggregating at  
one time 187 men. Released at completion of work.

Date Refer to Messrs.

J. Waldo Smith  
Alfred D. Flinn  
C.E. Gregory

Prof. William H. Burr  
J. R. Mann-51 Chambers St.  
B.F. Welton - 299 Broadway

J.J. Fetherstone-  
New Brighton, S.I.

(over)

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Joseph H. Blum

Address 1235 Webster Ave., Bronx, N.Y.

Telephone

Age 33 yrs.

U.S.Citizen?

Education Public schools 1893-1902. Evening High School 1902-1904  
Cooper Institute of Technology, 1904-1906; Mechanics Inst.  
1906-1909; Teachers College, 1909-11; City College, 1911-13;  
All of my technical training being taken up at evenings.

Experience Started with the Westinghouse, Church, Kerr & Co., during the  
summer of 1905 on the construction of the New York Pennsylvania Terminal  
at 33d St., New York City and remained with them until 1910; when I started  
on this construction, excavation had just been started so I was in line and grade  
party that laid out line during excavation. When excavating was about com-  
pleted, I was made transitman and was in party that had charge of the sub-  
structure work. Summer of 1908 I was given charge of party and looked  
after inspection of materials, etc., In 1909-1910, in the office on struc-  
tural details and office computations. While with the Westinghouse, Church,  
Kerr & Co., I had experience in up-to-date methods of excavation, placing of  
reinforced concrete, layout of conduit pipes, tunnels., etc.

Worked with Mr. W.E. Thompson, P.S.C.  
Mr. M. Fielder, Interborough  
Mr. Geo. W. Armitage, Governor's Is.  
Mr. Wisner, Dock Dept.

Salary Expected \$2100.

Date January 18, 1921

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Ralph M. Burkhalter

Address 25 East 193d St., Bronx, N.Y.

Telephone Tremont 0291

Age 37

U.S.Citizen?

Education Graduate in Civil Engineering at the University of Illinois, 1907

Experience One year Transit man on Western R.R. location prior to 1907

1907 - 1909	Inspector Penna. Tunnels under East River, grouting, shoving shield, iron lining and concreting.
1909 - 1912	Foreman and Asst. Supt., Geo. W. Jackson, Inc., Chicago Washington St. Tunnel under Chicago River and Yonkers Pressure Tunnel of Catskill Aqueduct.
1912 - 1914	Asst. Supt. Alabama Power Co., Power Ho.Constr.
1914 - 1918	Shift Engr. & Resident Engr. Old Slip - Clark St. Tunnel of Dual Subway System, General supervision of construction and alignment at the Old Slip Shaft, N.Y.side
1918 - 1919	Works mgr. Louis L. Brown Co., Concrete Barges for U.S. Navy
1919 - 1921	Office Engr., Estimator Dwight P. Robinson, Inc. Design of Structures, writing specifications, etc.,
1921 - 1922	General Contracting under own name

Salary Expected

Date September 25th, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Joseph E. Candotti**

Address **404 8th Ave.,**

Telephone **Chelsea 7469**

Age **37**

U.S.Citizen?

Education **Technical**

Experience **More than 15 years on Construction Works**

- Litchfield Construction Co., on the Seventh Ave. Subway Work  
(Mr. Goodridge)**
- Interborough Rapid Transit Co., as Asst. Engr.  
(Mr. V. Gronback)**
- Underpinning & Foundation Co. Engineer  
(Mr. Dyckman)**
- Headquarters M. G. T. Center Camp Hancock, Ga. as Droughtsman  
(Col. Kunzig)**

Salary Expected **\$225. per month**

Date **May 14, 1923**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Kenneth K. Clarke**

Address **120 West 57th St., New York City**

Telephone **Circle 2365**

Age **40**

U.S.Citizen?

Education **Graduate of Yale S.S.S. 1900**

Experience **About 4 months on engineer corps  
American Coke Co. Coal Mine Work  
2 yrs. Carter Oil Co., building telephone and telegraph lines  
and work with oil well material  
6 yrs. with Penna. Co., maintenance and construction  
2 yrs. 315th and 112th Engineers  
Mr. William M. Sexton, V.P., China-Japan Trucking Co.,  
Mr. A. M. Schoyer, V.P., Penna Co., Pittsburgh, Pa.  
Mr. Lawrence Maguire, 217 Broadway, N.Y.**

Salary Expected **\$150 per month**

Date **October 9, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Cochrane, Eugene L.

Address 85 Crooke Ave., Brooklyn, N.Y.

Telephone Flatbush 8200

Age 36

U.S. Citizen?

Education Civil Engineering;  
Brooklyn Polytechnic Inst.  
and  
University of Washington

Experience

1903-4 (Secretary to Div. Supt. ) Erie  
(R.R. location & const. Rodman)  
1904-5 Asst. Contract Clerk, Eng. Dept., N.Y. Central  
1905-7 Chief Clerk to Gen. Supt., N.Y.C.Ry.  
1907-15 Sp. Inspector, Mech Dept.)  
" " Opr. " ) B.R.T. Co.  
1915-1916 Student, University Washington  
1916-1917 Draftsman C.M. & St. Pt. Ry., Chicago  
1917-1920 Field Cost. Engr., Turner Const. Co.  
1920 Cost. Engr., J.G. White Engr. Corp., (9 mo.)  
1920 Asst. Engr., Geo. A Fuller Co., (Appraisal Bldgs., Temporary 6 wk)

Salary Expected \$225.

Date November 10, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Morris Cohen**

Address 1676 Prospect Place, Brooklyn, N.Y.

Telephone

Age **21**

U.S.Citizen?

Education Graduate Cornell University, March, 1919

Experience **3 months as rodman for Turner Construction Co.,**  
**3 months as Transitman for Thompson, Starrett Co.**

Salary Expected **\$1200.**

Date **July 2, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Samuel H. Cohen**

Address **17 Gramercy Park, N.Y.C. or  
128 President St., Passaic, N.J.**  
Telephone **passaic 2742**

Age **22**

U.S.Citizen?

Education **Degree of Bachelor of Science in Civil Engineering  
Mass. Institute of Technology, conferred, June, 1922.**

Experience

- June 1916-Sept.1916** Rodman on Municipal Engineering work with A.L. Peterson Civil Engineers, Passaic, N.J.
- June 1918-Sept.1918** Rodman & Timekeeper on railroad maintenance of way work, and also on construction work for Erie R.R. in and about terminal yards at Jersey City, -O.F. Barnes, Div. Engr.
- June 1920-Sept.1920** Transitman and Acting Chief of Party on Municipal Engineering work for Russell S. Wise-Civil Engineer, Passaic, N.J.
- June 1922-Nov.1922** Draftsman for steel fabricating and erection firm Detailing of steel beams, girders, columns and grillages, Harris Structural Steel Co., 1480 Broadway, N.Y.C.
- Nov. 1922-June,1923** Structural Steel Draftsman-Board of Estimate-Tunnel Division N.Y.C., General work, drafting, estimating, computing of stresses, etc. Worked in the Designing office under Mr. J.H. Quimby, Designing Engr.

Salary Expected **\$1800. per annum**

Date **July 2, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Milton K. Cohn**

Address **514 West 152nd St., New York City**

Telephone **Audubon 2570, Apt.#9**

Age **27**

U.S.Citizen?

Education **graduated from elementary school #70, N.Y.C.  
graduated from Hebrew Technical Institute 1911  
where I pursued a course in mathematics, then  
I pursued a course in Structural Steel Drawing  
at Cooper Union.**

Experience

May 1911 to Oct. 1911	A.M. Feldman, 120 Liberty St., N.Y.C. Cons.Engr.,-Draftsman
Nov.1911 to Jan. 1912	Raisler Heating Co., Amsterdam Ave. & 66th St., Engineers and Contractors, Draftsman
Jan.1912 to Jan.1912	Hudson Structural Steel Co., 136 St. Southern Blvd., Draftsman
Mar.1913 to Feb.1914	Public Service Commission, Structural Steel Draftsman
Jan.1915 to Feb.1916	Bridgeport Arms & Ammunition Co., Draftsman
Feb.1916 to Dec.1916	Gould Storage Battery Co., 30 E. 42nd St., Draftsman
Dec.1916 to Oct.1917	Purdy & Henderson, Engrs. 45 E. 17th St., Engr. Draftsman
Oct.1917 to July 1919	Bureau Yards & Docks, Navy Dept., Washington D.C., Structural Draftsman

Salary Expected **\$1800. per year**

Date **October 19, 1920**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Charles L. Crandall**

Address **412 East 170th St., New York City**

Telephone

Age **30**

U.S.Citizen?

Education **Graduate Grammar and High Schools at Schuylerville, N.Y.  
Graduate with degree of B.S. in C.E. at Rutgers College, 1915**

Experience **March 6th, 1916 to date with P.S.C. 1st Dist., N.Y.  
and R.T.C.C. N.Y., on Alignment and Inspection in  
connection with East River Tunnels**

Salary Expected **\$1800 per annum**

Date **October 21, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Herbert Graves Cruthers**

Address **144 Main St., Ridgefield Park, N.J.**

Telephone **Hackensack 2321-R**

Age **28**

U.S.Citizen?

Education **Stevens School, 1907-1911; graduate technical course  
Stevens Institute of Technology, 1911-1915 graduated  
with degree of Mechanical Engineer**

Experience **Summer vacations 1912-13-14 County Engineer's Office, Bergen County;  
Rodman and Transitman  
June 1915 to Jan. 1916 - Transitman on preliminary survey and con-  
struction of highways, County Engineer's Office, Bergen County,  
N.J.  
Jan. 1916 to June 1916; United Piece & Dye Works, Lodi, N.J. as  
Mechanical Engineer, doing power plant and efficiency  
engineering.  
June 1916 to present time County Engineer's Office,  
Bergen County, as transitman, draughtsman, Assistant  
Chief to Chief of Party on bridge and highway con-  
struction, designing reinforced concrete and structural  
steel.  
March 1918 to February 1919 in service U.S. Naval Flying Corps.,  
as Motor Tester and in experimental design division.**

Salary Expected **\$2400. per annum**

Date **August 25, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Michael Cunningham**

Address **131 West 122d St., N.Y.C.**

Telephone **1718 Lenox**

Age **51**

U.S. Citizen?

Education

Experience **U.S. GOVERNMENT Laborer**

**Major Kelley**

**Malcom's Music School  
131 West 122nd St.**

Salary Expected

Date **December 13, 1922**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Thomas Darrow**

Address **58 North 3d St., Newark, N.J.**

Telephone **Branch Brook 7579**

Age **40 yrs.**

U.S.Citizen?

Education **Union College, one year**

Experience **10 yrs. Tunnel Construction with N.Y. B.W.S and N.Y. P.S.C.**  
**About 8 yrs. experience on General Engineering Construction work**

Salary Expected **Min. \$200. per month plus bonus for Comp. Air**

Date **November 6, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Davis, A.C.**

Address **50 Martense St., Brooklyn, N.Y.**

Telephone **Flatbush 1857 W**

Age **38**

U.S.Citizen?

Education **Cornell University**

Experience **4 yrs. City and Land Surveying  
4 yrs. Tunnel and Subway Const., Asst. Engr., Field and Office  
6 yrs. Design and erection of miscellaneous machinery  
2 yrs. Asst. Manager in charge of production of Iron Works Co.  
1 yr. Chief Inspection Engineer in charge of inspection and  
engineering for chemical plant.**

Salary Expected **\$3600. per year.**

Date **August 1st, 1919**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name H. George Decancq

Address 311 Elm St., West Hoboken, N.J.

Telephone

Age 22

U.S.Citizen?

Education West Hoboken grammar and high school  
Completed course at Tri-State College of Angola, Ind.,  
leading to degree of B.S. in C.E.

Experience In surveying:

Assisted in tutoring plane surveying class in Spring term, 1922  
3 months, March, April, May  
About 6 months county work - Jan. to July, 1922  
About 10 months with the Baltimore & Ohio R.R. Co.  
With B & O from Sept. 1922 to Aug. 1923  
Mr. F.W. Reynolds, Store Keeper, Garrett, Ind.

References:

Prof. Niehaus, Angola, Ind.  
Mr. Fred Hubble, County Surveyor, Angola, Ind.  
Wm. McDonald, c/o County Engr., North Bergen, N.J.  
Jack Croxton, Angola, Ind.  
E.C. Burkman, 1790 Bway., N.Y.C., c/o U.S. Rubber Co.

Salary Expected

Date August 31, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Frank P. Derham**

Address **327 Kerrigan Ave., West Hoboken, N.J.**

Telephone

Age **28 yrs.**

U.S. Citizen?

Education **Grammar-Commercial-2 yrs. High School. Seton Hall, South Orange, N.J.  
September 1911 to 1913**

Experience **Tobin & Shannon, J.C. Stock Yards, Stenographer, June, 1911-Sept. 1911  
Erie R.R. Co., New York, Clerk and Stenographer, 1914-1918  
U.S. Army Transport Service, Hoboken, N.J., Asst. Purchasing Agent ) 1919-20  
and Stenographer )  
Gaston Williams & Wigmore, Cable Clerk and Stenographer, Mar. 1920-Dec. 1920  
D. L. & W. R.R. Co., Hoboken, N.J. Cost Clerk, Engineering Dept., 1920-22  
M. V. Murtha, Contractor, Hoboken, N.J., Bookkeeper and Stenographer 1922-23**

Salary Expected **\$1500.**

Date **May 3, 1923.**

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APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name J. N. Dodd

Address 185 - 82d St., Brooklyn, N.Y.

Telephone Sunset 5144

Age 48

U.S.Citizen?

Education Princeton A.B., 1893, A.M., 1894  
Specialized in advanced physics and mathematics  
Won fellowship in mathematics

Experience

Two years teaching (one in college)  
Twelve years design and manufacture of electrical machinery.  
This included general work such as studies on electrification  
of steam roads, one of electricity for mine hoists, for rolling  
mills, etc.,  
For seven years was in responsible charge of large work  
Eleven years Public Service Commission, New York City  
Electrical Engineer in charge of equipment plans for new rapid  
transit lines.

Salary Expected \$6000.

Date October 11. 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Louise Ducksten

Address 137 West 49th St., N.Y.C.

Telephone Circle 9389

Age 33

U.S.Citizen?

Education Graduate Central High School, (academic course) Washington, D.C.

Experience Two years - U.S. Government, Washington, D.C.

One year - Erie Railroad, N.Y.C.

Two years, Consolidated Steel Corp., N.Y.C.

Salary Expected \$1500. per year

Date November 24, 1922

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name James H. Dugan

Address 124 Lexington Ave., N.Y.C.

Telephone

Age 35 years

U.S.Citizen?

Education Rcnsselaer poly. Inst., C.E., 1907

Experience

- 1907-1909 McClintic Marshall Co., Pittsburgh, Structural Work
- 1909-1911 Trussed Conc. Steel Co., Structural Design
- 1911-1912 Barge Canal, Designing Bridge Work
- 1912-1920 Public Service Commission, designing bridge work, designing subway and elevated.

Salary Expected \$3000.

Date July 9, 1920

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APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Bion E. Dyer**

Address **936 Morris Ave., N.Y.C.**

Telephone **Melrose 6239 c/o Peterson**

Age **43**

U.S.Citizen?

Education **Public Schools, Calais, Maine**  
**Int. Correspondence Schools, Scranton**

Experience

**3½ yrs. Inspector & Asst. Engr., Board of Water Supply**  
**4 " Inspector, Dept. of Public Works, N.Y.C.**  
**1½ yrs. Asst. Engr., Water Dept., Cleveland, Ohio.**  
**About 1 yr. Rodman, Hudson Tunnels, N.Y.City**  
**" " " Inspector, Astoria " , Astoria, L.I.**  
**1½ yrs. Transitman, Jones & Laughlin, Steel Co., Pittsburgh.**

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **George Howard Eckerson**

Address **Harrington Park, N.J.**

Telephone -----

Age **33**

U.S.Citizen?

Education **International Corr. School**

Experience **Four years as Rodman and Transitman, Pennsylvania Terminal  
Worked for Westinghouse Church under Mr. J. H. O'Brien,  
Six years Catskill Aqueduct, running transit and inspecting.  
Southerin and City Aqueduct depts. Mr. Chas. Clark  
Mr. White & Mr. Sanborn, Div. Engrs., Four years  
Newburgh Shipyards, Mr. T.C. Desmond, #26 Beaver St., N.Y.C.  
At present working for Moran Maurice and Proctor Caisson & survey work**

Salary Expected -----

Date -----

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name John H. Eggers

Address 247 St. Pauls Ave., Jersey City, N.J.

Telephone

Age 51

U.S.Citizen?

Education Public School

Experience Shipping clerk for Nemaure Corp., from July 1919 to Aug. 1920  
Storekeeper for Suiger Mfg. Co., Elizabethport, N.J.  
Ordnanace Dept., J.C. Quick, Supt., from March 1918 to June, 1919.  
Own business from 1920 to date

Salary Expected

Date 8/29/22

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Maurice A. Eisenstadt**

Address **1051 Union Ave., Bronx, N.Y.**

Telephone **Intervale 5922**

Age **26**

U.S.Citizen?

Education **3 yrs. Grammar School**  
**3 yrs. Prep. Tech. Grad. 1915**  
**6 yrs. Engrg. Cooper Union (night) B.S. degree**

Experience **8 yrs. Exp. Electrical Engrg.**

May 1915-1917 **Hanan Engrg. Co., Firm dissolved in 1917 Now J.C. Wunsch, Engrs.,**  
**Draftsman on general industrial plant engrg. 302 MacDougal St.,**  
**Brooklyn, N.Y.**

1917-1917 **General Electric Co., Schenectady, N.Y.**  
**Switchboards, wiring, diagrams, etc.**

1917-1919 **Callophone Co. of New York - ref. N. A. Kurman, 151 Grand St.**

1919-present **Henry R. Kent & Co., Rutherford N.J.**  
**in charge of electrical design of Power Plants**  
**industrial plant electrification, installations,**  
**transmission, lighting, power wiring, conduit**  
**systems, etc., At present in this latter concern's**  
**present employ. Mr. Robert E. Morse, Elect. Engr.**  
**Mr. Charles N. White, Chief Draftsman.**

Salary Expected **\$300. per month**

Date **Jan. 29, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Durwood X. Ellett**

Address **30 Tennessee Ave., Danville, Ill.**

Telephone **2466-W**

Age **25**

U.S.Citizen?

Education **Graduate from the University of Illinois with degree of B.S. in Architectural Engineering. My work in the University has covered: Architectural Design, Graphic Statics, Heating and ventilation, steel and reinforced concrete construction.**

Experience **Have assisted with research work under Professors A. N. Talbot and F. E. Richart, pertaining to the estimation and strength of concrete and the proportioning of mortar.**

References: **Prof. A. C. Willard, 203 M.E.Laboratory, Urbana, Ill.  
Prof. L. H. Provine, 306 Engineering Hall, Urbana, Ill.  
Prof. C. E. Palmer, 401 Engineering Hall, Urbana, Ill.**

Salary Expected **\$1500. per year**

Date **June 1, 1923**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Elliott, Everett R.,

Address 923 East 26th St., Brooklyn, N.Y.

Telephone Midwood 7498

Age 19 yrs.

U.S.Citizen? yes

Education I am completing a four year high school course.

Experience

Salary Expected \$75.00 per month

Date June 6, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **H. S. Ertner**

Address **Taylor Hall, Bethlehem, Pa.**

Telephone **Bell system 2006**

Age **24**

U.S.Citizen?

Education **Civil Engineering course, Lehigh University**

Experience

- Summer 1919 - New York Ship Building Corp., - Ship fitter's helper
- " 1920 - " " " " " - Ship fitter
- " 1922 - Du Pont Engineering Co. - Concrete work on the North  
East Sewage Disposal Plant, Phila., Pa.

Salary Expected **\$125. to \$150 per month**

Date **May 28th, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Alfred Jones Faulkner

Address 137 Pearsall Ave., Jersey City, N.J.

Telephone Bergen 4073

Age 36

U.S.Citizen?

Education High School and Commercial course in Mossey Bus. College, Richmond, Va.

Experience Seven years with Dupont Co., Wilmington, Del., as Supervisor of Labor and transportation in Hopewell, Pa., Plant and Arlington, N.J. plant, 100 to 150 men.

Seven months with Passaic Valley and Sewer Commission, Newark, N.J. as Junior Engineer in 12' Concrete Tunnel.

Salary Expected Present rate \$218.75 would consider a position that paid \$2600.

Date August 9th, 1923.

Mr. Seth Peterson, 46 Gates Ave., Jersey City, Tel. Bergen 4341  
Mr. Jos. T. Wendelkin, Arlington, N.J., Tel. Kearny 0965

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **James C. Fisher, Jr.**

Address **28 Hendrickson Ave., Rockville Centre, L.I.**

Telephone **494 W. Rockville Centre**

Age **19 yrs.**

U.S.Citizen?

Education **Graduate of South Side High School, Rockville Centre, L.I.  
One year student at Polytechnic Institute, Bklyn.  
Present time evening student at same institute studying Civil Engrg.**

Experience

**Six months practical experience with United States Engineers (Field Work)  
References M. F. R. Andrews, Civil Engineer and City Surveyor,  
17 Margaret St., Great Kills, S.I.**

**Mr. H. Tibby, Jr. Engr., 1st Dist., U.S.E.D., 39 Whitehall St., N.Y.  
Have had experience in transit work, stadia, leveling, plotting  
and computations.**

Salary Expected **\$1200. per year**

Date **April 12, 1921**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Daniel E. Foley

Address 338 East 52nd St.

Telephone Plaza 8234

Age 22

U.S.Citizen?

Education C. E. Manhattan College, 1922

Experience Six months farm surveying in P.R.

Salary Expected \$1500. per year

Date July 2, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Elmer B. Fontaine**

Address **50 Morningside Drive, Apt. 24, N.Y.C.**

Telephone **Cathedral 7770**

Age **25**

U.S.Citizen?

Education **B. S. in C. E. University of Michigan, Grad. 1922**

Experience

- 1917-1918 J. B. Ford Co., laboring (9 mos.)
  - 1918 (6 mos.) Great Lakes Eng. Wks., store room
  - 1919 (3 mos.) J. B. Ford Co., laboring
  - 1920 (3 mos.) Great Lakes Eng. Wks., Electrician
  - 1922 (3 mos.) Ford Motor Co., Instrumentman on railroad survey party
- Above jobs were held after graduation from High School and during vacations while attending University.

Salary Expected \$---

Date **10/11/22**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Francis B. Foster**

Address **Harvard Union, Cambridge, Mass.**

Telephone **University 7600**

Age **27**

U.S.Citizen?

Education **Harvard College, A.B. Harvard Engineering School, S.B.**

Experience

**2 yrs. Army Air Service, 18 months at Pacific Mills, Lawrence, Mass.**

**2 yrs. graduate manager, Harvard Union**

Salary Expected

Date **May 25, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **William H. Francisco**

Address **3136 Broadway**

Telephone **Morningside 7048**

Age **30**

U.S.Citizen?

Education **2 yrs. Lafayette College, C.E. Course**

Experience

- Jan. 1919 Asst. Engr. Wire Coal & Coke Co., Field & Office, July 1920
- Aug. 1920 Draughting H. L. Doherty Co., June 1921
- June 1921 U.S.Shipping Board, Asst. head of appraisals, Hog Is.Aug.1921

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Milton H. Freeman**

Address **Valhalla, N.Y.**

Telephone **White Plains, 722 M**

Age **47**

U.S.Citizen?

Education **B. S. in C.E. University of Michigan 1903**

Experience

- 1903-1905 Asst.Engr. Mich. Cent.R.R., Location, double tracking, maintenance of way work
- 1905-1909 Inspector and Asst. Engr. on Penn. Tunnels under East River
- 1909-1914 With Board of Water Supply - New York City, as follows
  - 1909-1910 Inspector rock driven tunnels Rondout Siphon
  - 1910-1911 Asst. Engr. concrete lining in pressure tunnel Rondout Siphon
  - 1911-1914 Sect. Engr. " " and grouting in pressure tunnel Rondout S.
  - 1914-Sept.1914 Sect.Engr. experimental work of Narros, Siphon
- 1914-1919 With Public Service Commission of the First District, as follows
  - 1914-1916 Res. Engr., Old Slip-Clark St. Tunnels, until completion of excavation
  - 1916-1918 " " of entire River section 60th St. tunnels until completion of excavation.
  - 1918-July 1919 Res. Engr. Manhattan Shaft, 14th St. Tunnels.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Frank L. Fuller**

Address **225 Schermohorn St., Brooklyn, N.Y.**

Telephone

Age **34**

U.S. Citizen?

Education **3 yrs. high school, Completed 90% of an International Correspondence course ( Stresses, hydraulics, steel, plain and reinforced concrete) railroads, highways, bridges, etc., - Results - passed Axeman, rodman, chainman, junior asst. & junior engr., passed leveller, assistant engineer (highways) and assistant engineer Gr. 8 P.S.C. Summary tried 11 examinations, passed 11 Was offered 10 appointments and accepted 9**

Experience

May 1909-March 1914 N.Y. State Highway Dept.

May 1909-April 1912, axeman, chainman, rodman, duties, inspector on highway construction and rodman on surveys

April 1912-March 1914 Leveler & Asst. Engr. in charge of surveys 4 to 5 assistants and engineer in charge of highway construction, macadam, brick, concrete, concrete curb, culverts, bridges, etc., At one time had charge of contracts amounting to \$200,000.00, including compiling, signing of monthly estimates and also final estimates and making final surveys.

March 1914 -Sept. 1915 Private surveys, building construction, etc.

Sept. 1915 - Sept. 1918 Tunnel Division P.S.C. Compress air tunnel work, Inspector at Clark St. & 59th St. shafts under Mr. Freeman, Mr. Coe and Mr. Thompson

Shift Engineer about 18 months under Mr. Coe at Clark St. and Mr. Griffin at N. 7th, all pressures 0 to 48 lb.

Sept. 1918-May 1920 Sewer Construction, U. S. Army Engineers, shipbuilding, etc.

May 1920 - March 1923 N. Y. State Highway Dept., Engineer-in-charge of a \$263,500. road contract, supervision of 1 to 3 assistants, signing of monthly estimates, etc.

Salary Expected **\$200. per month, plus bonus**

Date **March 8th, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Charles Strong Galbraith**

Address **352 West 14th St.**

Telephone **Longacre 7100 Ext. 96**

Age **39**

U.S.Citizen? **Intention declared 6/6/17 - technicalities only prevented  
"completion" Jan., 1923.**

Education

**Master of Civil Engineering - "Honors," & "Scholar"  
University of Melbourne, Australia.  
Ex.Assoc.Institution Civil Engineers London  
Member Inst. M. & M. Engrs. New York.  
Licensed Municipal Engineer for New South Wales.**

Experience

**Eighteen years mainly construction both designs & field work.  
Victorian Railway Department 1902-3.  
Sydney Harbor Trust - Asst.Engr. 1908-11.  
Melbourne " " " " 1912-15.  
Port of London Authority " " 1919-20.  
Engr. Contractors Cataract Dam N.S.W. 1905-6  
Supt. St. Louis Smelting & Refining Co., Miami,Okla.,  
Jan.-Aug.1917**

References: **Messrs.J.Vipond Davies, 30 Church St.  
C.M.Hudson, 15 Park Row  
Whyte Pittsburgh Spring Steel Co.,70 E. 44th St.  
Henry Moir,Esq., U.S.Insurance Co., 105 Fifth Ave.**

Salary Expected

Date **Sept.25,1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Luciano A. Galimpin**

Address **26 S. Edwards Hall, Princeton, N.J.**

Telephone **none**

Age **26**

U.S.Citizen?

Education **Silliman Inst.**

**Civil Engineer, Princeton University**

Experience **Practically none, aside from the tunnel design we took in class this year.**

**Worked as Mechanic's helper one summer;  
as plumber's helper the next;  
and as transit man in a land survey last summer**

Salary Expected **To be within the limits offered**

Date **June 18, 1923.**

J.R.

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APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Patrick T. Gillespie

Address 1508 Lexington Ave., N.Y.C.

Telephone

Age 54

U.S. Citizen?

Education Grammar school

Experience Coal Mines, Scranton, 1889

Worked for Addyston Pipe & Steel Co., 8 yrs. making cast iron pipe in Addyston, Ohio. From 1889 to 1899, worked for the New York City railroad handling motors and overhauling in street cars.

Salary Expected

Date December 31, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Charles S. Gleim**

Address **411 Prospect St., Westfield, N.J.**

Telephone **Westfield 47 J**

Age **32**

U.S.Citizen?

Education **DeWitt Clinton High School**  
**Columbia College, Civil Engineering**

Experience

- 1905-1911 **Jacobs & Davies, Const. of Hudson and Manhattan tunnels.  
Chainman to Chief of Party and Chief Inspector**
- 1911-1912 **Erie R.R. Resident Engr. in charge of section of double tracking  
and regrading - Ohio**
- 1913 -6mos. **Jacobs & Davies - Asst. Engr., tunnel construction in Mexico - in  
charge of construction of four tunnels**
- 1913- 6mos. **W. J. Wilgus - Section Engineer on valuation of Lehigh Valley R.R.**
- 1914-1917 **Public Service Comm. N.Y. - Junior Engr. on East River Tunnels  
Had charge of alignment surveys, assistant to Resident Engineer.**
- 1917-1919 **Captain and Major- U. S. Army and Coast Artillery Corps.,  
Service in France with heavy artillery.**

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **William Gould**

Address **554 First St., Hoboken, N.J.**

Telephone **Hoboken 766**

Age **23**

U.S.Citizen?

Education **Graduate of Stevens Tech. as a Mechanical Engr.**

Experience

9 months assembly work on U. S. Navy gunsight telescopes for Keuffel and Esser Company of Hoboken, N.J. from April 1918 to September 1918

On graduation from Stevens in June, 1922 spent two months testing electrical motors, generators and blowers for the Diehl Mfg. Co., of Elizabethport. Resigned to go with the Safety Insulated Wire and Cable Co., of Bayonne, N.J. in charge of their power plant maintenance.

May refer to Prof. Pond of Stevens Tech. regarding character, etc.

Salary Expected **\$1350.**

Date **1/13/23**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Clarence M. Gregg**

Address **608 Crane St., Schenectady, N.Y.**

Telephone

Age **26**

U.S.Citizen?

Education **Elementary schools, Schenectady High School, Union College,  
Civil Engineering, 1923.**

Experience

**None outside of school**

Salary Expected **\$1500. per year.**

Date **July 7, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Theodore Griffin

Address 197 Pearl St., N.Y.C.

Telephone

Age 15

U.S.Citizen?

Education Grammar school

Experience Messenger

Salary Expected \$15.

Date Oct. 16, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Sidney Franklyn Greenhalgh

Address Avenel, N.J.

Telephone Rahway 219 R

Age 21

U.S.Citizen?

Education Graduate of Rensselaer Polytechnic Inst. with degree of C.E. 1918

Experience

Draftsman in the Engineering Dept. of the Steel Equipment Corp., of Avenel, N.J

Draftsman in the Engineering Dept. of James Stewart & Co., Inc.,  
General Contractors, 30 Church St., New York City

Salary Expected \$30. per week, to start

Date Oct. 22, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Christian A. Guldberg**

Address **67 North Willow St., Montclair, N.J.**

Telephone **Montclair 7239**

Age **44 yrs.**

U.S.Citizen?

Education **Royal Technical Institute of Krishainia, Norway.  
Registered Architect with the University of the State of New York  
Certificate No. 1292 June 30, 1917**

Experience

**20 yrs. experience in New York State and one year in New Jersey**

**Have been with the following firm of architects:**

**Albert E. Parfitt, Renwick, Aspinwall & Tucker  
Cron, Lewis & Wick, Clinton & Russell, Louis A. Gallade,  
Alfred Freeman, Johnson & Ford, Guilbert & Betelle.**

Salary Expected **\$275.00 per month**

Date **May 10, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Homer H. Haggard**

Address **77 Ross Ave., Hackensack, N.J.**

Telephone **Hackensack 879 W**

Age **44**

U.S.Citizen?

Education **B. S. in C. E. Missouri University 1905**

**C. E. " " 1908**

Experience

**Penn. Tunnels under East River 1905-09**

**With Cuban Engineering & Contracting Co. on  
Havana Sewer & Water Works 1909-1917**

**T. A. Gillespie Loading Company 1918-1919**

**Macaday Building Corp. 1919 to present**

Salary Expected

Date **April 10, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Emerson C. Hallock

Address 58 Park Circle, White Plains, N.Y.

Telephone 476 J

Age 26

U.S.Citizen?

Education Grammar School  
I. C. S. Course Municipal Engr., Attending Trigonometry West Side Y.M.C.A.

Experience 6½ yrs. B. W. S. City New York  
4 mos. P. S. Comm. Junior Assistant  
2 yrs. U. S. S. Board Inspector  
Acted as Transitman and Chief of Party  
Calculating Monthly and Final Est.  
Inspecting concrete and hulls  
Refer to Mr. Coe and Mr. Brown, P. S. Comm.  
Mr. Marshall, c/o Mallory S.S. Co. 11 Broadway, N.Y.C.

Salary Expected

Date November 30, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name G. Arthur Hansen

Address 100 Cottage St., Jersey City, N.J.

Telephone Montgomery 4974

Age 22

U.S.Citizen?

Education Graduate Dickinson High School, Jersey City, N.J. 1917

Attending New York University, School of Commerce Accounts & Finance

Experience

Timekeeper - Dailey and Ivins, Contractors, N.Y.C. June 1917-March 1918

Clerk Theo. Smith & Sons, Jersey City, N.J. March 1918 - Sept. 1918

Clerk Wm. M. Crane Co., Jersey City, N.J. Jan. 1919 - Jan. 1920

Clerk Nestles Food Co., N.Y.C. Jan. 1920 - June 1920

Timekeeper Stillman Delshanty Ferris Co., Contractors, Jersey City, N.J.  
June 1920-December 1920

Salary Expected \$1200.

Date 8/5/21

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Horace A. Hastings

Address 115 Central Ave., Tompkinsville, S.I.

Telephone

Age 25

U.S.Citizen?

Education High School, Night course Steno. & Shorthand

Experience 5 yrs. with Dairns, Abbott & Clinton, Attorneys

2 yrs. with United States Navy

6 months Bankers Trust Co., Bookkeeping

Salary Expected \$1200.

Date July 23, 1919

62

97

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Philip L. Hazard

Address 594 Pavonia Ave., Jersey City, N.J.

Telephone

Age 32

U.S.Citizen?

Education 4 yrs. Civil Engineering Course at State University of Iowa, B.E. 1922

Experience 1915-1919 Tunnel Division, P.S.C., N.Y. Old Slip & 14th St. Tunnels  
1919-1921 Highway Engineer, Faribault, Minn.  
1921-1922 Highway Engineer, Princeton, Ill.

Salary Expected

Date *1/2/22*

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Peter E. Helms

Address 418 Market St., Pottsville, Pa.

Telephone Bell 327 Dr. Burke

Age 47

U.S.Citizen?

Education High School, Business School, Franklin Inst.

Experience

- 1901-1906 Pencoed Iron Works (American Bridge Co.,) Pencoed, Pa.  
Testing and Inspecting Structural material (A.H. Wartman, Chief)
- 1906-1907 Hudson Co. ( Jacobs and Davies) Church & Duane Sts., N.Y.C.  
Shop and Mill inspection, Hudson Bldg., New York (Geo. W. Snyder, Prin.Asst. Engr.)
- 1907-1908 Harry MacDonald, Harrisburgh, Pa.  
Shop inspection, Sharon, Pa., Lapwelded pipe.
- 1908- 10 R. W. Hunt and Co., Phila. district  
Foundry inspection, New Castle, Del. (M. E. Fife, Chief)
- 1910- 12 R. W. Hunt and Co., Pittsburgh, Pa.  
Mills, shop, foundry inspection including mis'c. such as pipe (cast iron - cast steel) lap and buttwelded pipe, boiler, tubes, tanks, galvanized wire, barbed wire, cement, paving blocks, rubber and steam hose. (H. W. Parker, Chief)
- 1912- 13 R. W. Hunt and Co., Youngstown district  
Chief of the district for materials of all description (H.W. Parker, Chief)
- 1913 -17 Public Service Commission, State of New York  
Under Civil Service Commission, an examination was held in different cities passed second on the list and was appointed to the Phila. district, George L. Lucas, Div. Engr., 49, Lafayette St., N.Y.C., Chief  
~~Salary Expected~~ Shop - Mill-Foundry-Rails and miscellaneous inspection
- 1917-1921 American Bureau of Shipping 50 Beaver St., N.Y.C.  
Mill, Foundry, Steel and Iron, mis'c., such as chain of all description anchors, manganese propellors, marine, boiler, flange, hull, plates, forgings, (steel, nickel and chrome) Capt. McAllister, V.P., Stevenson Taylor, P

Date

date 4/14/22

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Horst H. Hempel**

Address **466 Marlborough Road, Brooklyn, N.Y.**

Telephone **Mansfield 9368**

Age **32**

U.S.Citizen? **First papers**

Education **High School & Commercial College**

**Had my own business, malt - grain.  
Import & Export**

Experience **12 years**

Salary Expected

Date **Sept. 14, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Fred B. Hulso**

Address **312 Ardmore Ave., Trenton , N.J.**

Telephone

Age **30**

U.S.Citizen?

Education **High School, Business College, Amer. School of Corres., Structural Drafting**

Experience

**A Bridge Company 1907 to 1911**

**Inspector of Steel 1911 to 1914**

**Panama Canal Comm., 1914 to 1917**

**N.Y. State Public Service Comm.**

**1918 and 1919 Merchant Shipbuilding Corp., Hull inspector on fabricated steel**

**1920 Sales Engr., Lakewood Engrg. Co., 141-149 Centre St., N.Y.C.**

Salary Expected

Date

*3/15/21*

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Clifford M. Holland

Address 2416 Avenue J., Flatbush, Brooklyn

Telephone Midwood 4652

Age 36

U.S.Citizen?

Education Graduate of Harvard University Degrees - A.B. 1905 and S. B. in  
Civil Engineering 1906

Experience June 1906 to date SUBWAY AND TUNNEL WORK IN NEW YORK CITY

1906-1908 Assistant Engineer in charge of alignment on construction of Battery-Joralemon St.- East River Tunnels.

1908-1911 Estimates and reports on claims in connection with Battery-Joralemon St. Tunnels and special studies for design, specifications and construction of subaqueous tunnels.

1911-1912 Assistant Engineer on surveys and construction of 4th Avenue Subway.

1912-1914 Engaged on designs, specifications, borings and surveys for Whitehall-Montague St. and Old Slip-Clark St. Tunnels under East River.

1914-date IN CHARGE OF CONSTRUCTION OF 8 TUNNELS UNDER THE EAST RIVER - 1914-1915 ACTING TUNNEL ENGINEER AND 1915 to DATE TUNNEL ENGINEER IN FULL CHARGE OF ALL SUBAQUEOUS TUNNEL WORK. This work includes the construction of the Whitehall-Montague St., Old Slip-Clark St., East River and approach tunnels in Brooklyn - contract value approximately \$15,500,000; the 14th St.-North 7th St.-East River Tunnels - contract value approximately \$6,600,000; and the 60th St.-East River Tunnels - approximate value \$4,200,000.-total value of work approximately \$26,000,000. These contracts have involved driving 12 soft ground tunnels with tunnel shields sinking 8 caissons in soft ground, 2 shafts in rock, driving rock and soft ground tunnels by the ordinary

~~Salary Expected~~

Date

(over)

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **Elmer P. Hubschmitt**

Address 124 Trenton Ave., Clifton, N.J.

Telephone Lambert 2552 W

Age 22

U.S.Citizen?

Education Paterson High School

New York University, Graduate, C.E., 1922

Experience The following are summer positions:

East Jersey Pipe Corp., Paterson, N.J.	June 1, 1918 to Oct. 1, 1918 Inspector of Munitions, salary \$30.
Irving Iron Works, 3d & Creek Sts., L.I.C.	June 1, 1920 to Oct. 1, 1920 Draftsman and Designer on light structural steel, salary \$35.
J. Rucolphy, 57th St. & Lexington Ave., N.Y.C.	June 1, 1921 to Oct. 1, 1921 (Drafting City Surveying (Computations (Field Work salary \$30.

Salary Expected \$35.00 to \$40.00

Date June 28th, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Joseph C. Imhoff

Address 130 Bostwick Ave., Jersey City, N.J.

Telephone

Age 36

U.S. Citizen?

Education Special studies in Architectural and structural design, Columbia Univ.

#### Experience

During 1903 I was engaged as Draftsman in the Engineering Department of the Lehigh Valley Railroad Co., under Mr. Walter G. Berg, Chief Engineer, on plans for shops, yard maps and station buildings.

During 1904, I was engaged as Draftsman in the Engineering Dept. of the D. L. & W. R.R. Co., under Mr. A. L. Bush, Chief Engineer, on plans for terminal shops, passenger stations and miscellaneous buildings.

From 1905 to 1909 I was engaged as Draftsman and Checker in the office of Engineer of Bridges and Buildings, Mr. Mason R. Strong and Frank A. Howard, Engineers of B & O. Designs were prepared for all types of railroad structures for locations between New York and Chicago. Those of local interest are extension to Pier No. 7 East River, extension to Piers 20 and 21, North River, plans for proposed New Ferry House at Chambers St., plans for underground Waiting Room in Jersey City for connection with Hudson and Manhattan Tubes.

During 1909 and 1910 I was located in the Engineering Department of the New York Edison Co. as Draftsman, on plans for several of their Generating Stations and Sub-Stations; alterations and additions to Waterside Stations Nos. 1 and 2, and a 60 ft. span bridge connecting stations for high-tension and switch-board control over East 39th St. All this work was first-class and located in New York City.

During 1911 and 1912 I was with Westinghouse, Church, Kerr & Co. in New York City, as engineering draftsman and Chief Draftsman of the Architectural Department. A few of the many projects developed in this office, upon which the writer was engaged, are as follows:

	Generating Station for N.Y., N.H., & H. R.R. Co. at Cos Cob, Conn.
	" " for Detroit Edison Co., at Delroy, Mich.
Date	" " for Jordan Steam Station, Salt Lake City, U.
	" " for Meriden, Conn. Electric Lt. & Power Co.
	Engine Houses for B & O R.R. Co. at Garrett & Cumberland
	Eliminations of Grades at Hamilton, Ont.
	Yard and shops at Calgary, Winnipeg, for Canadian Pacific, R.R.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Aksel H. Jorgensen

Address Morsemere, N.J.

Telephone Morsemere 566 W

Age 40

U.S. Citizen? yes

Education Grammar School, graduated 1898  
Evening High School, geometry, algebra and trigonometry 1898-1901  
International corres. school, electrical and mechanical engineering 1902-04  
Home study, surveying and architectural drawing  
Public water supply, roads and road building, 1902-1909  
Columbia University, Eve. Tech. course. Structural design-1909-11

Experience Columbia University, Eve. Tech. course Design of reinforced concrete  
construction, 1911-12  
Alexander Hamilton Inst. Course in Modern Business 1919-20

Experience

October 1905 Rodman with Rapid Transit Railroad Commission on triangulation  
July 1906. and line and grade for construction of East River Tunnels.

August 1906 Asst. Engr., R.T.P.R. Comm. and the Public Service Commission.  
January 1910 On construction of East River Tunnels; surveys, estimates,  
draughting computations, etc. Procured and compiled data on  
cost of tunnels. Field and office work in connection with  
valuation of surface car lines in New York City. Preliminary  
surveys for Fourth Ave. Subway, Bklyn.

February 1910 Asst. Engr. on construction of Fourth Ave. subway. In charge  
Sept. 1913 of building, examinations estimates, sub-surface surveys and  
steel erection.

October 1913 Section Engineer in charge of all work on completion of two  
March 1914 sections of subway.

Salary Expected

April 1914 Section Engineer in charge of the following work all of which  
August 1916 was in progress at one time under separate contract.

Notes

Preliminary surveys for 14th St. subway  
Installation and inspection of all tracks throughout  
Fourth Ave. subway from Manhattan Bridge to 86th St.  
Track Installation throughout 38th St. including 36th  
St. Yard.

New Utrecht Ave. elevated structures; track installa-

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Charles E. Johnson

Address 1228 Castleton Ave., West New Brighton, S.I.

Telephone 1113 - M West Brighton

Age 40 yrs.

U.S.Citizen?

Education B. S. Degree, Dartmouth College, 1903

Experience

July 1903 to Sept. 1905 B & O. R.R. N.Y.Div., Chief of Party  
Sept. 1905 to March 1907 C & N W R.R. in Wis. & So. Dakota, Rodman, Inst.Man & Const. Insp.  
Mar. 1907 to July 1907 New York, Westchester & Boston, Inst. Man, Const.  
July 1907 to Nov. 1916 Board of Public Works, North Andover, Mass. Supt.  
Nov. 1916 to April 1917 N. Y. N. H. & H. Pawtucket, R.I. Ch. Draftsman, Const.  
April 1917 to July 1917 Town of Brookline, Mass. Insp. Highway & Sewer Const.  
July 1917 to Dec. 1917 Camp Guster, Battle Creek, Mich., Asst. Engr., Sewer Const.  
Dec. 1917 to May 1918 B & O. R.R. at Fox Hills Hosp., Grassmere, S.I., Field Engr.  
May 1918 to Nov. 1919 Downey Shipbuilding Corp., Arlington, S.I., Const. Engr.  
Nov. 1919 to June 1920 U.S.S.B. E.F.C. Travelling Lumber Inspector  
July 1920 to Oct. 1920 Perrin & Marshall, N.Y.C Designer, Power House

Salary Expected \$2400.

Date Oct. 13, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Walter D. Jones**

Address **2207 Jane St., Pittsburgh pa.**

Telephone

Age **40**

U.S.Citizen?

Education **Grade and High School**

Experience Inspected iron, steel castings, brass, bronze castings, machinery, large machined parts, made hardening tests on 105 to 115 carbon steel while on the Panama Canal Commission. Inspected iron, steel castings and machinery for the New York Barge Canal Commission also forging. Inspected heat treated bolts. Hot rolled material, castings, forgings, rails, tie plate for Pgh. Testing Laboratory. Inspected heat treated high silican plates, shapes, cast iron and steel pipe for the United States Navy and the Argentine Government and French Commissinn.

Salary Expected **\$200. per month**

Date **September 12, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Louis J. Josten

Address 1323 North Marshall St., Phila., Pa.

Telephone

Age 37

U.S.Citizen?

Education Grammar School, 1900

Graduate Spring Garden Inst., Phila., 1903 - Mech. Engr.

Graduate American School of Correspondence, Mech. Engr., 1905

Graduate Hamilton College of Law, correspondence course, degree in Law.

Experience

1903 - American Bridge Co., Pencoysd Pa., Inspector of steel, iron and brass.

1903-4 J. G. Brill Car Co., Phila., Mechanical draughtsman.

1904-5 American Car & Foundry Co., Berwick, Pa., Mechanical draughtsman

1905-8 E. R. & N. R. Div., Penna. R.R. Tunnels, Inspector of cast iron lining,  
under Mr. Alfred Noble and Charles M. Jacobs.

1908-9 Packard Motor Car Co., Detroit, Inspector of castings and machined auto parts

1909-11 Thomas B. Jeffery Co., Kenosha, Wis., Inspector of castings and machined  
auto parts.

1911-12 Locomobile Co., Bridgeport, Conn., Inspector of Machined auto parts.

1912-13 Hudson & Manhattan R.R. Co., N.Y.C., Inspector of cast iron lining,  
under Mr. J. V. Davies

1913-17 New York Public Service Comm., Inspector of cast iron lining, under  
Mr. George L. Lucas

1917-22 Asst. Inspector of Ordnance, U.S. Navy Dept., Inspector of cast, rolled  
and forged ordnance material

Salary Expected Will be rate prevailing at time position is offered that is  
paid for similar work in other lines.

Date January 14th, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Harold J. Kelly

Address 169 Neptune Ave., Jersey City, N.J.

Telephone Bergen 7461

Age 25

U.S.Citizen?

Education Public School, Eight years

Drakes Business College, One year

Experience Commercial Trust Co., of N.J., Jersey City, N.J.  
Position of Clerk and Typist  
Two years - Mr. Carmichael, Cashier

United States Army, 27th Div., 107 Infantry

C. B. Richard & Co., 29 Broadway, N.Y.C.  
Foreign Exchange Teller at Ellis Island.  
Two years - Mr. J. F. Roe, Manager  
It was my duties while in this position  
to convert foreign money into American  
money for the immigrants arriving in this  
country and to sell this money to brokers  
in New York City

Salary Expected \$1350. per year

Date December 15, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
 and  
 NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
 Office of Chief Engineer, Room 614, Hall of Records,  
 New York City.

Name **Frank A. Kennan**

Address 1205 Willow Ave., Hoboken, N.J.

Telephone Hoboken 2514

Age 35 yrs.

U.S.Citizen?

Education 4 yrs. high school and extension course  
 University of Wisconsin

Experience

1903-1916	Engr. Dept. of B. L. & W. R.R.,	Engr. & Const. Work
1916-1916	" " Erie " " "	" "
1917-1920	" " W. C. Koles,	Building & construction work

Salary Expected \$60.00 per wk.

Date Oct. 28, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name **James Kenny**

Address 202 - 12th St., Jersey City, N.J.

Telephone 1189-W

Age 19

U.S.Citizen?

Education Grammar school

Experience Cunard S. S. Co., Pier 54, N.R., Clerking  
Fall River Line, Pier 14, N.R., looking up records

Salary Expected \$70. per month

Date Feb. 7, 1921

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Theodore P. Kilian**

Address c/o John R. Yale, Brewster, N.Y.

Telephone **Brewster 30**

Age **37**

U.S.Citizen?

Education **Columbia University, graduate C.E., Class 1906**

Experience

August, 1906 to September 1907, rodman and assistant inspector for Degnon Cont. Co., on New York and Long Island Tunnel.  
October, 1907 to September, 1913, with New York Central R.R., office of District Engineer as rodman, draftsman and assistant engineer. Principal duties: plans and estimates for various structures, and yard and station layouts.  
September, 1913 to July, 1914, with New York Central R. R., in Valuation Dept., general Valuation work.  
August, 1914 to July 1916, with Standard Oil Co., of New York, as geological draftsman and engineer in Peking, China.  
August, 1916 to July, 1917, Assistant engineer in Valuation Dept., of New York Central R.R.  
July, 1917, to January, 1919. Called into Federal Service in July, 1917, commissioned June, 1918, as second lieutenant. Discharged February, 1919, as first lieutenant.  
February, 1919, to June, 1919, Assistant Engineer in Valuation Dept. of N.Y.C. R.R.  
June, 1919, to October, 1921, Engineer for New York Oil Co., at Casper, Wyoming.  
Engineering work for gas pipe lines and calculation of gas data.

Salary Expected

Date

P.R.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
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New York City.

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Name Miles I. Killmer

Address 23 Harvard St., East Orange, N.J.

Telephone Orange 397 M

Age 36

U.S. Citizen?

Education Graduate Penna. State College, 1906 B. S. in C.E.  
" " " 1909 C.E.

## Experience

Penna East River Tunnels, 1906-1910  
U. S. Harbor Improvement, N.Y.C., 1910-11  
McMullen, Snore & Trieste, 1913-14  
Tunnel Div. of P.S.C., NY. 1915-17

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Howard L. King

Address 559 West 164th St., N.Y.C.

Telephone

Age 30

U.S. Citizen?

Education Graduated from College of the City of New York, 1908 with A. B. degree. Graduated from Mass. Inst. Tech. 1915, with S. B. in civil engineering.

Experience

1915-17 with Pub. Ser. Comm., N.Y.C., as junior assistant, later as junior engineer. Worked on East River Tunnel construction.

Preliminary surveys for 60th St. tubes	1 mo.
Surveys for Whitehall-Montague St. tubes	4 mos.
Underpinning of buildings	4 mos.
Inspector in river headings in compressed air up to 35 pounds	6 mos.
Shift engineer in charge of all engineering and inspection on an 8-hr. shift at Montague St. shaft, Brooklyn, four headings and surface	8 mos.

1917-19 In U.S. Army, second lieutenant, then first lieutenant, Engineers, with Co. B., 27th Engrs., in France, June, 1918 to March, 1919., Hon. Discharge April 5, 1919.

References: C. M. Holland, Tunnel Engr., 159 Remsen St., Bklyn.  
Col. O. B. Perry, 120 Bway., N.Y.C.

Salary Expected

Date April 17, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **John J. Krieg**

Address **151 W. 228th St., N.Y.C.**

Telephone **Marble 777**

Age **33 yrs.**

U.S. Citizen?

Education **Graduate Public School, 3 yrs. evening high school  
Courses in following, Columbia University,  
Hydraulics,  
New York University, Reinforced Concrete  
City College, N.Y., Mechanics  
International Corr. Schools, Civil Engr., Course.**

Experience **4 $\frac{1}{2}$  yrs. with the Board of Water Supply, N.Y., as Axeman & Rodman on Field  
Rodman on pressure and grade tunnels, C. & C. Aqueduct & Steel Pipe Line  
Public Service Comm., since Aug. 1915 as Jr. Asst. & Jr. Engr., at  
Montague St., Tunnel, until I went into U.S. Service, May, 1917,  
returned to Montague St. upon my discharge from service Oct. 1919,  
as Jr. Engr.**

Salary Expected **Not less than \$1500. to start**

Date **April 7, 1920**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John A. Lee

Address 15 Butler St., Bklyn., N.Y.

Telephone Main 9276 W

Age 33

U.S.Citizen?

Education Grammar, High School, Preparatory & 2 yrs. College, Villanova, 1905-10

Experience New York Central, 1910 to 1914, R. E. Dougherty, Dist. Engr. Chairman, Roadman, Transitman and Inspector 50.00 to 100. Preliminary Location and Tracking, Beacon to Hudson, Foundations, Bridges, River Protection, Dredging, Piers, Roundhouse and power house construction.  
private Land Surveying and Contracting, 1914-16, income 100. to 200. per month.  
Erie R.R., 1916 -4 months, T. C. Wulling, Res. Engr., 80. Situation surveys, plans and estimates for renewals and new work.  
1916-17 - 14 months. 80. to 85. Eliminations of Grade Crossings at Jamestown, N.Y., responsible for layout and inspection Ret. Walls, Bridges, Blags., and yards.  
Foundation Co., 1917 - 5 months. 125. Field Engr., Power House, Warehouses and Track layout.  
U. S. Flying Corps., 1918 - 12 months - Graduated from Cornell Ground School, Field School at Dallas Texas, and Flying at Kelly Field, S.A.  
Erie R. R. 1919 to present. Estimator, Inspector and Asst. Engr., 120. to 206. , estimating and planning, responsible for layout and inspection of Lift Bridge over Passaic River, near Fourth Ave., Newark and Freight Warehouse near same location reporting to O. P. Derr, Res. Engr.,  
~~Salary Expected~~ In charge of surveys of elimination of grade crossings at Paterson, N.J., reporting to O. R. Derr, Res. Engr., at present time working on Federal Valuation of Bridges.

Salary expected \$200. plus bonus  
Date March 9, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Harry L. Leffingwell**

Address **2755 Sedgwick Ave., N.Y.**

Telephone **Kingsbridge 1600**

Age **21 yrs., 6 months**

U.S.Citizen?

Education **2 $\frac{1}{2}$  yrs. at Cornell University**

Experience

**Formerly Head Driver for Yellow Cab Co., of Ithaca, N.Y.**

Salary Expected **\$1900.**

Date **Aug. 7, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Marion C. Lieb**

Address **Tompkins Ave., Hastings on Hudson**

Telephone **Hastings 1008**

Age **26**

U.S.Citizen?

Education **Six years of College training at the following institutions  
Scientific at C. C. N.Y.  
Engineering at Columbia University and the Colorado School of Mines**

Experience

Worked as shift-boss, underground for a few months of a summer in Colorado. Retained on Engineering staff for about a year for the U. S. Aluminum Co., Edgewater, N.J., during the course of a three million dollar concrete building performing the following duties as the emergency necessitated, construction engineer, inspection, expediting, following up and purchasing of building material and supervising construction of special machinery for the equipment of the building.

Salary Expected **\$1800. per annum**

Date

**Jan. 18, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Oscar E. Lokofsky**

Address **11 Bispham St., Mt. Holly, N.J.**

Telephone

Age **20**

U.S.Citizen?

Education **3 yrs. high school**

Experience **In applying for position as transitman, rodman:-  
Started October 20, 1921 to December 3d, Rodman  
December 3, 1921 to Jan. 1, 1923 Transitman  
In part time I have acted as Inspector, inspecting  
concrete. All time spent with Burlington  
County Eng.**

Salary Expected **\$110. to 125. per month**

Date **6-15-23**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
 and  
 NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
 Office of Chief Engineer, Room 614, Hall of Records,  
 New York City.

Name Michael Charles Lowenburg

Address 522 West 174 St., N.Y.C.

Telephone Wadsworth 4308

Age 20

U.S.Citizen?

Education Started Lafayette, but had to leave because of money running out.  
 Mining Engineering Course.

Experience Selling electrical appliances, August 1923, New York and Queens  
 Electric Light Co.  
 Jeddo-Highland Coal Co., Jeddo, Pa., all round work for experience  
 in mining engineering.  
 April 1st-July 17th, 1923. Worked for Louckheim, Minton & Co.,  
 Brokers, Hotel Astor, Sept., 1922 to March 30th, 1923.  
 Jno. F. Clark & Co., Brokers, Waldorf-Astoria Hotel, March, 1922  
 Sept. 1922.  
 Went to Tampico, Mex. of S.O.N.J., oil tanker, Feb. 1922  
 Worked for D & H Coal Co., Scranton, Pa., December to February  
 Went to College, 1921

Salary Expected

Date August 31, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Peter F. McBride

Address 362 East 207th St., Bronx, N.Y.

Telephone Olinville 3956

Age 27 yrs. 3 mos

U.S.Citizen?

Education Graduate of elementary and high school and completed two and one-half of the day course of Civil Engineering at Manhattan College.

Experience Two years and four months Engineering experience with the U. S. Army Engineers during World War which included surveying (incharge of field parties) about one year with the Transit Commission in field survey parties and on concrete inspection. About two years with the Department of Plant and Structures of City of New York as a transitman in charge of survey work and supervising construction and four months of design of subways with the Transit Comm.

Salary Expected

Date August 21, 1923.

References: Mr. J. Hunt, Tran. Comm., Franklin 5801  
Mr. J. Eckersley, Ch. Engr. of Des., Dept. Plant & Structures  
Mr. E. A. Byrne, Ch. Engr. " " "  
Mr. A. Koek, Engr. in Charge of Cons. " " "

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Grace R. McCall

Address 1611 Plymouth Ave., N.Y.C.

Telephone Westchester 3095-J

Age 22 yrs.

U.S.Citizen?

Education High School and Business College

Experience Three years

Waldo Bros., 41st St. & Park Ave.

Ganneyer Shoe Co., 34th St.

Easterbrook & Co., 25 Broad St.

Ship Owners Radio Serv., Inc., Singer Bldg.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Alice McCarthy

Address 55-37th St., Elmhurst, L.I.

Telephone Havemeyer 1617 W

Age 19 yrs.

U.S.Citizen?

Education Graduate elementary school

Two years high school

Experience

About 8 months N.Y. Telephone Co.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Christopher Joseph McNally

Address 147 Salem St., Lawrence, Mass.

Telephone 2089 W

Age 21 yrs. and 4 months

U.S.Citizen?

Education Complete academic and four years of civil engineering

Experience	June to October, 1919	Pitman Construction Co. Laborer
	" " 1920	Boston & Maine R.R., R.R. Engineering
	" " 1921	Turner Constr. Co. Line and Grades
	" " 1922	" " " " "

Salary Expected \$1200. - \$1500.

Date April 23, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **John G. McTernan**

Address **3710 Ave J., Bklyn., N.Y.**

Telephone **Midwood 3915 W**

Age **32 yrs.**

U.S.Citizen?

Education **Finished high school  
2 yrs. Polytechnic Institute, Brooklyn**

Experience

1913-1915 Transitman with City Surveyor  
1915-1917 Inspector of shoving shield and erecting iron in compressed air tunnel at Clark St.  
1917-1918 Inspector of rock tunneling at 60th St., N.Y.  
1918-1919 Inspector of shoving shield and erecting iron in compressed air tunnel at Long Island City  
1919-1920 Inspector of concreting and high and low pressure grouting in rock and cast iron tunnels. The last 6 months was Shift Engineer.  
1920-1922 Line and grade and inspection, Borough Hall Station and Lawrence St. Station.

Salary Expected **\$2400.**

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Leo J. Maguire

Address 254 Elmwood Ave., E. Orange, N.J.

Telephone Orange 4746 M

Age 24

U.S.Citizen?

Education Grammar school, 2 yrs. high school, 3 yrs. night school

Experience

I have been with the Passaic Valley Sewerage Comm. from June, 1915 to Jan. 1, 1920. as Rodman, Instrumentman and Inspector, doing tunnel work and I am qualified for and willing to enter the high air. Can refer you to Mr. J. R. VanDuyne, Chief Engr., Passaic Valley Sewerage Comm., Newark, N.J., Am now with the Engineering Department of the Sub. Boat Corp., Port Newark, N.J. as Transitman

Salary Expected \$150. per month and air bonus

Date Aug. 10, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name James J. Maley

Address 719 Cherokee St., S. Bethlehem, Pa.

Telephone 343 R

Age 36

U.S. Citizen?

Education High School, one year

Experience

4 yrs. machinist apprentice 1901-1905

6 " machinist 1905-1911

5 " shop inspector, Bethlehem Steel Co., 1911-17

4 " Steel Inspector, U. S. Navy, 1917-1921

The above includes ten years inspection experience on steel castings including laboratory, shop and foundry inspection.

I am at present employed as an Inspector by the Ingersoll Rand Co., Easton, Pa.

Salary Expected \$2100. per year

Date May 5, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Leo M. Martin

Address Huyler Ave., Tenafly, N.J.

Telephone 193 M. Englewood

Age 28

U.S.Citizen?

Education Catholic School

Experience 1909-1918 Mr. Watson G. Clark, Instrumentman and Draftsman

In service at Camp Merritt working as Draftsman - construction work

Salary Expected \$125.

Date Aug. 22, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name V. G. Matchett

Address 1121 Jancey St., Pittsburgh, Pa.

Telephone Highland 4069 R

Age 39

U.S.Citizen?

Education High School

Experience Have had 22 yrs. experience which covered practically all lines of inspection such as rolling mills, bridge shops, forge shops, foundries, both iron and steel, nut and bolt works as well as the erection of various kinds of structures, such as bridges, buildings, etc.

From 1922 until 1914 or up until the time of his death, I was with Emil Swensson, C.E. of Pittsburgh in the capacity of Chief Inspector; while in his employ, I had charge of all of his inspection work both in the mills and factories and on the erection of same.

After the death of Mr. Swensson I went with the Southern Railway - in the capacity of material inspector under Mr. J. E. Ramage, Supt. of Tests

Salary Expected \$200.

Date Oct. 7, 1922

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Jacob Mechanic**

Address 662 Powell St., Bklyn., N.Y.

Telephone

Age 26

U.S. Citizen?

Education Graduate of Columbia University, Degree of C.E.

Experience 1915 to date with Public Service Commission, Tunnel Div.

Salary Expected \$1800.00 per annum

Date Oct. 22, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **James C. Miller**

Address **295 So. 9th St., Newark, N.J.**

Telephone **Market C999**

Age **29**

U.S.Citizen?

Education **1st year High School**

Experience **11 yrs. in Foundry and Inspection**

Salary Expected **\$200. per month**

Date **June 10, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name William J. Monahan

Address 28 Clifton Pl., Jersey City, N.J.

Telephone 4936 Bergen

Age 26

U.S.Citizen?

Education Graduate Grammar School  
1 year Jersey City High School  
Graduate Eagan's School of Business

Experience

Nov. 1912-Aug. 1917 Stenographer- J. F. Shanley Co.,  
26 Exchange Pl., Jersey City, N.J.

Aug. 1917-Oct. 1917 Stenographer - Barclay, Parsons & Clapp  
30 Wall St., N.Y.C.

Oct. 1917-May. 1921 Chief Timekeeper - Army Supply Base, Kearny, N.J.

Salary Expected

Date

July 20, 1921

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Roy Saxton Moore**

Address **81 Columbia Heights, Brooklyn, N.Y.**

Telephone

Age **44 yrs.**

U.S.Citizen?

Education **Graduated from Penna. State College, C.E. Course, Class of 1897**

**Experience**

1898-1905 was with the Illinois Central R. R. Co., Bridge and Building Dept., in various positions from chairman and inspector to assistant engineer. As an assistant engineer had supervision of the construction of reinforced-concrete and steel bridges, etc.,-the work usually being done by contract.

1905-1908 was with the Pennsylvania Tunnel & Terminal R.R. Co., as an inspector and as an assistant engineer on the construction of land and subaqueous tunnels by contract for railway purposes in New York City, - East River division.

1908-1909 was with the Detroit River Tunnel Co., as an inspector, chief inspector and sub-contractor, on the construction of land and subaqueous tunnels for railway purposes for "The New York Central Lines", - First with practically the same duties as for the previous period - except on a smaller scale; and, last as sub-contractor for waterproofing a portion of the approach tunnels, completing the same.

1909-1913 was with Waddell & Harrington, Consulting Engineers, Kansas City, Mo., as a resident engineer on large bridge construction. Had entire supervision for them of the construction of the North Kansas City Bridge over the Missouri River at Kansas City, - a double-deck, double-track structure about one mile in length and containing 18,000- tons of steel, and costing \$2,500,000. Also performed similar duty in connection with two bridges in Louisiana, and seven bridges for the Canadian Northern Pacific Railway over the Thompson River in British Columbia, Canada, involving an expenditure of approximately \$1,500,000.

1914-1915 was with the Water supply Commission of Penn. as a construction engineer on some dike work being done by contract.

1915- was with the Public Service Commission, 1st district, New York, N.Y., as a chief inspector on the construction of four concrete-steel (pneumatic) caissons to form permanent shafts for East River subways, New York City

1915-1916 was with Gustav Lindenthal, Consulting Engineer, New York, as a structural steel inspector on railway bridge construction, including the Hell Gate Arch. Br.

1916-1917 was with the Flinn-O'Rourke Contracting Co., New York, as an assistant

over

superintendent or "walking boss" on the construction of shield-driven subaqueous tunnels under the East River, New York City for subway purposes.

1917 - held a temporary appointment of six months duration as the inspector in charge of the construction of an open reinforced-concrete caisson for the United States Navy, Bureau of Yards and Docks, in the Navy Yard at Washington, D.C., for the purpose of a shrinkage pit for making "thirty-mile" guns and other large guns.

1917-1918 was with the George A. Fuller Company in various capacities, foreman, engineering, etc., on the construction of temporary wooden buildings for the United States Government in Washington, D.C.

1918-1919 - six months was a captain of Engineers, U.S. ARMY, - Last assignment was Commanding Officer, Co. F., 209th Engrs., 9th Div., Camp Sheridan, Montgomery Ala.

1919-1920 was an appraisal engineer with the Shipping Board, Emergency Fleet Corporation on both field and office assignments.

1920-1921 to present, (February) assistant supervising engineer, Quartermaster Corps. Construction service U.S. Army, U.S. Nitrate Plant No. 2, Muscle Shoals, Ala.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Oscar Mulford

Address Sayville, L.I.

Telephone

Age 22

U.S.Citizen?

Education Two years high school

Experience Seven months on construction of docks ) May & Smith C. E.,  
Thirteen months boundary & topographical survey ) Patchogue, L.I. Box 510  
  
One year general layout on building and pipe line) E. L. DuPont Co.,  
Construction and inspection ) Carney's Point, N.J.  
  
Five months inspection on construction of con- ) N.Y. State Highway Dept.,  
crete roads, culverts and sea walls ) H. T. Tutthille. Islip, L.I.  
  
Two and one-half months, Lawrence St. Station John Daly, Wa. Stuart

Salary Expected \$1500.

Date 5/24/22

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name James Duncan Munro

Address 270 West 11th St.

Telephone

Age 20

U.S.Citizen?

Education P. S. 16, N.Y.C.  
Townsend Harris Hall, N.Y.C.

C.E., Rensselaer Poly. Tech. Inst. , Troy, N.Y., 1923

Experience

Drafting room of the Western Electric Co., West and Bethune Sts.,  
Summer of 1920

Installation Dept. of the Western Elec. Co., Summer, 1922.

Salary Expected \$35. per wk.

Date June 19, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Charles W. Murdock

Address 1134 St. Johns Pl., Bklyn., N.Y.

Telephone Decatur 1432-M

Age 30

U.S. Citizen?

Education A. B. - Middlebury College 1910

C.E. - Rensselaer Poly. Inst. 1912

Experience

7/12 to 12/12 N.Y. Telephone Co.- Brooklyn office,  
Inspection and cable layouts  
12/12 to 2/18 Pub. Ser. Comm., 1st Dist.  
Squad Boss in charge of ventilation, drainage,  
plumbing, etc.  
2/18 to 10/18 Chile Exploration Co.  
Designing steel and wood structures  
Checking shop drawings.  
10/18 to 4/19 Curtiss Engineering Corp.,  
Designer and Supt. of Const.  
4/19 to date N. Y. Railway Corp.,  
General mechanical work, re-pumping, ventilation,  
escalators, ventilation. Preparing specifications.

Salary Expected \$2490.00

Date 7/10/19

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Edward Murphy

Address 112 Verona St., Bklyn., N.Y.

Telephone 4405 Henry

Age 25

U.S.Citizen?

Education Grammar School

Experience 8 yrs. driving and repairing

References: Mr. H. Donaldson  
Detroit Cadillac Motor  
Bklyn., N.Y.

Mr. J. Sommerville,  
555 West 35th St.,  
N.Y.C.

Salary Expected \$2000.

Date Nov. 13, 1932

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Malachy J. Naughten

Address 9 East 85th St., N.Y.C.

Telephone

Age 29

U.S.Citizen?

Education A. B. & B. S. Degrees from Fordham '15 and  
Mass. Institute of Tech. '23

Experience None in Engineering  
Have had some experience in handling small groups of men in factories  
I was in the Army 1918-1919 with the 51st Pioneer Inf., and was one  
year in France and Germany

Salary Expected \$1800.

Date June 20th, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name E. P. Neuschwander

Address 10 Catalpa Drive, Albany, N.Y.

Telephone Albany-Main 478 M

Age 40

U.S.Citizen?

Education Commercial High School; Civil Eng., International Corres.  
Schools; Now studying Modern Business in Alex. Hamilton  
Inst.

Experience Aug. 1899-Jan. 1900, with Trimble & Miller, Engrs., Pittsburgh, Pa.  
as assistant on surveying corps and inspector on municipal work.  
Jan. 1900-June, 1907, with the following railroads: Penna lines  
West of Pittsburgh; Wabash-Pittsburgh Terminal; Bessemer and  
Lake Erie & Western Allegheny; Western Maryland; N.Y. Central;  
And with Westinghouse, Church, Kerr and Co. on the Penna Terminal  
Duties: Rodman, Transitman, Engr., in charge of construction and  
Draftsman and Squad Chief in the office. -- Work consisted  
of building and designing tracks, yards, roadbed, masonry piers  
and abutments, arches, culverts, bridges and viaducts, etc.  
Two years was on the design of Grand Central Station substructure  
and about six months of the same for the Penna Terminal.  
June, 1907-May, 1908, with the Chief Engr., Bureau of Sewers,  
Borough of Brooklyn, as Draftsman.  
May, 1908-date, Assistant Engineer in the department of the  
State Engineer, State of New York. First two years was in  
Charge of Construction of locks and Dam work. The remainder  
of the time about one half on the design of important  
structures on the canal and estimates of the same and the  
remaining half investigating, estimating, reporting and recom-  
mendating on the railroad crossing situation on the canal.

Salary Expected \$3300.00

Date May 1, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Oliver Newman

Address Belmar, N.J.

Telephone

Age 32

U.S.Citizen?

Education Graduated from a three (1907-1910) course in Civil Engineering  
at Heffley Engineering School, Branch of Pratt Inst., Bklyn., N.Y.

Experience

1910-11	1.3 yrs.	Surveying and Estimating for appraisal of Railroad for R.R. and Canal Revaluation Com. of New Jersey.	\$77.00 per month	Reported to Mr. L. Focht, Chief Engr., Trenton
1911	.4 yrs.	Street and Highway, Estimating and Laying out Streets for City of New York.	\$125.00 per mo.	Mr. Applebe, Chief Engr.
1912-17	5 yrs.	Bridge Designer, Bridge Dept. of Erie R.R. Co. Designing, Detailing, Estimating and making plans for Bridges, Abutments, Retaining Walls, Trestles and Piers.	\$110.00 per month	Mr. F. A. Howard Bridge Eng. #50 Church St., N.Y.C.
1917-19	1.3 yrs.	Concrete Designer, Chile Exploration Co., Designing, making Plans, and Estimating on Foundations and Structures for Copper Mines in Chile.	\$160.00 per month	Mr. F. M. Shaw Office Engr. 120 Bway., N.Y.C.
1917-19	1.2 yr.	U. S. Army, 2nd Lieut., Air Service Aeronautics, (Reserve Military Aviator)	\$177.00 per month	Director of Military Aeronautics, Wash., D.C.

Salary Expected

Date July 7, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Richard R. Oram

Address Tuxedo Park, N.Y.

Telephone Tuxedo 295

Age 25 yrs. 6 mos.

U.S.Citizen?

Education B. S. in C.E., Union College, Schenectady, N.Y.

Experience Two summers as Asst. Inspector, Dock & Dams, under Alex Rice McKim,  
State Inspector, Conservation Comm.

One summer Inspector for Westchester Light and Power Co., Mt. Vernon,  
N.Y., (Mr. R.E. Dennis, Engr.) on new sub station at New Rochelle,  
N.Y.

One year A. E. F. France, U. S. Marines, (Day Labor)

Salary Expected as per letter to Prof. McKibben

Date May 16, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Erling Owre

Address 29 Scribner Ave., New Brighton, S.I., N.Y.

Telephone Tompkinsville, 1297 M

Age 43

U.S.Citizen? Norway (American citizen)

Education Graduate Architect from Throughjem Technical School 1899

Experience

- 4 yrs. in Norway, General architectural work
- 18 yrs. in U. S. A.
- 5 yrs. Supervision of Construction
- 13 yrs. of Designing of high grade architectural buildings,  
water colors, perspectives, estimates and  
consulting work.

Salary Expected \$3300.

Date December 3, 1921

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Harry J. Paletz**

Address **73 Fourth St., Ridgefield Park, N.J.**

Telephone **Watkins 0112 (9 AM to 5 PM)**

Age **36**

U.S.Citizen?

Education **Three years at Rensselaer Polytechnic Inst.**

**One year at Mass. Inst. of Tech.**

Experience **Two years, rodman and instrumentaman, Chicago and Northwestern R.R.**

**One year, instrumentman, Chicago, Milwaukee and St. Paul R.R.,  
Bridge and Building Dept.**

**One year, Asst. Engr., United Fruit Co., Panama**

**One year, Engineering and Surveying, Panama Govt.**

**One year, Resident Engr., Nipe Bay Co., Cuba**

**Two years, Mech. Engr., Anniston Ordnance & Steel Co., Anniston, Fla.**

**One year, Municipal Engr.**

**Two and one-half yrs., 2nd and 1st Lieut. of Engrs., in charge of  
Warehouse Construction, France.**

**One year, Technical Asst. War Dept., Inspector Machinery and Engr.,  
Material**

Salary Expected

Date **Nov. 29, 1922.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Joseph L. Parker

Address 22 Claremont Park, Boston, Mass.

Telephone Back Bay 7263

Age 25 yrs.

U.S.Citizen?

Education Will finish Civil Engineering, M. I. T., June 12, 1923.

Experience

Salary Expected \$1500. per year

Date June 4, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Elias J. Peck**

Address 61 West 59th St., N.Y.C.

Telephone Columbus 3241

Age 24

U.S.Citizen?

Education Grammar and high schools. Two years of College training at  
Norwich University

Experience Nine months field experience with Strobell and Earle, Rutland, vt.  
Three years as traveling salesman  
2½ yrs. Calif. Packing Corp., 131 State St., Boston, Mass., Mr. S.E. Eldridge  
½ yr. Valentine & Co., 456 4th Ave., N.Y.C., Mr. N.W. Drescher

Salary Expected

Date March 23, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Herrmann F. Pfau

Address 10 Intervale Place, Yonkers, N.Y.

Telephone Yonkers 7330

Age 29

U.S. Citizen?

Education Graduate New York University, 1916  
Course in Civil Engineering

Experience

Public Service Comm., East 14th St., New York City, 1916-17

Morgen Engineering Co., Memphis, Tenn., 1919-1920  
Highway and Drainage Engrg.

Ramapo Ore Co., Sterlington, N.Y. 1920-1921, iron mining.

Also business experience with  
Bristol Co., Waterbury Conn., sales correspondent, 1917-18  
Keuffel & Esser Co., Hoboken, N.J. 1921-22

Salary Expected \$150. per month

Date Oct. 13, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John B. Saxe

Address 29 Hollis Hall, Cambridge, Mass.

Telephone University 10356

Age 21

U.S. Citizen? yes

Education Phillips Exter Acad. 1918  
Harvard College 1919-21  
Harvard Engineering School 1921-23 - Candidate for deg. of B.S. in C.E.

Experience

Rodman - N. E. Power Co. - Summer 1918

Asst. Course in surveying at Squam Lake - Summer 1922

also, Exam. of Land Titles - Worcester, Mass. - Summer 1919

Salary Expected \$125. per month

available after June 30, 1923.

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Rudolph F. Schaefer

Address 8930-118 St., Richmond Hill, N.Y.

Telephone Rich. Hill 6930

Age 33

U.S.Citizen?

Education Cornell University C.E., 1910

Experience 2 yrs. with American Bridge Co., as detailer and checker of structural steel.  
2 yrs. with Long Island Railroad as designer in Bridge Dept., designed plate girder and truss bridges, signal towers, station platforms and canopies, etc.  
3 yrs. with N. Y. Municipal R.R. Corp., as designer in structural Dept. designed elevated railroad structures and investigated and reinforced existing structures.  
4 yrs. with Guggenheim Bros., as structural designer and squad boss; designed mill bldgs., trestles, power houses and miscellaneous mine structures.

Salary Expected \$50. per week

Date March 25, 1921

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Arthur W. Schwab

Address 193 N. 11th St., Newark, N.J.

Telephone Braenk Brook 1320

Age 23

U.S.Citizen?

Education Two years in college, architecture

Experience two years structural exp. in charge of material and supervising  
work of an erection gang. 9 months in surveying party.  
6 months chairman - 3 months running party

Salary Expected whatever my services may be worth

Date December 13, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Max Sebiri

Address 876 Irvine St., N.Y.C.

Telephone Intervale 5968

Age 37

U.S.Citizen?

Education Public School

Experience With W. J. Wilgus 15 yrs.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John F. Severn

Address 460 Decatur St., Bklyn., N.Y.

Telephone Bushwick 1718-W

Age 41 yrs.

U.S. Citizen?

Education Grammar School

Experience 10 yrs. as molder, and general foundry work  
9 yrs. on the Panama Canal, as foreman of cableways and  
dredge operation.  
4 $\frac{1}{2}$  yrs. as Asst. Inspector of Ordnance U. S. Navy  
as traveling inspector of iron-steel and now Ferris metals  
in the rough and finished state.

Salary Expected \$2000

Date March 28, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Leidy R. Shellenberger  
Address 19 East 42nd St., Bayonne, N.J.  
Telephone Bayonne 401  
Age 56  
U.S.Citizen?  
Education Public schools-Graduate Millersville State Normal School '86  
Lehigh University '91

Experience

Until 1895 with several small iron works - mostly detailing  
1895-1903 with American Bridge Co., at Pencoyd  
1903-1908 with Grand Central St. Archts., N.Y.C. Designer  
1908-1917 with Public Service Comm., N.Y.C., Designer  
1917-1919 with Chile Ex. Co., designer and checker  
1919-1921 with Westinghouse, Church, Kerr & Co., and Dwight P. Robinson, as designer  
Last three months with Covendale and Colpotts, valuation work

Salary Expected

Date June 4, 1919

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John P. Simmons

Address 30 Thomas St., Bloomfield, N.J.

Telephone

Age 41 yrs.

U.S.Citizen?

Education University of Maine, 1906

B. S. College of Civil Engineering

Experience

Sept. 1906 to Oct. 1907 With N.Y. & L.I. R.R., Subway Construction  
Oct. 1907 to Feb. 1908 With Penn. Tunnel & Terminal Co., East River Dv. Air job  
Feb. 1908 to July 1908 With Interborough Rapid Transit Co., foreman of construction  
June 1910 to Feb. 1914 With New York City Board of Water Supply, Catskill Aqueduct  
Feb. 1914 to Aug. 1917 With Public Service Commission, 1st dist. 7th Ave., Subway  
Aug. 1917 to May 1920 With Bureau of Yards and Docks, Washington, D.C., and  
located at U.S. NAVAL Academy, Annapolis, M.D.

Salary Expected \$2500.

Date June 8, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Henry M. Sackrider

Address 55 Second St., Weehawken, N.J.

Telephone

Age 38 yrs.

U.S.Citizen?

Education Pratt Inst., 1902

Experience New York Central R.R., 1903  
American Bridge Co., Estimating Dept. and structural detailing, 1904-07  
Structural Steel Co., Lt., Montreal, Que., General steel work, 1909-11  
Westinghouse, Church, Kerr & Co., general building work and drainage,  
1911-12  
Structural Steel Co., Ltd., Montreal, 1913-17  
Chile Expl. Co., general design, (structural steel drafting) 1917-18  
Bethlehem Construction Co., with whom I am at present employed

References:

Mr. Robert Fleming, American Bridge Co.,

Mr. F.D. Rhodes, American Refining Co.

Salary Expected

Date

June 24, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name William C. Sands

Address 59 Garrison Ave., Jersey City, N.J.

Telephone Bergen 4145

Age 22

U.S.Citizen?

Education Public and High School graduate

Studied engineering in night school

Experience

Have been employed in the summer time vacations when I was attending school.

I have been and still am in the employ of the Chile Exploration Co., in the capacity of Concrete Tracer and Detailer - 2 $\frac{1}{2}$  yrs. I have also had complete charge of all the drawings and blue prints of the above mentioned firm. (filing)

Salary Expected \$125. per month

Date

July 28, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Charles F. Richardson

Address 228 - 51st St., Bklyn., N.Y.

Telephone

Age 44 yrs.

U.S.Citizen?

Education Public and high school

Experience 1908-09 Inspector of tunnel driving, concrete, brick and carpenter work, for Penn. R.R.  
1909-10 Inspector tunnel driving, concrete, waterproofing, etc., for Detroit River Tunnel Co.,.  
Three years - Foreman subway construction with E.E. Smith Co.  
One year - Inspector excavating, concrete, track and brick work for B. R. T.,  
  
Five years - Foreman building construction for Morse D.D. Co.  
One year with C. M. Dept., as Inspector of general building work

Salary Expected Around \$200. per month to start with usual bonus for air work

Date Oct. 16, 1922.

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Vincent L. Riley

Address 485 Terrace Ave., Hasbrouck Heights, N.J.

Telephone 95-J

Age 27

U.S.Citizen?

Education Grammar school  
Morris High 2 yrs. (evening)

Experience

1912-17 McClintie-Marshall Co., Steno. & Sec. to Contracting Engr., N. Y. City  
Some field work

1917-1919 Army Service

1919-1920 McClintie-Marshall Co., Pottstown, Pa., Timekeeper

1920-1921 Pratt Engr. & Mach. Co., Atlanta, Ga., Field Purchasing Agent.

1921-1922 Bridgeman various jobs., N. Y. District

1922-1923 January to July: Rigger, Radio Corp. of America, Rocky Point, L.I.

July to March : McClintie-Marshall Co., Pittsburgh, Pa.,  
Timekeeper, Castleon Bridge, N.Y.  
Mr. Geo. R. Enscoe, 50 Church St.

Salary Expected \$150.

Date March 3, 1923



APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Abraham Robinson

Address 4416-14th Ave., Brooklyn, N.Y.

Telephone Blythebourne 2764

Age 32

U.S.Citizen?

Education High School - Stuyvesant graduate  
City College, Evening Course

Experience

1907-11 Railroad & Mercantile experience - Stenographer and correspondent

1911-19 Public Service Commission, Engineering Dept.  
Stenographer and office manager  
Systematize filing of correspondence and records in  
Station Finish Division, attended to correspondence  
which was not of a strictly technical nature, and  
assisted in the management of office and division.

1919-22 Book-keeper and office manager for C.H. Brown & Son Corp.,  
7 East 42nd St., N.Y.C., building and subway construc-  
tion contractors.

Salary Expected \$150. per month

Date February 24, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Beverley Robinson**

Address **Hotel Arlington, 20 W. 25th St., N.Y.C.**

Telephone **Watkins 8960**

Age **36**

U.S.Citizen?

Education **Columbia University graduate from College of Architecture  
Harvard University one summer session " " "  
Paris Ecole des Beaux Arts 1 yr. in Atelier Duquesne  
University of Michigan Master of Science in Architecture**

Experience **1 yr. of independent practice of architecture  
5 yrs. as Assistant Professor in architectural design at the  
University of Michigan  
7 yrs. as designer in following offices in New York and  
others elsewhere:-  
Messrs. Carrere & Hastings-U.S. Rubber Bldg. & approaches to  
Williamsburg Bridge  
Messrs. Warren & Wetmore - Hotels  
Fred F. French Co., Contractors- apartment houses  
Starrett & VanVleck, Schools and Department Stores**

Salary Expected **\$3900. per annum**

Date **March 4, 1923.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Francis A. Rossell**

Address **1201 North Clayton St., Wilmington, Del.**

Telephone **2387-W Bell tel. Wilmington, Del.**

Age **33**

U.S.Citizen?

Education **Primary and Preparatory schools, Army and Navy Academy, Washington, D.C. Delaware College, Newark, Del.; Jefferson School of Law, Louisville, Kentucky; Graduate in Law and Degrees of Bachelor of Laws and Master of Laws; Graduate Field Artillery, Central Officers Training School, Camp Taylor, Louisville, Ky., Commissioner Second Lieut.**

Experience **Rodman and Draftsman on Highway Construction, New Castle County, Del.; Instrumentman and Draftsman, U. S. Engineering Dept., Wilmington, Del.; Chief of Party Chesapeake & Delaware Canal Enlargement, U.S. Engineering Dept., Wilmington, Del.; Instrumentman East River Gas Tunnel Construction New York City; Chief of Party Louisville & Portland Canal Enlargement U.S. Engineering Dept., Louisville, Ky.; Assistant to Chief Engineer, Coleman duPont Road, Delaware; Draftsman and Field Engineer, Louisville, & Nashville R.R., Louisville, Ky.; Asst. Engineer City of Louisville, Ky.; General Supt., for Sub Contractor, Hog Island, Phila., Pa.; Appraisal Engineer U.S. Shipping Board, Hog Island, Phila., Pa.; Supervising Engr. Construction of Dry Dock No. 3, League Island Navy Yard, Phila., Pa.**

Salary Expected **\$3000. per year**

Date **Ja. 10, 1921.**

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Charles J. Ryan

Address 161 West 168th St.,

Telephone Bingham 2862

Age 25

U.S.Citizen?

Education Business School Graduate  
High School 3 yrs.  
Special courses in English

Experience 8 yrs. stenographic-secretarial exp.  
Public Service Commission 1914-1919  
General Development Co., Stenographer, Cable Clerk, etc.  
Chief Yeoman in U.S. Navy, 1917-1919

Salary Expected \$1500.

Date January 27, 1921

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name **Ole Singstad**

Address **147 - 84th St., Brooklyn, N.Y.**

Telephone **Bay Ridge 3738**

Age **37**

U.S. Citizen? **Norway**

Education **C. E. Trondhjem Tech. School**

## Experience

Sept. 05 to Dec. 05 Transitman C.R.R. of N.J., Jersey City, N.J.  
Jan. 06 to Jan. 09 one year draftsman, two years Asst. Engr., in charge of  
construction, Virginian Railway, Norfolk, Va.  
Mar. 09 to Mar. 10 Designer H. & M. R.R. CO., N.Y.C.  
Mar. 10 to Sept. 17 Designer P.S.C., 1st district, N.Y.C.  
Apr. 11 to June 11 Asst. Engr. in charge field work on R.R. Valuation  
Prof. Geo. F. Swain  
Sept. 17 to Nov. 18 Structural Engr., Chile Expl., Co., N.Y.C.  
Nov. 18 to July 19 Asst. Engr., Barclay, Parsons & Klapp., N.Y.C.

Salary Expected

Date

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Ralph Smillie

Address 50 Vanderbilt Ave., N.Y.C.

Telephone Murray Hill 8180

Age 32

U.S.Citizen?

Education Yale B. A., 1909  
Columbia, C.E., 1912  
Yale, M. A., 1918

Experience

1911 - 1913-Draftsman and designer Interborough Rapid Transit Co.,

1913 - 1916-Draftsman Public Service Comm., 1st dist., on East River Tunnel work

1916 - 1917-Engineer for T. W. Price Eng., Co.

1917- 1919- Navigating Officer U.S.S. Bushwell

Salary Expected \$2700. min.

Date Sept. 4, 1919

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Victor J. Smith

Address 301 Webster Ave., Jersey City, N.J.

Telephone

Age 26

U.S. Citizen?

Education One year Hoboken High School

Experience six years on street, highway, sewer and foundation construction, also some experience at Dredging and Dock bldg., railroad location and track layout, concrete and pavements studied.

Civilian employee in quartermasters dept.

Salary Expected

Date

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Frederic Antes Snyder

Address 105 Carnegie Ave., East Orange, N.J.

Telephone Orange 2924 W

Age 49

U.S. Citizen?

Education Williamsport, Pa. Public Schools and Dickinson Sem.

Experience

September 1919 to date, Constructing Engineer, Commonwealth Water Company, Summit, N.J. in charge of the construction of six miles 16" Water Mains 12" Water Mains, 1,000,000 gallon reinforced concrete reservoir, booster pumping station, alterations to pumping stations, rearrangements of air lifts, new 3,000,000 gallon Centrifugal Pump and all other Water Works Construction, Surveys, records, etc.

July 28, 1917 to June 5th, 1919, Lieut. Col. and Col., 103d U.S. Engrs., Chief Engr., 28th Div., work and training of Combat Engrs., regiment, camp and division water supply, both in the United States and France at the front, Chateau Thierry, Vesle-Aisne, Argonne, Thiaucourt Sector, Colombey les Belles and Lellana Areas.

In full charge of all road work in the different Divisional Sectors or Areas in France. Forces used on this work, the regiment I commanded, Labor Battalions and part of the Infantry of the Div.

June, 1914 to July, 1917, Chief Engineer Town of Mt. Royal near Montreal, Que., Can., in full charge of design construction, etc., water work, sewers, pavements, etc.

April to May, 1914, Consulting Engr., R.T.S.C. CO., Bias on tunnels under East River, N.Y.C.

Sept. 1908 to July 1917, Consulting Engr., New York Tunnel Co., Claims against Salary Expenses.

Oct. to Nov., 1917 with Snare and Trieste Bidding on docks and inspecting docks, Pacific Coast, United States and Canada.

Sept. 1908 to Sept. 1912, with Cuban Engineering and Contracting Company, Date Resident Engineer, full charge of the construction of the sewerage system of the City of Havana, Cuba, 250 kilometers sewers and drains, pumping stations, cast iron outfalls, subaqueous tunnel under the Harbor, etc. Cost about \$9,000,000. U.S. Gold

over.

August 1905 to February 1906, Engineer of Costs and February 1906 to September, 1908 Engineer Superintendent New York Tunnel Company, Brooklyn End Battery to Brooklyn Sub-aqueous Subway tunnel.

May 1904 to August 1905, Supt., of Construction of 1,000,000 gallon reinforced concrete reservoir, sewers, pipe lines, etc., for Commonwealth Water Co., Summit and Lakewood, N.J.

Jan. 1903 to May 1904 Supt. Costa Construction Co., 3 miles sewer construction including  $\frac{3}{4}$  mile of subaqueous tunnel.

Jan. 1902 to Jan. 1903 City Engr., Williamsport, Pa. full charge of sewers, paving and other construction.

Nov. 1900 to Jan. 1902, Instrumentman with N. Y. C. & H. R.R. Karthaus Branch, Pa. Location and Construction, tunnel bridges and heavy railroad construction.

August 1894 to April 1898 and Nov. 1898 to November 1900 Asst. City Engr., Williamsport, Pa., Asst. in charge of sewers, paving and other construction and all surveys.

April 1898 to Oct. 1898 1st Lieut. and Regiment Adjutant, 12th Inf. Perma. Vol. War with Spain.

February to August, 1894, Engineer Standard Coal and Coke Co., Glen Fisher, Pa.

1892 to October 1893, Asst. Supervisor, R.R. Tracks Construction and maintenance P. & R. R. W.

1890 to 1892, Asst. in Division Engineers Office, tracks, surveys, etc., P. & R.R. W.

1887 to 1890, Chairman City Engineers Office, Williamsport, Pa.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name A. E. Steers

Address 79 Richland St., Rochester, N.Y.

Telephone Stone 3675-J

Age 41

U.S.Citizen?

Education B. S. , R.I. College, 1900

Graduate course, Civil Engineering, 1901-2

Experience Drafting, design of file machinery, about 1½ yrs., Nickelsen File Co.  
Rooman, transitman and inspector, Metropolitan Water & Sewerage Bd. of  
Boston.  
R. R. Tunnel, Viaduct Bridges and Wachusett Dams, 2 yrs.  
Engr. Aid and Transitman, U. S. Reclamation serv.,  
Design and construction, Minidoka Project, Idaho  
N. Y. State Engrs. Dept., 17½ yrs., as leveler, 6 months,  
Asst. Engr. on design and charge of construction 4 yrs. 4 mos.  
Resident and Senior Asst. Engr., charge of construction 11½ yrs.  
and design of Hydro Electric power houses, 10 months.

Salary Expected

Date March 22, 1923.

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name William H. Stringfellow

Address 123 Parkwood Blvd., Schenectady, N.Y.

Telephone 1955-M

Age 22

U.S.Citizen?

Education Four years Schenectady High School

Four years in Union College, Schenectady, Civil Engineering Course, 1922

Experience

Nine months in drawing room and five months in machine shops of the  
American Locomotive Works, Schenectady (summer vacations)

Salary Expected

Date

May 29, 1923

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Walter Glencairn Thomson

Address 30 Madeleine Dr., Yonkers, N.Y.

Telephone Yonkers 1631

Age 24

U.S.Citizen?

Education Yonkers High School  
Columbia College  
Harvard Engineering School, B.S. in C.E., 1922

Experience Thompson-Starrett Co., field work, estimating design, 3 months  
Mr. Lovey, V.P.  
Hill Engineering Co., mechanical engineer, 7 months  
42 Bway., N.Y.C.; Mr. M.F.Hill, Pres.  
Turner Construction Co., job accountant, 2 months  
Mr. Proudfoot, Asst. Treas.

Salary Expected \$150. per month

Date August 6, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

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Name Harry C. Taylor

Address 112 Atlantic St., Jersey City, N. J.

Telephone

Age 48

U.S. Citizen? yes

Education Grammar School

Experience

Chauffeur for A & P Tea Co.,  
July 1910 - Aug. 31, 1923.

Reference:- H. B. Anderson,  
150 Bay St., Jersey City, N. J.  
Tel. 2400 Montgomery

Salary Expected \$100 per month

Date Oct. 15, 1923.

APPLICATION FOR POSITION

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NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John M. C. VanHulsteyn

Address 333 Maple Terrace, Mt. Washington, Pittsburgh, Pa.

Telephone Lafayette 2490 R

Age 26

U.S.Citizen?

Education B. S. in Engineering, Johns Hopkins Univ., Baltimore, Md.

Experience 3 yrs. Carnegie Steel Co., Pittsburgh

1½ yrs. Water Dept., City of Baltimore

Transitman or levelman in field

Salary Expected -

Date April 9, 1923

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Arthur H. Weis

Address 41 College Ave., New Brunswick, N.J.

Telephone 1162 N.B.

Age 21

U.S.Citizen?

Education Graduate June 12, 1923, Rutgers College  
Degree B. S., in Civil Engineering  
graduate Paterson High School

Experience none

Salary Expected \$1500. per year

Date June 6, 1923.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Eberhard Welle  
  
Address 111 Lafayette Ave., Hawthorne, N.J.  
Telephone 8920 Cort., Ext. 45  
Age 32  
U.S.Citizen?  
Education Graduate Columbia University 1912 C.E.

Experience

- 1 yr. with consulting engineer on sewerage systems, sewage disposal plants, water supply; as draftsman, some designing, computing, estimating, etc.
- 1 yr. as assistant to resident engineer on reinforced concrete factory and water power plant, having responsible charge of layout of work of complicated nature on excavations, foundations, form-work, bridge, machinery, etc.
- 6 yrs. investigation and design on subway and elevated R.R. structures, existing structures, additions, renewals, reinforcing, track and yard buildings, estimates, drafting, reports, etc.

Salary Expected min. \$2700.

Date April 16, 1920

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Francis J. White

Address 1390 Putnam Ave., Bklyn., N.Y.

Telephone Sterling 8208

Age 32

U.S. Citizen?

Education Elementary and grammar school 7 yrs.  
Night high school 2 yrs.  
Cooper Institute night school (1 yr. plain and reinforced concrete  
construction and testing)

Experience

Inspector for 4½ yrs. on E. 60th St. and E. 14th St. Tunnels  
Briefly: Nature of work was to inspect and supervise the  
constructing of cast iron lining and grouting in both free  
and compressed air. After removal of air, was employed to  
inspect and supervise the stopping of leaks in iron lining,  
panning of leaks in rock sections, placing of concrete, high  
and low pressure grouting, and in general everything pertaining  
to inspection of tunnel construction.  
Was also inspector of sealing and painting of E. 14th St. and  
No. 7th St. Shafts

Salary Expected \$200. per month

Date Aug. 20, 1922.

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name Herman C. Wolter

Address Hamilton Ave., Glen Rock, N.J.

Telephone 525-M Ridgewood

Age 36

U.S.Citizen?

Education 2 yrs. Cooper Union - 2 yrs. J.C.S.

Experience With H & M R.R. Co. since July, 1905, starting as chainman, gradually working to my present position as Asst. Engr.; during this period have had charge of shield-check party and general alignment. During the last 12 yrs work has consisted of re-alignment of tracks and re-construction of tunnels, but mainly in investigating the condition of the structure on the exterior. My various chiefs during this time have been Mr. Hilt, H & M R.R. Mr. H. Statham, Staten Island and Mr. S.C. Bacon, Asst. Engr., Jersey City Engr. Dept.

my present salary is \$185.

Salary Expected \$200.

Date December 9, 1922

APPLICATION FOR POSITION

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
and  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
Office of Chief Engineer, Room 614, Hall of Records,  
New York City.

Name John Joseph Zapf

Address 249 East 23d St., Brooklyn, N.Y.

Telephone

Age 26

U.S.Citizen?

## Education

Public school #15, 3d Ave. & State St., Bklyn. graduated 1910  
1 yr. High School, Manual Training High School, 7th Ave. & 4th St., Bklyn. 1910-11  
5 yrs. Civil Engineering Course, Herdley's Inst., 243 Ryerson St., Bklyn. Sept. 1913-June 1918

## Experience

June 1920-Nov. 30, 1920 Jr. Asst. Engr., N.Y. State Highway Comm., Bureau of Test. Albany, N.Y.. Mr. Abbott or M. P. Schultz for ref. \$165.mo.  
April 1917-May 30, 1920 Public Service Comm., Tunnel Comm., 49 Lafayette St., N.Y.C. Mr. Drew, Mr. Coe or Mr. Griffin for ref. \$137.50 mo.  
Oct. 1916-Dec. 1916 Public Service Commission, 14th St. Tunnel  
Feb. 1916 - Oct. 1916 Rodman and transitman with Lawyers Eng. & Sur. Co., 135 Bway.N.Y.  
Aug. 1911 - Mar. 1912 Rodman, Westinghouse, Church & Kerr Co., 37 Wall St., N.Y.C.

Salary Expected \$2400.

Date 11-16-22

December 14, 1921.

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CONTRACT NO. 1  
FINAL ESTIMATE

New York State Bridge & Tunnel Commission  
and  
New Jersey Interstate Bridge & Tunnel Commission.

Gentlemen:-

I transmit herewith the final estimate of the total amount of work done and materials furnished for the construction of the Canal Street and Spring Street shafts by the Holbrook, Cabot & Rollins Corporation under Contract No. 1, dated October 1, 1920.

The Contractor was ordered to start work October 9, 1920 and twelve (12) months were allowed for completion, but the time was extended by granting extensions of time from October 9th to October 23rd, 1921, and from October 23rd to December 10th, 1921, in accordance with my recommendations dated October 11th and November 21st, 1921, as requested by the Holbrook, Cabot & Rollins Corporation in letters dated October 10th and November 19th, 1921. The latter extension of time covers the supplemental agreement for the partial restoration of the New York Central Railroad tracks in Canal Street.

Work under this Contract was started October 9th, 1920 and completed December 1st, 1921, at a cost within the original amount appropriated by the Commissions. It is a matter of much satisfaction to report that the entire work was carried out in a skillful manner, without mishap or serious injury to any one connected with its prosecution. The maximum air pressure used was twenty-seven (27) pounds, yet such care was taken in decompressing the workmen that but one case of compressed air sickness, which might be considered at all serious, was reported and this was only of a temporary duration, with no serious after effects.

12/14/21.

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Under the terms of the contract, the Contractor is required to restore any disturbed street surface to its original condition before the beginning of the work. If any other form of pavement or sidewalk is restored, the Contractor must file with the Commissions a copy of his agreement with such officer or property owner, acknowledged in writing by both parties, agreeing to such change. Instead of the flag sidewalk on the north side of Spring Street, the Contractor restored a cement sidewalk. A certified copy of the agreement in duplicate with the adjacent property holders, dated October 25, 1921, is attached hereto.

The contract also provides that the Contractor shall make good any damage to adjacent property caused by his operations. Transmitted herewith are certified copies in duplicate of letters from adjacent property owners who have been directly concerned under the above-mentioned contract provision, stating that all such damage has been repaired.

November 23, 1921 - Department of Plant and  
Structures, City of New York  
to Holbrook, Cabot & Rollins Corpn.

December 5, 1921 - New York Central Railroad Co. to  
Holbrook, Cabot & Rollins Corpn.

In the letter dated December 5th, from the New York Central Railroad Company, stating that the repair work necessary to their buildings is satisfactory, it is further stated that the Railroad Company has a claim against the Contractor or the Commissions, or both, for loss of rental on account of obstruction and impairment of use for access purposes of sidewalk and roadway in front of one of their buildings, amounting to approximately \$466.67. and that further their lessees in the above buildings may have claims for damages by reason of loss of business or otherwise, as to which the New York Central Railroad Company is not informed.

Every facility was afforded the occupants of these buildings that was within the power of the Commissions so to do and at the same time carry on the necessary work of sinking the Spring Street caisson. The occupants of the building were not cut off from access to the City street or sidewalk, in fact, the Commissions went to considerable expense in order to cause as little inconvenience as possible. It is to be expected that in carrying on a big public work of this character that there will be a certain amount of interference with the normal use of the City streets, but during the progress of this work neither the Engineers nor the Contractor have ever received a complaint from the tenants of these buildings in regard to access and it is our opinion that they did have proper access. Our records show that this building was used during the

progress of work in the same manner as previous to the commencement of the work and has been used subsequently, and I do not believe that they have any real basis of cause for complaint.

The Contract provides that the Contractor shall settle all claim for labor, materials, etc. A letter from Mr. Thomas B. Bryson, Vice-President, Holbrook, Cabot & Rollins Corporation, to Mr. C. M. Holland, Chief Engineer, dated December 14th, 1921, certifies that all such claims have been paid, copies of which letter are attached in duplicate.

The work orders listed with the estimate have been issued to the Contractor by your Engineer to cover additional work that was necessary for the completion of the Contract. Authority for such work orders was granted by the Commissions on June 14th, 1921, provided that the total amount so expended did not exceed two percent of the bid price of the Contract. Twenty-three (23) work orders have been issued, totaling \$7,407.84., or 1.14 percent of the bid price of the Contract. Two supplemental agreements, one for the construction of a shed for testing materials, amounting to \$375.00. and one for the partial restoration of the New York Central Railroad tracks in Canal Street, amounting to \$8,500., have been approved by the Commissions.

I submit below a statement, showing the amount of the Contractor's bid price compared with the actual estimated quantities, as follows:

Bid price of contract according to Engineer's estimate of quantities.	\$650,802.50.
Amount of final estimate (not including work orders or supplemental agreements).	\$626,912.40.
Total of work orders.	7,407.84.
Total of supplemental agreements	<u>8,875.00.</u>
Total of final estimate (including work order and supplemental agreements)	<u>\$645,195.24.</u>
Net amount of the bid price of the Contract left after all payments have been made to the Contractor.	\$ 7,607.26.

Referring to the above, you will note that all work under Contract No. 1 has been completed within the amount originally appropriated and that there is an unexpended balance of \$7,607.26. so that work involving an estimate expenditure of more than \$650,000. has been carried out within the estimate, without additional appropriation by the States.

12/14/21.

I hereby certify that this work has been completed in accordance with the terms of the above-mentioned contract , and that the attached statement totaling \$643,195.24 is a correct and final estimate of the work done and materials furnished under the contract, and that the amount now due to the Contractor, the Holbrook, Cabot & Rollins Corporation, including \$63,052.82. in retained percentage is \$75,719.80.

Respectfully submitted,

C. M. HOLLAND.

CMH:GRM

Chief Engineer.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N.Y..

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100 Per Cent Payment. Sheet 1 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1 Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measure-ment.	Quantity for this Estimate	Quantity to Date	Unit price	Amount of this Estimate	Amount to Date.
1.	For excavation, both above and below M.H.W. for sewers (except the main Canal St. sewer), pipes, ducts and conduits, other than street railroad ducts and conduits, and all excavation not otherwise provided for.	Cu. Yd.	4.69	819.69	\$7.25.	\$34.00.	\$5,942.75.
2	For earth excavation above M.H.W. for by-passing the main Canal St. Sewer.	Cu. Yd.	0.14	986.14	6.75	.95.	6,656.45.
3	For earth excavation below M.H.W. for by-passing the main Canal St. sewer.	Cu. Yd.	0.63	813.63	8.25	5.20.	6,712.45.
4	For earth excavation above M.H.W. for the permanent shafts.	Cu. Yd.	0.92	883.92	6.75	6.21.	5,966.46.
5	For earth excavation below M.H.W. for the permanent shafts.	Cu. Yd.	6.08	8,231.08	20.00	121.60.	164,621.60
6	For rock excavation for the permanent shafts.	Cu. Yd.	0	0	1.00	0	0
Carried Forward						\$167.96.	\$189,899.71

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N.Y.

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100 Per Cent Payment      Sheet 2 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 4, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measurement.	Quantity for this Estimate	Quantity to Date	Unit Price	Amount of this Estimate	Amount To Date
Brought Forward						\$ 167.96.	\$189,899.71.
27	For concrete (except concrete placed in compressed air), as follows:						
(a)	For concrete in the main Canal St. Sewer and concrete not otherwise provided for.	Cu. Yd.	3.82	648.82	\$18.00.	68.76.	11,678.76.
(b)	For concrete in the caisson walls and floors.	Cu. Yd.	16.74	2456.74	15.00	251.10.	36,851.10.
28	For concrete placed in compressed air (caisson floors).	Cu. Yd.	3.25	733.25	21.00	68.25	15,398.25.
29	For mortar batches used in connection with placing concrete.	Bbl.	2.0	68.0	4.50	9.00	306.00.
34	For brick masonry.	Cu. Yd.	0	5.00	30.00	0	150.00.
45	For 1 to 1 Portland Cement Grout, not placed in compressed air.	Bbl.	0	0	5.00	0	0
46	For 1 to 0 Portland Cement Grout (neat grout) not placed in compressed air.	Bbl.	0	0	4.50	0	0
47	For 1 to 1 Portland Cement Grout, placed in compressed air.	Bbl.	0	0	5.75	0	0
48	For 1 to 0 Portland Cement Grout, (neat grout) placed in compressed air.	Bbl.	0	0	5.25	0	0
Carried Forward						\$565.07.	\$254,283.82.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment. Sheet 3 of 14 Sheets.

Final estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done	Unit of measure-ment.	Quantity for this estimate	Quantity to Date	Unit Price	Amount of this Estimate	Amount to Date.
Brought Forward						\$ 565.07.	\$254,283.82.
63	For waterproofing, brick in asphalt mastic, laid in compressed air, including, one (1) ply treated woven fabric.	Cu. Yd.	0	0	\$60.00.	0	0
64	For waterproofing, treated woven fabric, laid in compressed air, including protective layer of brick, as follows:						
(d)	For four (4) ply.	Sq. Yd.	2.98	438.98	3.50.	10.43.	1,536.43.
(f)	For six (6) ply.	Sq. Yd.	0	0	5.00.	0	0
70	For built up steel work (except steelwork of shaft caissons).	Ton*	0.70	1.70	125.00.	87.50	212.50.
71	For all steelwork forming part of the shaft caissons.						
	Delivered	Ton*	6.14	1146.14	100.00.	614.00.	114,614.00.
	Erected	Ton*	6.14	1146.14	182.00.	1117.48.	208,597.48.
72	For steel beams and shapes, with or without connections (except steelwork of shaft caissons).	Ton*	0.15	10.65	100.00.	15.00.	1,065.00.
73	For steel rods and bars.	Ton*	1.69	36.69	100.00.	169.00	3,669.00.
74	For special wire forms.	Lb.	0	16.00.	.12	0	1.92.
Carried Forward						2,578.48.	\$583,980.15.

\*2000 lbs.

Note: \$100.00 per ton is allowed on delivery for Items 70, 71 and 72, the balance of contract prices being payable on erection.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N.Y.

100 Per Cent Payment. Sheet 4 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1  
Holbrook, Cabot & Rollins Corpn. October 1, 1920 for the construction of  
the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done	Unit of Measurement.	Quantity for this Estimate	Quantity to Date	Unit Price	Amount of this Estimate	Amount to Date
	Brought Forward					\$2,578.48.	\$583,980.15.
81	For furnishing new wrought-iron or steel pipe, except pipe for electric conduits (threads and couplings included), required.	Lb.	0	3422.0	\$ .06	0	205.32.
82	For furnishing new malleable iron fittings for new wrought iron, or steel pipe, except pipe for electric conduits, required.	Lb.	0	0	.20	0	0
83	For furnishing new miscellaneous wrought iron and galvanized iron fixtures for all surface manholes and basins (but not including pipe or pipe fittings) required.	Lb.	0	15.0	.10	0	1.50.
91	For furnishing new cast-iron hub and spigot water, gas or sewer pipe (straight pipe), required.	Ton*	0.65	19.15	80.00.	52.00.	1,532.00.
92	For furnishing new cast-iron hub and spigot water, gas or sewer pipe (special castings), required.	Ton*	0.54	4.54	150.00.	81.00.	681.00.
93	For furnishing new cast-iron pipe (straight pipe) for high pressure fire system, required.	Ton*	0.62	12.62	100.00.	62.00.	1,262.00.
	Carried Forward					\$2,773.48.	\$587,661.97.

\* 2000 lbs.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

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100 Per Cent Payment      Sheet 5 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measure-ment.	Quantity for this Estimate	Quantity to Date	Unit Price	Amount of this Estimate	Amount to Date
Brought Forward						\$ 2,773.48.	\$587,661.97.
94	For furnishing new cast-iron pipe (special castings) for high pressure fire system, required.	Ton.*	0.37	6.37	200.00.	74.00.	1,274.00.
95	For furnishing new cast-iron manhole and catch basin fixtures and gratings and other miscellaneous castings (not including pipe or pipe fittings), required.	Ton*	0	0.87	150.00.	0	130.50.
120	For changing cast-iron water pipe to avoid interference with the shafts, but not including furnishing new pipe required, as follows:						
(b)	For six (6) inch pipe.	Lin.Ft.	0.08	141.08	3.50.	0.28	493.78.
(e)	For twelve (12) inch pipe.	Lin.Ft.	0.34	150.34	9.00.	3.06	1,353.06.
121	For changing cast-iron pipe for high pressure fire system to avoid interference with the shafts, but not including furnishing new pipe, required, as follows:						
(g)	For sixteen (16) inch pipe.	Lin.Ft.	0.39	144.39	16.00.	6.24	2,310.24.
Carried Forward						\$2,857.06.	\$593,223.55.

\*2000 lbs.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment. Sheet 6 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of work done.	Unit of Measurement.	Quantity for this Estimate	Quantity to Date	Unit Price	Amount of This Estimate	Amount to Date.
	Brought Forward					\$ 2,857.06.	\$593,223.55.
122	For changing gas pipe to avoid interference with the shafts, but not including furnishing new pipe required, as follows:						
(a)	For four (4) inch pipe.	Lin.Ft.	-0.49*	17.31	\$3.50.	-1.72.	61.28.
(b)	For six (6) inch pipe.	Lin.Ft.	0.18	322.10	4.50.	0.81	1,449.81.
(d)	For ten(10) inch pipe.	Lin.Ft.	1.84	116.84	5.00.	14.72	934.72.
(e)	For twelve (12) inch pipe.	Lin.Ft.	1.86	136.86	10.50.	19.53	1,437.03.
	For furnishing and changing ducts and conduits, other than wrought-iron, steel or fire conduits, to avoid interference with the shafts.	Duct Ft.	0	0	.50.	0	0
126	For furnishing and changing wrought-iron, steel or fibre conduits, to avoid interference with the shafts, as follows:						
(a)	For two (2) inch pipe.	Lin.Ft.	0	0	.50.	0	0
(b)	For two and one-half (2-1/2) inch pipe.	Lin.Ft.	0	0	.75.	0	0
(c)	For three(3)inch pipe.	Lin.Ft.	34.05	1674.05	1.00.	34.05	1,674.05.
(d)	For three and one-half (3-1/2) inch pipe.	Lin.Ft.	3.23	128.23	1.25.	4.04	160.29.
(e)	For four(4)inch pipe.	Lin.Ft.	0	0	1.50	0	0
						\$2,930.21.	\$598,940.73.
						1.72.	
						\$2,928.49.	\$598,940.73.
	Carried Forward						

Deduct for Item 122(a)

\*Over estimated.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment Sheet 7 of 14 sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measure-ment.	Quantity for this Estimate	Quantity to Date	Unit Price	Amount of This Estimate	Amount To Date
	Brought Forward					\$ 2,928.49.	\$ 598,940.73.
(f)	For four and one-half (4 1/2) inch pipe.	Lin.Ft.	0	0	\$1.75	0	0
(g)	For three (3) inch conduit.	Lin.Ft.	0	0	1.00	0	0
(h)	For four (4) inch conduit.	Lin.Ft.	0	0	1.50	0	0
133	For changing or laying cast-iron sewer pipe, to avoid interference with the shafts, but not including furnishing new pipe required, as follows:						
(e)	For twelve (12) inch pipe.	Lin.Ft.	4.89	106.89	8.00	39.12	855.12.
138	For wrought-iron or steel by-passing pipes, without trestle, upon or below the street surface, furnished, placed and removed, as follows:						
(a)	For four (4) inch pipe.	Lin.Ft.	0	0	5.50	0	0
(b)	For six (6) inch pipe.	Lin.Ft.	0	0	8.00	0	0
(d)	For ten (10) inch pipe.	Lin.Ft.	0	0	13.00	0	0
(e)	For twelve (12) inch pipe.	Lin.Ft.	0	0	16.00	0	0
143	For by-passing or shifting and maintaining the New York Central Railroad tracks.	Lin. ft. of single track.	10.02	485.02	3.50	35.07	1,697.57.
	Carried Forward					\$3,002.68	\$601,493.42.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment Sheet 8 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measure-	Quantity for this Estimate	Quantity To Date	Unit Price	Amount of this Estimate	Amount to Date
	Brought Forward					\$ 3,002.68.	\$601,493.42.
148	For building and equipping an Engineer's Field Office.	Lump Sum.	2%	100%	22000.00.	440.00.	22,000.00.
150	For temporary timber decking over shafts (exclusive of surface restoration).	1000 F.B.M.	0.59	45.59	90.00.	53.10.	4,103.10.
155	For building a tight board fence around shafts and park.	Lin.Ft.	0.47	251.47	1.00.	0.47.	251.47.
164	For restoration of roadways between curb lines with granite block pavement.	Sq.Yd.	3.80	413.80	2.75.	10.45.	1,137.95.
165	For restoration of sidewalks and other surfaces between the curb line and the property line.	Sq.Yd.	8.19	328.19	2.75.	22.52.	902.52.
	Carried Forward.					\$3,529.22	\$ 629,888.46.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N.Y.

100 Per Cent Payment. Sheet 9 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measurement.	Quantity	Unit Price	Amount	Amount of this Estimate	Amount to Date
	Brought Forward					\$ 3,529.22.	\$629,888.46.
300	Work Order No. 1. Erecting and removing grandstand.						
	Labor				\$1,059.16.		
	Insurance				109.52.		
	Material				1,889.21.		
	10%				305.79.		
	Materials returned to Contractor.				-692.48.		2671.20.
	Work Order No. 2 Construction and erecting sign.						
	Materials				156.41.		
	10%				15.64		172.05.
	Work Order No. 3. Widening Canal St.						
	Item 1 - Excavation	Cu. Yd.	92.10	\$7.25	667.73. x		
	Item 164-Restoration	Sq. Yd.	114.10	2.75	313.77. x		
	Item 165- "	Sq. Yd.	131.48	2.75	361.57. x		
					<u>1,343.07. x</u>		
	Work Order No. 4 Moving office furniture.						
	Labor				3.00		
	10%				.30	0	3.30.
	Work Order No. 5 Drain boxes in Canal and Spring St.						
	Labor				12.18		
	Insurance				1.26		
	Material				18.62		
	10%				3.21	0	35.27
	Item 1-Excavation	Cu. Yd.	4.59	7.25	33.28 x		
	Item 27(a)-Concrete.	Cu. Yd.	1.26	18.00	22.68 x		
	Item 95 - Castings	Tons*	0.35	150.00	52.50 x		
					<u>\$108.46</u>		

Carried Forward \$3,529.22.    \$632,770.28  
\*2000 lbs.

x - That part of the work done under Work Orders, susceptible of classification is not extended to the column for totals as it is already included under the totals for the respective schedule items of the contract.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

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100 Per Cent Payment. Sheet 10 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. & Spring St. Shafts. From October 1, 1920, to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measurement.	Quantity	Unit Price	Amount	Amount of this Estimate	Amount to Date.
	Brought Forward					\$ 3,529.22.	\$ 632,770.28.
300	Work Order No. 6.						
	Experimental Concrete.						
	Labor				\$17.07.		
	Insurance				1.77.		
	Material				85.06.		
	10%				10.39.	0	114.29.
	Work Order No. 7.						
	Save trough over door of Field Office.						
	Labor				2.25		
	Insurance				.23		
	Material				.81		
	10%				.33	0	3.62.
	Work Order No. 8.						
	For drilling and tapping holes in working chamber of Spring St. Shaft Caisson.						
	Labor				133.96		
	Insurance				13.85		
	10%				14.78	0	162.59.
	Work Order No. 9.						
	For shutting off and capping 4" water main. S.S. of Spring St.						
	Labor				8.00		
	Insurance				.83		
	Material				7.95		
	10%				1.68	0	18.46.
	Work Order No. 10.						
	Drilling and tapping holes for butting on strips for waterproofing.						
	Labor				137.93.		
	Insurance				14.26.		
	10%				15.22.	0	167.41.
	Carried Forward					\$3,529.22.	\$633,236.65.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment      Sheet 11 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1, Holbrook, Cabot & Rollins Corpn. dated October 1, 1920, for the construction of the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measure-ment.	Quantity	Unit Price	Amount	Amount of this Estimate.	Amount to Date.
	Brought Forward					\$ 3,529.22.	\$633,236.65.
300	Work Order No. 11. Sheeting used in capping 16" H.P. water main N.S. of Spring St.						
	Labor				\$9.00.		
	Insurance				.93.		
	Material				6.51.		
	10%				1.64.	0	18.08
	Work Order No. 14. Grout pipes thru the upper portion of the walls at Canal St. and Spring St.						
	Labor				11.88.		
	Insurance				1.23.		
	Material				23.56.		
	10%				3.67.	0	40.34.
	Work Order No. 15. Reinforcing rods in Spring St. invert of caisson.						
	Item 73-Steel rods and bars.	Ton*	0.0413	\$100.	4.13 x		
	Work Order No. 16. China Wood Oil used in connection with work chamber water-proofing Spring & Canal St. Caissons.						
	Labor				3.00		
	Insurance				.31		
	Material				6.10		
	10%				.94	0	10.35
	Work Order No. 18. Counterweights in trap doors in shaft decking. Canal & Spring St.						
	Labor				22.63.		
	Insurance				2.54.		
	Material				5.85.		
	10%				3.08.	0	35.90.
	Carried forward					\$3,529.22	\$633,339.32.
	2000 lbs.-						

x - that part of the work done under work orders, susceptible of classification is not extended to the column for totals as it is already included under the totals for the respective schedule items of the contract.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION  
HALL OF RECORDS, N. Y.

100 Per Cent Payment Sheet 12 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1  
Holbrook, Cabot & Rollins Corp. dated October 1, 1920, for the construction of  
the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measurement.	Quantity	Unit Price	Amount	Amount of this Estimate	Amount to Date
Brought Forward						\$ 3,529.22.	\$633,339.32.
300	Work Order No. 19. Cast-iron grating over drain box in Canal St.						
	Labor				\$3.38.		
	Insurance				.35.		
	10%				.37.	0	4.10.
	Item 27(a)-Concrete	Cu. Yd.	0.08	\$18.00.	1.44. x		
	Item 95 - Castings	Tons*	0.10	150.00.	15.00. x		
					\$16.44.		
Work Order No. 20.							
	Lead Lined drain pipe for hydrant on north side of Spring St.						
	Material				21.50.		
	10%				2.15.	23.65.	23.65.
Work Order No. 21.							
	Drilling holes in cais- son walls and floors to anchor stairways.						
	Labor				27.50.		
	Insurance				2.84.		
	10%				3.03.	0	33.37.
Work Order No. 22.							
	Heating system for testing laboratory.						
	Labor				59.52.		
	Insurance				6.15.		
	Material				102.05.		
	10%				16.77.	0	184.49.
Work Order No. 23.							
	Fencing boiler house and storage yards adjacent to Resident Engineer's Office.						
	Item 155-Fencing.	Lin.Ft.	126.67	1.00	126.67. x		
					126.67.		
Carried Forward						\$3,552.87	\$633,584.93.
*2000 lbs.							

x - That part of the work done under Work Orders susceptible of classification is not extended to the column for totals as it is already included under the totals for the respective schedule items of the contract.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION.

HALL OF RECORDS, N.Y.  
100 Per Cent Payment

Sheet 13 of 14 Sheets.

Final Estimate of the work done and materials furnished under Contract No. 1  
Holbrook, Cabot & Rollins Corp'n. Dated October 1, 1920, for the construction of  
the Canal St. and Spring St. Shafts. From October 1, 1920 to December 1, 1921.

Item No.	Description of Work Done.	Unit of Measurement.	Quantity	Unit Price	Amount	Amount of this Estimate	Amount to Date
Brought Forward					\$3,552.87.	\$633,584.93.	
300	Work Order No. 24. Extending the approaches to decking of Spring St. decking and changing pavement on N. side.						
	Labor				\$98.15.		
	Insurance				10.15.		
	Material				1.88.		
	10%				11.02.	0.	121.20.
Item 1 -	Excavation	Cu. Yd.	28.27	\$7.25.	186.32. x		
Item 150-	Decking	Sq. Ft.	13,227	90.00.	1,190.43. x		
					\$1,376.75.		
Work Order No. 25. Capping and decapping 16" high pressure line in Spring St.							
	Labor				413.86.		
	Insurance				42.79.		
	Material				71.63.		
	10%				51.83.	581.11.	581.11.
Item 72 -	Steel shapes.	Tons*	.004	100.00.	.40. x		
Item 73 -	Steel rods and bars.	Tons*	.0014	100.00.	.14. x		
					.54		
Work Order No. 27. Purchase of water meter for Field Office No. 1.							
	Material				30.00		
	10%				3.00.	33.00.	33.00.
300A	Supplementary Agreement. Work Order No. 12 (See letter of Div. Engr. 6/9/21) Shed for testing materials.						
	Lump Sum				375.00.	0	375.00.
300B	Supplementary Agreement. Work Order No. 26. (See letter of Ch. Engr. 11/16/21) Restoration of N.Y.C. R.R. tracks in Canal St.						
	Lump Sum				8,500.00.	8,500.00.	8,500.00.
Carried Forward					12,686.98.	\$643,195.24.	
*2000 lbs.							

x - That part of the work done under Work Orders, susceptible of classification is not extended to the column for totals as it is already included under the totals for the respective schedule items of the contract.



C O P Y

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October 6, 1923.

CONTRACT NO. 3  
ESTIMATE NO. 17

New York State Bridge & Tunnel Commission  
 and  
 New Jersey Interstate Bridge & Tunnel Commission.

Gentlemen:-

I submit herewith Approximate Estimate No.17, for the construction of the New York River Section of the Vehicular Tunnel from September 1st, 1923 to September 30th, 1923, inclusive, amounting to Four hundred thousand, eight hundred and twenty dollars and fifty-one cents (\$400,820.51), which amount I hereby certify is due the Contractor in conformity with the Contract and Specifications.

The bid price of this Contract is \$7,199,623.00 and the total estimated value of the work to date is as follows:

Total amount certified to date for payment	\$3,514,308.69
Total amount of retained percentage	<u>585,762.87</u>
Total estimated value of contract to date	\$4,100,071.56

RECOMMENDATION is made that, in accordance with Estimate No.17, Four hundred thousand, eight hundred and twenty dollars and fifty-one cents (\$400,820.51) be paid Booth & Flinn, Ltd., one-half to be paid by each State.

Respectfully submitted,

C. M. HULLAND

Chief Engineer.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Sheet 1 of 10 Sheets

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

SCHEDULE ITEMS

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
<b>EXCAVATION</b>						
For earth excavation, both above and below mean high water (except tunnel excavation and shaft excavation), including excavation for pipes, ducts and conduits	Cu. yd.			7.00		
For shaft excavation in earth, below mean high water	Cu. yd.	0	8,800	25.00	0.00.	\$ 220,000.00.
For shaft excavation in rock	Cu. yd.	1,948	1,948	45.00	87,660.00.	87,660.00.
For tunnel excavation wholly in earth	Cu. yd.	3,773	59,551	25.00	219,325.00.	1,488,775.00.
For tunnel excavation partly in earth and partly in rock	Cu. yd.	380	380	42.00	15,960.00.	15,960.00.
For tunnel excavation wholly in rock	Cu. yd.			70.00		
<b>PERMANENT BLANKET</b>						
For permanent blanket	Cu. yd.	0	8,500	.50	0.00.	4,250.00.
<b>CONCRETE AND MASONRY</b>						
For concrete (except concrete placed in compressed air), as follows:						
(a) For concrete used in changing sub-surface structures and concrete not otherwise provided for	Cu. yd.			15.00		
(b) For shaft concrete, (except concrete protection outside the steel of the river shaft caisson)	Cu. yd.	0	1,933	15.00	0.00.	29,070.00.
(c) For concrete protection outside the steel of the river shaft caisson	Cu. yd.	0	546	20.00	0.00	10,920.00.
(d) For tunnel concrete	Cu. yd.			21.00		
For concrete placed in compressed air, as follows:						
(b) For shaft concrete	Cu. yd.			25.00		
(d) For tunnel concrete	Cu. yd.	2	2	30.00	60.00.	60.00.
For mortar batches used in connection with placing concrete, either in normal or compressed air	Bbl. cement	0	224	6.00	0.00.	1,344.00.
For dry stone packing	Cu. yd.			2.00		
For granite facing on the outside of the river shaft caisson	Cu. yd.			90.00		
For granite curbing in the tunnels	Lin. ft.			3.00		
Amounts carried forward					323,005.00.	1,858,039.00.

**NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION**

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 September 30, 1923.

SCHEDULE ITEMS

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
Amounts brought forward.....					\$323,005.00.	\$1,858,039.00.
<b>GROUT</b>						
45 For 1 to 1 Portland cement grout, not placed in compressed air...	Bbl. cement			7.50		
46 For 1 to 0 Portland cement grout (neat grout), not placed in compressed air.....	Bbl. cement			7.50		
47 For 1 to 1 Portland cement grout, placed in compressed air.....	Bbl. cement			9.50		
48 For 1 to 0 Portland cement grout (neat grout), placed in compressed air.....	Bbl. cement			9.50		
49 For 1 to 1 mixed cement grout placed in compressed air, as follows:						
(a) For Portland cement used in mixed cement grout....	Bbl. cement	38	4,404	3.50	308.00.	15,414.00.
(b) For natural cement used in mixed cement grout....	Bbl. cement	177	3,957	2.20	389.40.	19,705.40.
50 For 1 to 0 mixed cement grout (neat grout), placed in compressed air, as follows:						
(a) For Portland cement in mixed cement grout.....	Bbl. cement	0	265	4.00	0.00.	1,060.00.
(b) For natural cement in mixed cement grout.....	Bbl. cement	0	745	2.20	0.00.	1,639.00.
<b>PILING AND TIMBERING</b>						
57 For platform required to be left around the river shaft.....	Sq. ft.			.10		
<b>WATERPROOFING</b>						
60 For waterproofing, treated woven fabric (except dry ply), not laid in compressed air, without protective layer of brick, as follows:						
(a) For one (1) ply.....	Sq. yd.			1.35		
(b) For two (2) ply.....	Sq. yd.			1.90		
(c) For three (3) ply.....	Sq. yd.			3.10		
(d) For four (4) ply.....	Sq. yd.			4.40		
(f) For six (6) ply.....	Sq. yd.			6.00		
Amounts carried forward.....					\$623,702.40.	\$1,895,357.40.

**NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION**

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Sheet 3 of 10 Sheets

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED,  
March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923  
September 30, 1923.

**SCHEDULE ITEMS**

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward . . . . .					\$323,702.40.	\$1,895,857.40.
	<b>WATERPROOFING — Cont'd</b>						
31	For waterproofing, treated woven fabric (except dry ply), laid in compressed air, without protective layer of brick, as follows:						
	(d) For four (4) ply . . . . .	Sq. yd.			7.00		
	(f) For six (6) ply . . . . .	Sq. yd.			11.00		
34	For waterproofing, treated woven fabric, laid in compressed air, including protective layer of brick, as follows:						
	(d) For four (4) ply . . . . .	Sq. yd.			16.50		
	(f) For six (6) ply . . . . .	Sq. yd.			20.00		
66	For applying (but not furnishing) protective waterproof coating, as follows:						
	(a) On the outside steel of the river shaft caisson . . . . .	Sq. yd.	0	1,632	1.50	0.00.	2,448.00.
	<b>STEEL AND IRON</b>						
70	For built-up steel work (except steel work of the river shaft caisson) and steel work not otherwise provided for,						
	Delivered . . . . .	Ton*			75.00		
	Erected . . . . .	Ton*			175.00		
71	For steelwork forming part of the completed work of the river shaft caisson,						
	Delivered . . . . .	Ton*	0	1,627	75.00	0.00.	122,025.00.
	Erected . . . . .	Ton*	38	1,514	75.00	2,850.00.	113,550.00.
72	For steel beams and shapes, with or without connections (except steelwork of the river shaft caisson and special rolled floor beams for the tunnel roadway),						
	Delivered . . . . .	Ton*			75.00		
	Erected . . . . .	Ton*			25.00		
73	For steel rods and bars for reinforcing concrete,						
	Delivered . . . . .	Ton*			75.00		
	Erected . . . . .	Ton*			25.00		
74	For wire mesh,						
	Delivered . . . . .	Ton*			75.00		
	Erected . . . . .	Ton*			45.00		

Amounts carried forward . . . . . 326,562.40 \$2,155,800.40

\*2,000 lbs per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at foundry.

**NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION**

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

**SCHEDULE ITEMS**

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$326,552.40.	\$2,133,880.40.
75	STEEL AND IRON—Cont'd For special steel structures, as follows:						
	(a) For special rolled floor beams for the tunnel roadway,						
	Delivered.....	Ton*			70.00		
	Erected.....	Ton*			0.00		
	(c) For steelwork in the connecting rings between the caissons and the tunnel lining,						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			100.00		
	(d) For steelwork in the permanent tie-rod anchorages						
	Delivered.....	Ton*	0	225	75.00	0.00.	16,875.00.
	Erected.....	Ton*			50.00		
76	For high tensile steel, as follows:						
	(a) For tunnel bolts and nuts, including soft steel or wrought-iron washers,						
	Delivered.....	Ton*	172	1,136	75.00	12,900.00.	88,950.00.
	Erected.....	Ton*	115	745	75.00	8,625.00.	55,875.00.
	(b) For permanent tie-rods, including bolts, pins, turnbuckles and clevises (but not including anchorages),						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			225.00		
77	For copper steel, as follows:						
	(a) For plates, bolts, nuts and washers,						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			15.00		
83	For furnishing and placing ladders, hand bars and miscellaneous wrought-iron fixtures (but not including pipe or pipe fittings),	Lb.			.15		
84	For furnishing and placing wrought-iron or steel pipe in the tunnel, as follows:						
	(a) For one (1) inch pipe....	Lin. ft.			.40		
	(b) For one and one-half (1½) inch pipe.....	Lin. ft.			.60		
	(c) For two (2) inch pipe....	Lin. ft.			.90		

Amounts carried forward.....

\$343,077.40.    \$2,295,580.40.

\*2,000 lbs.    (Note: per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at boundary.)

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND

NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1922 to September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$348,077.40.	\$2,295,580.40.
84	STEEL AND IRON — Cont'd						
Cont'd	(d) For two and one-half (2½) inch pipe.....	Lin. ft.			1.10		
	(e) For three (3) inch pipe....	Lin. ft.			1.35		
	(f) For four (4) inch pipe....	Lin. ft.			1.70		
85	For furnishing and placing galvanized iron electric conduits in the tunnel, as follows:						
	(a) For three-quarter (¾) inch conduits.....	Lin. ft.			.15		
	(b) For one (1) inch conduits.	Lin. ft.			.30		
	(c) For one and one-quarter (1¼) inch conduits.....	Lin. ft.			.33		
	(d) For one and one-half (1½) inch conduits.....	Lin. ft.			.36		
	(f) For three (3) inch conduits.....	Lin. ft.			.75		
86	For furnishing and placing miscellaneous galvanized iron fixtures, as follows:						
	(a) For outlet boxes in the tunnel.....	Each			3.00		
	(b) For pull boxes (4" x 4" x 3") in the tunnel.....	Each			2.20		
	(c) For pull boxes (6" x 6" x 4") in the tunnel.....	Each			4.90		
	(d) For sheet metal air flues complete, including fittings.....	Each			25.00		
	(e) For curb guards, ladders, handbars and miscellaneous fixtures.....	Lb.			.10		
88	For cast steel, as follows:						
	(a) For tunnel lining, except pile segments,						
	Delivered at foundry storage.....	Ton*			†55.00		
	Delivered from foundry storage to plant site	Ton*			5.00		
	Delivered directly from foundry to plant site...	Ton*	0	1,032	60.00	0.00.	61,920.00.
	Erected.....	Ton*	0	636	30.00	0.00.	19,080.00.
	(b) For pile segments,						
	Delivered at foundry storage.....	Ton*			†55.00		
	Delivered from foundry storage to plant site....	Ton*			5.00		

Amounts carried forward.....

\$348,077.40 . \$2,295,580.40.

\*2,000 lbs.

†\$5.00 per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at foundry

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

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Sheet 6 of 10 Sheets

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$348,077.40.	\$2,376,580.40.
88	STEEL AND IRON — Cont'd						
Cont'd	(b) For pile segments—Cont'd						
	Delivered directly from foundry to plant site...	Ton*			60.00		
	Erected.....	Ton*			30.00		
	(d) For posts, lintels and bases in the sump and pump chamber,						
	Delivered at foundry storage.....	Ton*			†55.00		
	Delivered from foundry storage to plant site.	Ton*			5.00		
	Delivered directly from foundry to plant site.	Ton*			60.00		
	Erected.....	Ton*			90.00		
90	CAST IRON						
	For cast-iron tunnel lining,						
	Delivered at foundry storage.....	Ton*	0	3,768	†30.00	0.00.	113,040.00.
	Delivered from foundry storage to plant site.	Ton*			5.00		
	Delivered directly from foundry to plant site.	Ton*	2,336	21,270	35.00	81,760.00.	744,450.00.
	Erected.....	Ton*	2,872	18,102	18.70	53,706.40.	338,507.40.
91	For furnishing new cast-iron hub and spigot pipe (straight pipe) required for sub-surface changes,	Ton*			70.00		
92	For furnishing new cast-iron hub and spigot pipe (special castings) required for sub-surface changes.....	Ton*			115.00		
95	For furnishing and placing miscellaneous cast-iron fixtures, as follows:						
	(a) For new manhole and catch basin fixtures, gratings, drain covers and castings not otherwise provided for (not including pipe or pipe fittings) . .	Ton*			115.00		
100	For furnishing and placing cast-iron water, discharge or other tunnel service pipe, as follows:						
	(b) For six (6) inch pipe .....	Lin. ft.			1.40		
	(c) For eight (8) inch pipe...	Lin. ft.			1.50		
	Amounts carried forward.....					\$483,543.80.	\$3,572,577.80.

\*2,000 pounds.

†\$5.00 per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at foundry.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$483,543.80.	\$3,572,577.80.
	SUB-SURFACE ELECTRIC DUCT AND CONDUIT CHANGES						
126	For furnishing and changing wrought-iron or steel conduits, as follows:						
	(b) For two and one-half (2½) inch pipe.....	Lin. ft.			5.00		
	(c) For three (3) inch pipe...	Lin. ft.			6.00		
	(d) For three and one-half (3½) inch pipe.....	Lin. ft.			7.00		
	ENGINEER'S FIELD OFFICE						
148	For the engineer's field office services.....	Lump sum	2½%	50%	4,000.00	100.00.	2,000.00.
	PLACING THE ROOFS OF THE LAND SHAFTS						
150	For placing (but not furnishing) the roof girders of the land shafts.....	Per shaft			200.00		
	FENCING						
155	For building tight board fence...	Lin. ft.			2.50		
	RESTORATION OF SURFACE						
164	For restoration of roadways between curb lines with granite block pavement.....	Sq. yd.			4.00		
165	For restoration of side-walks and other surfaces between the curb line and the building line.....	Sq. yd.			1.80		
	Amounts carried forward.....					\$483,643.80.	\$3,574,577.80.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1922, to September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$483,643.80.	\$3,574,577.80.
300	For work not susceptible of classification.....						
		Additional work orders Nos. 1 to 5, incl., Nos. 7, 8, 10, 14, 15, 16 completed, Nos. 6, 9, 11, 12 and 13 not yet completed.				388.95.	8,661.50.
300A	For furnishing additional service to the Engineer's Field Office.	Monthly Rate	1	11 8/31	\$50.00.	50.00.	562.90.
300B	Additional Work to safeguard tunnel structure.	Lump Sum	0	100%	16,223.50.	0.00.	16,223.50.
	Payment provided under Section 90-4 breaking cast-iron tunnel segments.		0			0.00.	45.86.
Total schedule items.....						\$484,082.75.	\$3,600,071.56.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED,  
dated March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1925  
to September 30, 1925.

ESTIMATE FOR PLANT

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	% FOR THIS ESTIMATE	% TO DATE	TOTAL ALLOWED FOR PLANT	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
PAYMENT FOR PLANT						
Power-house and equipment.....	Lump sum	0	100	250,000.00	0.00	\$250,000.00.
North shield.....	Lump sum	0	100	125,000.00	0.00	125,000.00.
South shield.....	Lump sum	0	100	125,000.00	0.00	125,000.00.
Plant payment previously estimated (Est. No. 8.).....						\$500,000.00.
Total payment for plant.....					0.00	500,000.00.

DEDUCTION OF PLANT PAYMENT

Amount due Contractor in this estimate under schedule items (see Sheet No. 10) \$435,674.47.  
Amount deducted for plant in this estimate, 8 per cent of above total \$34,853.96.  
Amount previously deducted (Est. No. 16.) \$190,901.75.

Amount deducted to date..... \$225,755.71.

Net... deduction for plant \$34,853.96. \$225,755.71.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 17 of the value of work done and materials furnished under Contract No. 3, BOOTH AND FLINN, LIMITED,  
March 28, 1922, for the construction of the New York River Section of the Hudson River Vehicular Tunnel, from September 1, 1923.  
September 30, 1923.

SUMMARY

Total amount estimated to date under schedule items (Refer to sheet No. 3 )	\$3,600,071.56.
Total amount estimated previously under schedule items (Refer to Estimate No. 16)	3,115,988.81.
Amount of present estimate under schedule items	484,082.75.
Deduct 10%	48,408.28.
Amount due for work done and materials furnished under this estimate	435,674.47.
Payment for plant (Refer to sheet No. 9 )	0.00.
Deduction for plant (Refer to sheet No. 9 )	34,853.96.
Amount due under this estimate	400,820.51.
AMOUNT CHARGEABLE UNDER THIS ESTIMATE TO N. Y. STATE BRIDGE & TUNNEL COMM.	<del>3 200,410.26.</del>
AMOUNT CHARGEABLE UNDER THIS ESTIMATE TO N. J. INTERSTATE BRIDGE & TUNNEL COMM.	<u>3 200,410.25.</u>

I HEREBY CERTIFY that the above estimate has been prepared by a person duly designated by me and in the manner required by the Contract, and that the work done and the materials delivered and estimated, including the prices thereof, are in conformity with the Contract and Specifications therefor, and have not been heretofore certified by me in any previous estimate.

C. M. HOLLAND.

Chief Engineer

Dated October 5, 1923

RECAPITULATION

Total amount certified for payment including this estimate	\$3,514,303.69.
Total amount retained percentage including this estimate	585,762.87.
Grand total estimated value of contract to date including this estimate	4,100,071.56.

NEW YORK STATE BRIDGE AND TUNNEL COMMISSION  
 NEW JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION

File No. 0 Acc. No. 0 Page 36

Office 1 Contract No. 3

Reference Estimate Sheets - File 0 Acc. 0 Page 325

Sheet No. 11 of 11

Computer H. Pfau Checked by C.L. Grandall Date Sept. 30, 1923

Subject Monthly Estimate #17 - September, 1923

ADDITIONAL WORK ORDER SUMMARY - SEPTEMBER, 1923.

Add'l. W.O. No.	Description of Work	Computed Under			Payment Under - Amount		Total for each Work Order.
		Estim No.	Page No.	Item No.	Item 300	Schedule Items of Contract	
1	Extension to Engineer's Field Office	5	26	300	930.49		5360.80
		6	38	300	1,392.21		
		7	55	300	2,421.84		
		8	75	300	154.61		
		9	114	300	461.65		
2	Brackets for Tunnel Scales at top of shafts	8	76	300	72.98		72.98
3	Building Platforms on Shafts.	8	77	300	341.45		341.45
4	Corrugated Sheeting for Engineer's Boiler	9	115	300	151.65		151.65
5	Commission's Garage	8	78	300	555.08		671.47
		9	116	300	111.24		
		10	147	300	5.15		
		9	117	300	38.79		
* 6	Transit Platforms	10	148	300	42.46		524.65
		11	177	300	52.73		
		14	275	300	99.15		
		15	310	300	31.57		
		16	346	300	141.22		
		17	386	300	118.73		
		9	118	300	9.04		
8	Changes in Medical Lock	8	79	300	54.37		106.28
* 9	Furnishing Concrete Mat'l. Rods to aid in obtain- ing Bottom Flange Elevs. of Tunnel Lining	9	119	300	51.91		7.15
		12	209	300	7.15		
* 11	Furnishing Materials for Waterproof Coating for River Shaft Caisson	12	210	300	12.78		12.78
		14	276	300	335.23		
		16	347	300	422.63		
* 12	Additional Rods as furnished under Item No. 10.	14	277	300	49.22		757.86
		15	311	300	17.81		
		16	348	300	35.75		
		17	387	300	38.55		
Carry Forward					8,157.44		8,157.44
* Not Complete							

NEW YORK STATE BRIDGE AND TUNNEL COMMISSION  
 NEW JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION

File No. 0 Acc. No. 0 Page 362A  
 Office 1 Contract No. 3  
 Sheet No. 11A of 11

Reference Estimate Sheets - File 0, Acc. 0 Page 325  
 Computer H. Pfau Checked by C.L. Crandall Date Sept. 30, 1923  
 Subject Monthly Estimate #17 - September, 1923

ADDITIONAL WORK ORDER SUMMARY - SEPTEMBER, 1923.

Add'l. W.O. No.	Description of Work	Computed Under			Payment Under - Amount			Total for each W.O.
		Estim. No.	Page No.	Item No.	Item 300	Schedule Items of Contract.	Supplem'ry. Schedule	
	Brought Forward.				8,157.44			8,157.44
* 13	Work & Material to aid in making Obser- vations on movement of tunnel lining.	15	312	300	248.64			299.31
		16	349	300	23.75			
		17	388	300	26.92			
14	Work & Material to Construct Closets for Photographer	17	389	300	12.93			12.93
15	Enlarging Grout Holes in Segments	17	390	300	127.88			127.88
16	Enlarging Grout Holes in Segments	17	391	300	63.94			63.94
			Totals		8,661.50			8,661.50

Chas. S. Gleim  
 Resident Engineer

\* Not Complete

C O P Y

October 6, 1923.

CONTRACT NO. 4  
ESTIMATE NO.14

New York State Bridge & Tunnel Commission  
 and  
 New Jersey Interstate Bridge & Tunnel Commission.

Gentlemen:-

I submit herewith Approximate Estimate No.14, for the construction of the New Jersey River Section of the Vehicular Tunnel from September 1st, 1923 to September 30th, 1923, inclusive, amounting to Three hundred and forty-four thousand, one hundred and fifty dollars and ninety-six cents (\$344,150.96), which amount I hereby certify is due the Contractor in conformity with the Contract and Specifications.

The bid price of this Contract is \$12,132,100.50 and the total estimated value of the work to date is as follows:

Total amount certified to date for payment	\$4,129,433.61
Total amount of retained percentage	<u>419,855.03</u>
Total estimated value of contract to date	\$4,549,288.64

RECOMMENDATION is made that, in accordance with Estimate No.14, Three Hundred and forty-four thousand, one hundred and fifty dollars and ninety-six cents (\$344,150.96) be paid Booth & Flinn, Ltd., one-half to be paid by each State.

Respectfully submitted,

C. M. HOLLAND.

Chief Engineer.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED,  
March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1,  
September 30, 1923

SCHEDULE ITEMS

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
Amounts brought forward.....					\$182,120.00	\$740,313.00
<b>GROUT</b>						
For 1 to 1 Portland cement grout, not placed in compressed air...	Bbl. cement			7.50		
For 1 to 0 Portland cement grout (neat grout), not placed in compressed air.....	Bbl. cement			7.50		
For 1 to 1 Portland cement grout, placed in compressed air.....	Bbl. cement	0	1,437		0.00	13,651.50
For 1 to 0 Portland cement grout (neat grout), placed in compressed air.....	Bbl. cement			9.50		
For 1 to 1 mixed cement grout placed in compressed air, as follows:						
(a) For Portland cement used in mixed cement grout....	Bbl. cement	0	300	3.50	0.00	1,050.00
(b) For natural cement used in mixed cement grout.....	Bbl. cement	0	600	2.20	0.00	1,320.00
For 1 to 0 mixed cement grout (neat grout) placed in compressed air, as follows:						
(a) For Portland cement used in mixed cement grout....	Bbl. cement			4.00		
(b) For natural cement used in mixed cement grout.....	Bbl. cement			2.20		
<b>PILING AND TIMBERING</b>						
For reinforced concrete piles to support the river shaft caissons in final position, as follows:						
(b) For twenty (20) inch piles..	Lin. ft.	0	52	16.00	0.00	832.00
(c) For twenty-four (24) inch piles.....	Lin. ft.	0	11,700	18.00	0.00	210,600.00
For platform required to be left around the river shafts.....	Sq. ft.			.10		
For timber bulkheads in the land shafts.....	M. ft. B. M.			150.00		
<b>WATERPROOFING</b>						
For waterproofing, treated woven fabric (except dry ply), not laid in compressed air, without protective layer of brick, as follows:						
Amounts carried forward.....					\$182,120.00	\$967,766.50

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 19 September 30, 1923.

SCHEDULE ITEMS

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
Amounts brought forward.....					\$182,120.00	\$ 967,766.50
<b>WATERPROOFING — Cont'd</b>						
(a) For one (1) ply .....	Sq. yd.			1.35		
(b) For two (2) ply .....	Sq. yd.			1.90		
(c) For three (3) ply .....	Sq. yd.			3.10		
(d) For four (4) ply .....	Sq. yd.			4.40		
(f) For six (6) ply .....	Sq. yd.			6.00		
For waterproofing, treated woven fabric, laid in compressed air, including protective layer of brick, as follows:						
(d) For four (4) ply .....	Sq. yd.	0	420	16.50	0.00	6,930.00
(f) For six (6) ply .....	Sq. yd.			20.00		
For applying (but not furnishing) protective waterproof coating, as follows:						
(a) On the outside steel of the river shaft caissons, and on the steel water-stops of the land shaft caissons.....	Sq. yd.	110	1,690	1.50	165.00	2,535.00
<b>STEEL AND IRON</b>						
For built up steelwork (except steelwork of the land and river shaft caissons) and steelwork not otherwise provided for:						
Delivered .....	Ton*			75.00		
Erected .....	Ton*			175.00		
For steelwork forming part of the completed work of the land and river shaft caissons (except steel rods and bars):						
Delivered .....	Ton*	60	2,880	75.00	4,500.00	216,000.00
Erected .....	Ton*	110	2,880	75.00	6,250.00	216,000.00
For steel beams and shapes, with or without connections (except steelwork of the land and river shaft caissons and special rolled floor beams for the tunnel roadway):						
Delivered .....	Ton*			75.00		
Erected .....	Ton*			25.00		
For steel rods and bars for reinforcing concrete:						
Delivered .....	Ton*			75.00		
Erected .....	Ton*			25.00		
For wire mesh:						
Delivered .....	Ton*			75.00		
Erected .....	Ton*			45.00		
Amounts carried forward.....					\$195,035.00	\$1,409,231.50

\*2,000 lbs. per ton assumed for steelwork unless otherwise specified.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

SCHEDULE ITEMS

M D.	DESCRIPTION OF WORK DONE	UNIT OF MEASURE- MENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$195,035.00	\$1,409,231.50
	STEEL AND IRON — Cont'd For special steel structures, as follows:						
	(a) For special rolled floor beams for the tunnel roadway:						
	Delivered.....	Ton*			70.00		
	Erected.....	Ton*			0 00		
	(b) For built-up floor beams for the tunnel roadway:						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			25.00		
	(c) For steelwork in the connecting rings between the caissons and the tunnel lining:						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			100.00		
	(d) For steelwork in the permanent tie-rod anchorages:						
	Delivered.....	Ton*	0	566	75.00	0.00	42,450.00
	Erected.....	Ton*			50.00		
	For high tensile steel, as follows:						
	(a) For tunnel bolts and nuts, including soft steel or wrought-iron washers:						
	Delivered.....	Ton*	0	1,817	75.00	0.00	136,275.00
	Erected.....	Ton*	64	214	75.00	4,800.00	16,050.00
	(b) For permanent tie rods, including bolts, pins, turnbuckles and clevises (but not including anchorages):						
	Delivered.....	Ton*	2	40	75.00	150.00	3,000.00
	Erected.....	Ton*			225.00		
	For copper steel, as follows:						
	(a) For plates, bolts, nuts and washers:						
	Delivered.....	Ton*			75.00		
	Erected.....	Ton*			15.00		
	For furnishing and placing ladders, hand bars and miscellaneous wrought-iron fixtures (but not including pipe or pipe fittings).....	Lb.			.15		
	For furnishing and placing wrought-iron or steel pipe in the tunnel, as follows:						
	Amounts carried forward.....					\$199,985.00	\$1,607,006.50

\* 2,000 lbs.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward.....					\$199,985.00	\$1,607,006.50
	STEEL AND IRON — Cont'd.						
	(a) For one (1) inch pipe.....	Lin. ft.			.40		
	(b) For one and one-half (1½) inch pipe.....	Lin. ft.			.60		
	(c) For two (2) inch pipe.....	Lin. ft.			.90		
	(d) For two and one-half (2½) inch pipe.....	Lin. ft.			1.10		
	(e) For three (3) inch pipe.....	Lin. ft.			1.35		
	(f) For four (4) inch pipe.....	Lin. ft.			1.70		
	For furnishing and placing galvanized iron electric conduits in the tunnel, as follows:						
	(a) For three-quarter (¾) inch conduits.....	Lin. ft.			.15		
	(b) For one (1) inch conduits..	Lin. ft.			.30		
	(c) For one and one-quarter (1¼) inch conduits.....	Lin. ft.			.33		
	(d) For one and one-half (1½) inch conduits.....	Lin. ft.			.36		
	(f) For three (3) inch conduits	Lin. ft.			.75		
	For furnishing and placing miscellaneous galvanized iron fixtures, as follows:						
	(a) For outlet boxes in the tunnel.....	Each			3.00		
	(b) For pull boxes (4" x 4" x 3") in the tunnel.....	Each			2.20		
	(c) For pull boxes (6" x 6" x 4") in the tunnel.....	Each			4.90		
	(d) For sheet metal air flues complete, including fittings	Each			25.00		
	(e) For curb guards, ladders, hand bars and miscellaneous fixtures.....	Lb.			.10		
	For cast steel, as follows:						
	(a) For tunnel lining, except pile segments:						
	Delivered at Foundry Storage.....	Ton*	450	2754	†\$55.00	24,750.00	151,470.00
	Delivered from Foundry Storage to Plant Site..	Ton*			5.00		
	Delivered directly from Foundry to Plant Site..	Ton*	0	334	60.00	0.00	50,040.00
	Erected.....	Ton*	114	569	25.00	2,850.00	14,225.00
	(b) For pile segments:						
	Delivered at Foundry Storage.....	Ton*			†\$55.00		

Amounts carried forward..... \$227,585.00 \$1,822,741.50

100 lbs. †\$5.00 per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at foundry.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

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Sheet 6 of 10 Sheets

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 September 30, 1923.

SCHEDULE ITEMS

NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE	
	Amounts brought forward.....					\$227,585.00	\$1,822,741.50	
	STEEL AND IRON — Cont'd							
	Delivered from Foundry Storage to Plant Site..	Ton*			5.00			
	Delivered directly from Foundry to Plant Site	Ton*			60.00			
	Erected .....	Ton*			25.00			
	CAST IRON							
	For cast-iron tunnel lining:							
	Delivered at Foundry Storage.....	Ton*	-142*	12914	†30.00	-4,260.00	387,420.00	
	Delivered from Foundry Storage to Plant Site..	Ton*	1,399	2622	5.00	6,995.00	13,110.00	
	Delivered directly from Foundry to Plant Site	Ton*	4,800	45101	35.00	168,000.00	1,578,535.00	
	Erected .....	Ton*	1,325	4620	12.50	16,562.50	57,750.00	
	For furnishing new cast-iron hub and spigot pipe (straight pipe) required for sub-surface changes	Ton*	0	67	70.00	0.00	4,690.00	
	For furnishing new cast-iron hub and spigot pipe (special castings) required for sub-surface changes	Ton*	0	2.2	115.00	0.00	253.00	
	For furnishing and placing miscellaneous cast-iron fixtures, as follows:							
	(a) For new manhole and catch basin fixtures, gratings, drain covers and castings not otherwise provided for (not including pipe or pipe fittings) .....	Ton*			115.00			
	For furnishing and placing cast-iron water or other tunnel service pipe, as follows:							
	(b) For six (6) inch pipe.....	Lin. ft.			1.40			
	(c) For eight (8) inch pipe ...	Lin. ft.			1.50			
	(d) For ten (10) inch pipe....	Lin. ft.			2.50			
	(e) For twelve (12) inch pipe..	Lin. ft.			3.50			
	NON-CORROSIVE METAL							
	For furnishing and placing non-corrosive metal .....	Lb.			.75			
	BRONZE							
	For furnishing and placing bronze fixtures, as follows:							
	(a) For bolts, wedges and hinges	Lb.			.75			
	<b>*Difference between delivered at foundry storage and transferred to Contract No.3</b>							
	Amounts carried forward.....					\$414,882.50	\$3,864,499.50	
	*2,000 lbs. †\$5.00 per ton retained to cover freight and handling charges for tunnel lining stored on leased ground at foundry.							

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward					\$414,882.50.	\$3,864,499.50.
	TUNNEL DUCTS						
110	For tunnel ducts, as follows:						
	(a) For single way ducts . . . . .	Duct ft.			.20		
	(b) For two (2) way ducts . . . . .	Duct ft.			.20		
	(c) For three (3) way ducts . . . . .	Duct ft.			.20		
	(d) For four (4) way ducts . . . . .	Duct ft.			.20		
	(e) For six (6) way ducts . . . . .	Duct ft.			.20		
	ASBESTOS MATERIALS						
112	For furnishing and placing asbestos materials and compounds, as follows:						
	(a) For one-quarter (1/4) inch asbestos lumber . . . . .	Sq. ft.			.50		
	SUB-SURFACE WATER PIPE CHANGES						
113	For changing cast-iron water pipe (but not furnishing new pipe required), as follows:						
	(b) For six (6) inch pipe . . . . .	Lin. ft.	0	309.85	1.00	0.00.	309.85.
	(c) For eight (8) inch pipe . . . . .	Lin. ft.	0	265.31	1.10	0.00.	291.84.
	(d) For ten (10) inch pipe . . . . .	Lin. ft.	0	247.67	1.25	0.00.	309.59.
	(e) For twelve (12) inch pipe . . . . .	Lin. ft.			1.35		
	NEW SUB-SURFACE GAS PIPE AND WATER PIPE LINES						
123	For laying cast-iron water pipe where required (but not furnishing new pipe), as follows:						
	(b) For six (6) inch pipe . . . . .	Lin. ft.	0	2,224	.65	0.00.	1,445.60.
	(c) For eight (8) inch pipe . . . . .	Lin. ft.			.85		
	(d) For ten (10) inch pipe . . . . .	Lin. ft.			1.05		
124	For laying cast-iron gas pipe where required (but not furnishing new pipe), as follows:						
	(a) For four (4) inch pipe . . . . .	Lin. ft.	0	1,756	.45	0.00.	790.20.
	ENGINEER'S FIELD OFFICE						
148	For building and equipping an Engineer's Office . . . . .	Lump sum	0.4%	92.0%	25,000.00	100.00.	23,000.00.
	FENCING						
155	For building tight board fence . . . . .	Lin. ft.	0	1,700.16	2.50	0.00.	4,250.40.
	Amounts carried forward . . . . .					\$414,982.50.	\$3,894,896.98.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Sheet **8** of **10** Sheets 215

Approximate Estimate No. **14** of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from **September 1,** 19**23** to **September 30,** 19**23**.

SCHEDULE ITEMS

ITEM NO.	DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
	Amounts brought forward					\$414,982.50	\$3,894,896.98
300	For work not susceptible of classification		Additional work orders Nos. 1 to 5, inc., 7 to 11, inc., 14, 19 and 21 completed. Nos. 6, 12, 13, 15, 16 and 17 not yet completed.			658.76	4,030.87
300A	Removing paint and furnishing (but not applying) bituminous coating; completed.					0.00	88.72
	Payment provided under Section 90-4, breaking cast-iron and cast-steel tunnel segments.					0.00	272.07
Total schedule items.....						\$415,641.26	\$3,899,288.64

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, dated March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 to September 30, 1923.

ESTIMATE FOR PLANT

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	% FOR THIS ESTIMATE	% TO DATE	PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
PAYMENT FOR PLANT Power house and equipment .....	Lump sum	0	100%	250,000.00	0.00	\$250,000.00
North land shield .....	Lump sum	0	50%	100,000.00	0.00	50,000.00
<b>river</b> South <del>land</del> shield .....	Lump sum	0	100%	100,000.00	0.00	100,000.00
North river shield .....	Lump sum	0	100%	125,000.00	0.00	125,000.00
<b>land</b> South <del>river</del> shield .....	Lump sum	0	100%	125,000.00	0.00	125,000.00
Plant Payment Previously Estimated (Est. No. <u>13</u> ) .....					0.00	\$650,000.00
<b>\$650,000.00</b> Total payment for plant ....						
<b>DEDUCTION FOR PLANT PAYMENT</b>						
Amount due Contractor in this estimate under schedule items (See Sheet No. <u>10</u> ) .....						\$374,077.13
Amount deducted for plant in this estimate 8 per cent of above total .....					29,926.17	
Amount previously deducted (Est. No. ....) .....					0.00	
Amount Deducted to Date ...						29,926.17

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

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Sheet 10 of 10 Sheets

Approximate Estimate No. 14 of the value of work done and materials furnished under Contract No. 4, BOOTH AND FLINN, LIMITED, March 28, 1922, for the construction of the New Jersey River Section of the Hudson River Vehicular Tunnel, from September 1, 1923 September 30, 1923.

SUMMARY

Total amount estimated to date under schedule items (Refer to sheet No. <u>8</u> )	\$3,899,288.64
Total amount estimated previously under schedule items (Refer to Estimate No <u>13</u> )	<u>3,483,647.38</u>
Amount of present estimate under schedule items	415,641.26
Deduct 10%	<u>41,564.13</u>
Amount due for work done and materials furnished under this estimate	374,077.13
Payment for plant (Refer to sheet No. )	0.00
Reduction for plant (Refer to sheet No. <u>9</u> )	29,926.17
Amount due under this estimate	344,150.96
AMOUNT CHARGEABLE UNDER THIS ESTIMATE TO N. Y. STATE BRIDGE & TUNNEL COMMISSION.	172,075.48
AMOUNT CHARGEABLE UNDER THIS ESTIMATE TO N. J. INTERSTATE BRIDGE & TUNNEL COMMISSION	<u>172,075.48</u>

I HEREBY CERTIFY that the above estimate has been prepared by a person duly designated by me and in the manner required by the Contract, and that the work done and the materials delivered and estimated, including the prices thereof, are in conformity with the Contract and Specifications therefor, and have not been heretofore certified by me in any previous estimate.

Dated October 3, 1923.

*C. M. HOLLAND*  
Chief Engineer.

RECAPITULATION

Total amount certified for payment including this estimate	4,129,433.61
Total amount retained percentage including this estimate	419,855.03
Grand total estimated value of contract to date including this estimate	4,549,288.64

## MONTHLY ESTIMATE NO.14 SEPTEMBER 1923 CONTRACT NO.4

## ADDITIONAL WORK ORDER SUMMARY SEPTEMBER 1923

Addi- tion- al Work Order No.	Description of Work	Computed Under			Payment Under		Amount Total for each Work Order
		Est. No.	Page No.	Item No.	Item #300	Schedule Items of Contract	
1	Removing and re- locating part of P. V.O.Co. wall	6 6 3	211 211 87	1 27(a) 300	\$52.78 294.15 \$338.79		\$685.72
2	Placing three sur- vey instruments	1 1	24 24	1 27(a)	47.81 55.20		103 .01
3	Lights for the road- way leading to the River Front Plant Sites	5	159	300	460.90		460.90
4	Electric Light and lead for plumbing piles	5	100	300	60.42		60.42
5	Electric Apparatus for plumbing piles	5	161	300	102.12		102.12
*6	Furnishing gate valves	4 7	123 259	300 300	60.54 21.88		82.42
7	Additional cement for concrete in piles under N.J.River cais- sons	6 14	212	300	310.73 101.78		412.51
8	Storm door for En- gineer's office	6	213	300	48.76		48.76
9	For applying protec- tive waterproofing coating on North Land Shaft	6	214	66(a)	134.43		134.43
10	For removing the paint and applying the pro- tective waterproof coating on the South Land Shaft	7 7	260 261	66(a) 300	296.03 297.69		593.72
	Carried forward				\$1,803.61	\$880.40	\$2,684.01

\*Not completed.

ADDITIONAL WORK ORDER SUMMARY SEPTEMBER 1923

Addi- tion- al Work Order No.	Description of Work	Computed Under				Payment Under		Amount Total for each Work Order
		Est. No.	Page No.	Item No.	Item #300	Schedule Items of Contract	Supple- mentary Schedule	
	Brought Forward				\$1,803.61	\$880.40	\$2,684.01	
11	Survey towers and targets	9 10	361 409	300 300	278.64 172.47		451.11	
*12	Line dropping apparatus	10 11	410 461	300 300	101.86 61.19		163.05	
*13	Supplying water proof coating for River Shaft Caissons	11 13	462 564	300 300	156.40 560.63		717.03	
14	Labor for taking concrete test specimens	11	463	300	16.43		16.43	
*15	Electric Leads for Alignment Party also Electric Light and Lead for Plumbing Piles to Support the New Jersey River Shaft Caissons	11	464	300	12.03		12.03	
*16	Instrument and Observers Plat- form	11	466	300	61.19		61.19	
*17	Instrument Platform for the Tunnel	12		300	124.06		124.06	
19	Screens for the New Jersey Field Office	13	565	300	125.38		125.38	
	Carried forward				\$3,473.89	\$880.40	\$ 4,354.29	

\*Not completed.



COPY

October 6, 1923.

CONTRACT NO. 5  
ESTIMATE NO. 1

New York State Bridge & Tunnel Commission  
 and  
 New Jersey Interstate Bridge & Tunnel Commission.

Gentlemen:-

I submit herewith Approximate Estimate No.1, for the construction of the New York Approach Section of the Vehicular Tunnel from August 20th, 1923 to September 30th, 1923, inclusive, amounting to Forty-seven thousand, six hundred and thirty-six dollars and ten cents (\$47,636.10), which amount I hereby certify is due the Contractor in conformity with the Contract and Specifications.

The bid price of this Contract is \$3,467,413.50 and the total estimated value of the work to date is as follows:

Total amount certified to date for payment	\$47,636.10
Total amount of retained percentage	<u>5,292.90</u>
Total estimated value of contract to date	\$52,929.00

RECOMMENDATION is made that, in accordance with Estimate No.1, Forty-seven thousand, six hundred and thirty-six dollars and ten cents (\$47,636.10) be paid Rodgers & Hagerty, Inc., one-half to be paid by each State.

Respectfully submitted,

C. M. HOLLAND

Chief Engineer.

**NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION**

Approximate Estimate No. 1 of the value of work done and materials furnished under Contract No. 5, Rodgers & Hagerty, Inc., dated Aug. 20, 1923.  
 17, 1923, for the construction of the New York Approach Section of the Hudson River Vehicular Tunnel, from September 30, 1923.

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
<b>EXCAVATION</b>						
For excavation, both above and below mean high water, for test pits, pipes, ducts, conduits, sewers and other structures (but not including excavation for the tunnel structure, the land ventilation building and the air ducts between the shafts and the ventilation building).....	Cu. Yd.			\$14.00		
For excavation, above mean high water, for the tunnel structure, the land ventilation building and the air ducts between the shafts and the ventilation building.....	Cu. Yd.	1530	1530	14.00	\$21,420.00.	\$21,420.00.
For excavation, below mean high water, for the tunnel structure, the land ventilation building and the air ducts between the shafts and the ventilation building.....	Cu. Yd.	712	712	14.00	9,968.00.	9,968.00.
<b>UNDERPINNING BUILDINGS</b>						
For underpinning, protecting, supporting, maintaining and restoring buildings, as follows:	Lump					
(a) For Nos. 293-301 Spring St.	Sum			1,000.00		
(b) For No. 290 Hudson St. and Nos. 286-288 Spring St...	Lump				39,000.00	
	Sum					
Amounts carried forward					\$ 31,388.00.	\$31,388.00.

**NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION**

Approximate Estimate No. 1 of the value of work done and materials furnished under Contract No. 5, Rodgers & Hagerty, Inc., dated August 20, 1923, for the construction of the New York Approach Section of the Hudson River Vehicular Tunnel, from September 30, 1923.

DESCRIPTION OF WORK DONE	UNIT OF MEASUREMENT	QUANTITY FOR THIS ESTIMATE	QUANTITY TO DATE	UNIT PRICE	AMOUNT OF THIS ESTIMATE	AMOUNT TO DATE
Amounts brought forward					\$31,388.00.	\$ 31,388.00.
For laying cast-iron pipe sewers but not including furnishing new pipe required, as follows:						
(e) For twelve (12) inch pipe..	Lin. Ft.			\$2.50		
 <b>TEMPORARY BY-PASSING GAS PIPES</b>						
For temporary by-passing gas pipes without trestle upon or below the street surface, furnished, placed and removed, as follows:						
(a) For four (4) inch pipe.....	Lin. Ft.			4.00		
(b) For six (6) inch pipe.....	Lin. Ft.			7.00		
(c) For eight (8) inch pipe.....	Lin. Ft.	1151	1151	10.00	11,510.00.	11,510.00.
(d) For ten (10) inch pipe.....	Lin. Ft.			9.00		
(e) For twelve (12) inch pipe..	Lin. Ft.	25	25	11.00	275.00.	275.00.
(f) For sixteen (16) inch pipe..	Lin. Ft.			15.00		
(g) For twenty (20) inch pipe..	Lin. Ft.			15.00		
 For temporary by-passing gas pipe above the street surface on trestle or cable suspension, furnished, placed and removed, as follows:						
(a) For four (4) inch pipe.....	Lin. Ft.			11.00		
(b) For six (6) inch pipe.....	Lin. Ft.			12.00		
(c) For eight (8) inch pipe....	Lin. Ft.	36	36	15.00	540.00.	540.00.
(d) For ten (10) inch pipe.....	Lin. Ft.			16.00		
(e) For twelve (12) inch pipe..	Lin. Ft.	512	512	18.00	9,216.00.	9,216.00.
(f) For sixteen (16) inch pipe..	Lin. Ft.			20.00		
(g) For twenty (20) inch pipe..	Lin. Ft.			20.00		
Amounts carried forward					\$ 52,929.00.	\$52,929.00.

NEW YORK STATE BRIDGE & TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE & TUNNEL COMMISSION

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Sheet 3 of 3 Sheets

Approximate Estimate No. 1 of the value of work done and materials furnished under Contract No. 5, RODGERS & HAGERTY, Inc., dated August 20, 1923, for the construction of the New York Approach Section of the Hudson River Vehicular Tunnel, from September 30, 1923.

## SUMMARY

Amount estimated to date (Refer to sheet No. <u>2</u> )	\$ 52,929.00.
Amount previously estimated (Refer to Estimate No. - )	0.00.
Amount of present estimate	52,929.00.
Amount due for work done and materials furnished under this estimate	5,292.90.
Amount due for work done and materials furnished under this estimate	47,636.10.
Amount CHARGEABLE UNDER THIS ESTIMATE TO N. Y. STATE BRIDGE & TUNNEL COMMISSION.	\$23,818.05.
Amount CHARGEABLE UNDER THIS ESTIMATE TO N. J. INTERSTATE BRIDGE & TUNNEL COMMISSION	\$23,818.05.

HEREBY CERTIFY that the above estimate has been prepared by a person duly designated by me and in the manner required by the Contract, and that the work done and the materials delivered and estimated, including the prices thereof, are in conformity with the Contract and specifications therefor, and have not heretofore certified by me in any previous estimate.

C. M. ROLLAND

-----  
Chief Engineer

October 4th, 1923

## RECAPITULATION

Amount certified for payment including this estimate	\$47,636.10.
Amount retained percentage including this estimate	5,292.90.
Total estimated value of contract to date including this estimate	52,929.00.

**NEW YORK STATE BRIDGE AND TUNNEL COMMISSION  
AND  
NEW JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION  
HUDSON RIVER VEHICULAR TUNNEL CONTRACT NO 1  
CANVASS OF BIDS RECEIVED SEPTEMBER 21, 1920**

Thomas B. Bryson  
52 Vanderbilt Av.  
New York

Booth & Flinn Ltd  
17 Battery Pl.  
New York.

Patrick McGovern  
50-E. 42nd St  
New York.

Fred K L. Cranford  
Inc.  
149 Remsen St.  
Brooklyn.

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ITEM	CLASSIFICATION	UNIT	QUANTITY	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT
1	Excavation for sewers & pipes, except Canal St. sewer	Cu. Yd.	330	\$ 7.25	\$ 2392.50	\$ 9.00	\$ 2970.00	\$ 32.00	\$ 10,560.00	\$ 15.00	\$ 4950.00		
2	Excavation above M.H.W. for main Canal St. sewer	Cu. Yd.	1,030	6.75	6952.50	17.00	17510.00	41.50	42,745.00	15.00	15,450.00		
3	" below " " " " " " "	Cu. Yd.	840	8.25	6930.00	17.00	14280.00	44.50	37,380.00	15.00	12,600.00		
4	Earth excavation above M.H.W. for shafts	Cu. Yd.	870	6.75	5872.50	24.00	20880.00	33.00	28,710.00	55.00	47,850.00		
5	" below " " " " " " "	Cu. Yd.	8,330	20.00	166,600.00	24.00	199,920.00	33.00	274,890.00	55.00	458,150.00		
6	Rock " for the permanent shafts	Cu. Yd.	10	1.00	10.00	5.00	50.00	25.00	250.00	15.00	150.00		
27-a	Concrete in the main Canal St. sewer	Cu. Yd.	725	18.00	13050.00	20.50	14862.50	30.00	21,750.00	20.00	14,500.00		
27-b	" " caisson walls and floors	Cu. Yd.	2,710	15.00	40650.00	20.00	54200.00	30.00	81,300.00	20.00	54,200.00		
28	" placed in compressed air	Cu. Yd.	770	21.00	16170.00	20.00	15400.00	30.00	23,100.00	30.00	23,100.00		
29	Mortar batches in connection with placing concrete	Bbl.	300	4.50	1350.00	6.50	1950.00	5.00	1500.00	10.00	3000.00		
34	Brick Masonry	Cu. Yd.	5	30.00	150.00	40.00	200.00	40.00	200.00	50.00	250.00		
45	Grout, Portland Cement 1 to 1 not in compressed air	Bbl.	10	5.00	50.00	8.50	85.00	7.00	70.00	10.00	100.00		
46	" " " 1 to 1 " " " "	Bbl.	10	4.50	45.00	8.50	85.00	6.50	65.00	10.00	100.00		
47	" " " 1 to 1 in " " " "	Bbl.	1,000	5.75	5750.00	12.50	12500.00	8.00	8000.00	10.00	10000.00		
48	" " " 1 to 1 " " " "	Bbl.	100	5.25	525.00	12.50	1250.00	7.50	750.00	10.00	1000.00		
63	Brick in asphalt mastic, in compressed air incl. 1-ply fabric	Cu. Yd.	5	60.00	300.00	71.00	355.00	53.00	265.00	150.00	750.00		
64d	Water proofing in compressed air incl. layer of brick - 4-ply	Sq. Yd.	10	3.50	35.00	5.55	55.50	6.30	63.00	4.00	40.00		
64f	" " " " " " " " - 6- "	Sq. Yd.	460	5.00	2300.00	15.00	6900.00	8.15	3749.00	6.00	2760.00		
70	Riveted Steel (except shaft caisson)	Ton	2	125.00	250.00	160.00	320.00	240.00	480.00	200.00	400.00		30
71	Steel work forming part of the shaft caissons	Ton	1,190	282.00	335580.00	225.00	267750.00	240.00	285600.00	200.00	238000.00		30
72	" beams and shapes	Ton	2	100.00	200.00	200.00	400.00	240.00	480.00	200.00	400.00		30
73	" rods " bars	Ton	40	100.00	4000.00	200.00	8000.00	150.00	6000.00	175.00	7000.00		20
74	Wire Forms, Special	Lb.	500	.12	60.00	.30	150.00	.17	85.00	.30	150.00		
81	Wrought iron or steel pipe, except pipe for electric conduits	Lb.	500	.06	30.00	.35	175.00	.15	75.00	.10	50.00		
82	Malleable iron fittings for new wrought iron or steel pipe	Lb.	100	.20	20.00	.25	25.00	.15	15.00	.25	25.00		
83	Miscellaneous wrought iron and galvanized iron	Lb.	100	.10	10.00	.15	15.00	.20	20.00	.25	25.00		
91	Cast iron hub and spigot pipe (straight pipe)	Ton	17	80.00	1360.00	150.00	2550.00	100.00	1700.00	150.00	2550.00		10
92	" " " " " " (special castings)	Ton	4	150.00	600.00	190.00	760.00	210.00	840.00	200.00	800.00		20
93	" " pipe (straight pipe) high pressure	Ton	5	100.00	500.00	120.00	600.00	110.00	550.00	150.00	750.00		15
94	" " " (special castings) " " "	Ton	2	200.00	400.00	230.00	460.00	220.00	440.00	200.00	400.00		20
95	" " manhole and catch basin fixtures and gratings	Ton	1	150.00	150.00	175.00	175.00	120.00	120.00	200.00	200.00		20
120b	Changing 6" cast iron water pipe	Lin. Ft.	60	3.50	210.00	1.70	102.00	.80	48.00	4.00	240.00		
120c	" 12" " " " " " "	Lin. Ft.	60	9.00	540.00	3.00	180.00	1.70	102.00	5.00	300.00		
121-g	" 16" high pressure cast iron pipe	Lin. Ft.	60	16.00	960.00	4.40	264.00	3.00	180.00	10.00	600.00		
122-a	" 4" gas pipe	Lin. Ft.	60	3.50	210.00	1.65	99.00	.50	30.00	4.00	240.00		
122-b	" 6" " " " " " "	Lin. Ft.	60	4.50	270.00	1.70	102.00	.70	42.00	4.00	240.00		
122d	" 10" " " " " " "	Lin. Ft.	60	8.00	480.00	2.20	132.00	1.30	78.00	5.00	300.00		
122e	" 12" " " " " " "	Lin. Ft.	60	10.50	630.00	3.00	180.00	2.80	168.00	5.00	300.00		
125	Furnishing and changing ducts and conduits	Dct. Ft.	50	.50	25.00	.28	14.00	1.00	50.00	2.00	100.00		
126-a	" " " wrought-iron, steel cond. 2"	Lin. Ft.	100	.50	50.00	5.40	540.00	.60	60.00	3.00	300.00		
126b	" " " " " " " 2 1/2"	Lin. Ft.	950	.75	712.50	2.75	2612.50	.75	712.50	3.00	2850.00		
126c	" " " " " " " 3"	Lin. Ft.	340	1.00	340.00	7.00	2380.00	1.00	340.00	3.00	1020.00		
126d	" " " " " " " 3 1/2"	Lin. Ft.	100	1.25	125.00	4.95	495.00	1.25	125.00	3.00	300.00		
126e	" " " " " " " 4"	Lin. Ft.	100	1.50	150.00	5.25	525.00	1.55	155.00	3.00	300.00		
126f	" " " " " " " 4 1/2"	Lin. Ft.	100	1.75	175.00	6.50	650.00	1.85	185.00	3.00	300.00		
126g	" " " " " fibre conduit 3"	Lin. Ft.	50	1.00	50.00	3.00	150.00	1.00	50.00	3.00	150.00		
126h	" " " " " " " 4"	Lin. Ft.	100	1.50	150.00	5.00	500.00	1.55	155.00	3.00	300.00		
133e	Changing or laying cast iron sewer pipe 12"	Lin. Ft.	60	8.00	480.00	3.20	192.00	2.00	120.00	10.00	600.00		
138-a	By-passing pipes, without trestle - 4"	Lin. Ft.	110	5.50	605.00	3.45	379.50	3.00	330.00	10.00	1100.00		
138b	" " " " " " " 6"	Lin. Ft.	100	8.00	800.00	3.75	375.00	6.00	600.00	10.00	1000.00		
138d	" " " " " " " 10"	Lin. Ft.	100	13.00	1300.00	6.40	640.00	10.00	1000.00	12.00	1200.00		
138e	" " " " " " " 12"	Lin. Ft.	100	16.00	1600.00	8.60	860.00	13.00	1300.00	12.00	1200.00		
143	Shifting New York Central Railroad Tracks	Lin. Ft.	800	3.50	2800.00	12.00	9600.00	75.00	60000.00	25.00	20000.00		
148	Building and equipping Engineer's field office	Lump	1	22000.00	22000.00	20000.00	20000.00	15000.00	15000.00	8000.00	8000.00		250
150	Temp. timber decking over shafts (excl. of surface restoration)	M.F. B.M.	20	90.00	1800.00	150.00	3000.00	150.00	3000.00	150.00	3000.00		
153	Building tight board fence around shafts and park	Lin. Ft.	700	1.00	700.00	5.00	3500.00	5.00	3500.00	5.00	3500.00		
164	Restoration of roadways with granite block pavement	Sq. Yd.	300	2.75	825.00	4.00	1200.00	8.00	2400.00	5.00	1500.00		
165	" " sidewalk	Sq. Yd.	190	2.75	522.50	5.00	950.00	3.00	570.00	5.00	950.00		
<b>TOTAL</b>					650,802.50		694,455.00		922,052.50		949,590.00		

**NEW YORK STATE BRIDGE AND TUNNEL COMMISSION**  
**AND**  
**JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION**  
**HUDSON RIVER VEHICULAR TUNNEL CONTRACT No 1**  
**CANVASS OF BIDS RECEIVED SEPTEMBER 21, 1920**

Thomas B. Bryson  
52 Vanderbilt Av.  
New York

Booth & Flinn Ltd  
17 Battery Pl.  
New York.

Patrick McGovern  
50 - E. 42<sup>nd</sup> St  
New York.

Fred'k L. Cranford  
Inc.  
149 Remsen St.  
Brooklyn.

Rogers & Haggerty  
103 E. 125<sup>th</sup> St  
New York

Engineers  
Estimate.

CLASSIFICATION	UNIT	QUANTITY	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT
Excavation for sewers & pipes, except Canal St. sewer	Cu. Yd.	330	\$ 7.25	\$ 2392.50	\$ 9.00	\$ 2970.00	\$ 32.00	\$ 10,560.00	\$ 15.00	\$ 4950.00	\$ 20.00	\$ 6600.00	10.00	3300.00
Excavation above M.H.W. for main Canal St. sewer	Cu. Yd.	1,030	6.75	6952.50	17.00	17510.00	41.50	42745.00	15.00	15450.00	20.00	20600.00	10.00	10300.00
" " " " " " " "	Cu. Yd.	840	8.25	6930.00	17.00	14280.00	44.50	37380.00	15.00	12600.00	25.00	21000.00	12.00	10080.00
Earth excavation above M.H.W. for shafts	Cu. Yd.	870	6.75	5872.50	24.00	20880.00	33.00	28710.00	55.00	47850.00	20.00	17400.00	10.00	8700.00
" " " " " " " "	Cu. Yd.	8,330	20.00	166600.00	24.00	199920.00	33.00	274,890.00	55.00	458150.00	69.00	574770.00	23.00	191,590.00
Rock " " for the permanent shafts	Cu. Yd.	10	1.00	10.00	5.00	50.00	25.00	250.00	15.00	150.00	60.00	600.00	30.00	300.00
Concrete in the main Canal St. sewer	Cu. Yd.	725	18.00	13050.00	20.50	14862.50	30.00	21,750.00	20.00	14500.00	30.00	21750.00	22.00	15950.00
" " caisson walls and floors	Cu. Yd.	2710	15.00	40650.00	20.00	54200.00	30.00	81300.00	20.00	54200.00	30.00	81300.00	16.00	43360.00
" " placed in compressed air	Cu. Yd.	770	21.00	16170.00	20.00	15400.00	30.00	23,100.00	30.00	23100.00	40.00	30800.00	26.00	20020.00
Mortar batches in connection with placing concrete	Bbl.	300	4.50	1350.00	6.50	1950.00	5.00	1500.00	10.00	3000.00	10.00	3000.00	6.00	1800.00
Brick Masonry	Cu. Yd.	3	30.00	150.00	40.00	200.00	40.00	200.00	50.00	250.00	50.00	250.00	40.00	200.00
Grout, Portland Cement 1 to 1 not in compressed air	Bbl.	10	5.00	50.00	8.50	85.00	7.00	70.00	10.00	100.00	15.00	150.00	7.00	70.00
" " " " 1 to 1 " " " "	Bbl.	10	4.50	45.00	8.50	85.00	6.50	65.00	10.00	100.00	15.00	150.00	7.00	70.00
" " " " 1 to 1 in " " " "	Bbl.	1,000	5.75	5750.00	12.50	12500.00	8.00	8000.00	10.00	10000.00	20.00	20000.00	10.00	10000.00
" " " " 1 to 0 " " " "	Bbl.	100	5.25	525.00	12.50	1250.00	7.50	750.00	10.00	1000.00	20.00	2000.00	10.00	1000.00
Brick in asphalt mastic, in compressed air incl. 1-ply fabric	Cu. Yd.	5	60.00	300.00	71.00	355.00	53.00	265.00	150.00	750.00	70.00	350.00	70.00	350.00
Waterproofing in compressed air incl. layer of brick - 4-ply	Sq. Yd.	10	3.50	35.00	5.55	55.50	6.30	63.00	4.00	40.00	7.50	75.00	9.00	90.00
" " " " " " " " - 6 - "	Sq. Yd.	460	5.00	2300.00	15.00	6900.00	8.15	3749.00	6.00	2760.00	8.00	3680.00	11.00	5060.00
Pivoted Steel (except shaft caisson)	Ton	2	125.00	250.00	160.00	320.00	240.00	480.00	200.00	400.00	300.00	600.00	160.00	320.00
Steel work forming part of the shaft caissons	Ton	1,190	282.00	335580.00	225.00	267750.00	240.00	285600.00	200.00	238000.00	300.00	357000.00	185.00	220150.00
" " beams and shapes	Ton	2	100.00	200.00	200.00	400.00	240.00	480.00	200.00	400.00	300.00	600.00	135.00	270.00
" " rods " bars	Ton	40	100.00	4000.00	200.00	8000.00	150.00	6000.00	175.00	7000.00	200.00	8000.00	135.00	5400.00
Wire Forms, Special	Lb.	500	.12	60.00	.30	150.00	.17	85.00	.30	150.00	.30	150.00	.25	125.00
Wrought iron or steel pipe, except pipe for electric conduits	Lb.	500	.06	30.00	.35	175.00	.15	75.00	.10	50.00	.15	75.00	.25	125.00
Malleable iron fittings for new wrought iron or steel pipe	Lb.	100	.20	20.00	.25	25.00	.15	15.00	.25	25.00	.50	50.00	.50	50.00
Miscellaneous wrought iron and galvanized iron	Lb.	100	.10	10.00	.15	15.00	.20	20.00	.25	25.00	.15	15.00	.50	50.00
Cast iron hub and spigot pipe (straight pipe)	Ton	17	80.00	1360.00	150.00	2550.00	100.00	1700.00	150.00	2550.00	100.00	1700.00	120.00	2040.00
" " " " " " (special castings)	Ton	4	150.00	600.00	190.00	760.00	210.00	840.00	200.00	800.00	200.00	800.00	240.00	960.00
" " " " " " pipe (straight pipe) high pressure	Ton	5	100.00	500.00	120.00	600.00	110.00	550.00	150.00	750.00	150.00	750.00	120.00	600.00
" " " " " " (special castings) " " "	Ton	2	200.00	400.00	230.00	460.00	220.00	440.00	200.00	400.00	250.00	500.00	240.00	480.00
" " " " " " manhole and catch basin fixtures and gratings	Ton	1	150.00	150.00	175.00	175.00	120.00	120.00	200.00	200.00	200.00	200.00	170.00	170.00
Changing 6" cast iron water pipe	Lin. Ft.	60	3.50	210.00	1.70	102.00	.80	48.00	4.00	240.00	5.00	300.00	1.00	60.00
" " " " " " " " 12" " " " " " "	Lin. Ft.	60	9.00	540.00	3.00	180.00	1.70	102.00	5.00	300.00	9.00	540.00	2.00	120.00
" " " " " " " " 16" high pressure cast iron pipe	Lin. Ft.	60	16.00	960.00	4.40	264.00	3.00	180.00	10.00	600.00	12.00	720.00	4.00	240.00
" " " " " " " " 4" gas pipe	Lin. Ft.	60	3.50	210.00	1.65	99.00	.50	30.00	4.00	240.00	4.00	240.00	.75	45.00
" " " " " " " " 6" " " " " " "	Lin. Ft.	60	4.50	270.00	1.70	102.00	.70	42.00	4.00	240.00	5.00	300.00	1.00	60.00
" " " " " " " " 10" " " " " " "	Lin. Ft.	60	8.00	480.00	2.20	132.00	1.30	78.00	5.00	300.00	8.00	480.00	1.25	75.00
" " " " " " " " 12" " " " " " "	Lin. Ft.	60	10.50	630.00	3.00	180.00	2.80	168.00	5.00	300.00	9.00	540.00	1.50	90.00
Furnishing and changing ducts and conduits	Dct. Ft.	50	.50	25.00	.28	14.00	1.00	50.00	2.00	100.00	3.00	150.00	.50	25.00
" " " " " " " " wrought-iron, steel cond. 2"	Lin. Ft.	100	.50	50.00	5.40	540.00	.60	60.00	3.00	300.00	4.00	400.00	.60	60.00
" " " " " " " " " " " " 2 1/2"	Lin. Ft.	950	.75	712.50	2.75	2612.50	.75	712.50	3.00	2850.00	4.50	4275.00	.75	712.50
" " " " " " " " " " " " 3"	Lin. Ft.	340	1.00	340.00	7.00	2380.00	1.00	340.00	3.00	1020.00	5.00	1700.00	.90	306.00
" " " " " " " " " " " " 3 1/2"	Lin. Ft.	100	1.25	125.00	4.95	495.00	1.25	125.00	3.00	300.00	5.50	550.00	1.05	105.00
" " " " " " " " " " " " 4"	Lin. Ft.	100	1.50	150.00	5.25	525.00	1.55	155.00	3.00	300.00	6.00	600.00	1.15	115.00
" " " " " " " " " " " " 4 1/2"	Lin. Ft.	100	1.75	175.00	6.50	650.00	1.85	185.00	3.00	300.00	6.50	650.00	1.25	125.00
" " " " " " " " " " " " fibre conduit 3"	Lin. Ft.	50	1.00	50.00	3.00	150.00	1.00	50.00	3.00	150.00	4.00	200.00	.90	45.00
" " " " " " " " " " " " 4"	Lin. Ft.	100	1.50	150.00	5.00	500.00	1.55	155.00	3.00	300.00	4.50	450.00	1.15	115.00
Changing or laying cast iron sewer pipe 12"	Lin. Ft.	60	8.00	480.00	3.20	192.00	2.00	120.00	10.00	600.00	9.00	540.00	1.50	90.00
By-passing pipes, without trestle - 4"	Lin. Ft.	110	5.50	605.00	3.45	379.50	3.00	330.00	10.00	1100.00	6.00	660.00	.75	82.50
" " " " " " " " " " " " 6"	Lin. Ft.	100	8.00	800.00	3.75	375.00	6.00	600.00	10.00	1000.00	7.50	750.00	1.00	100.00
" " " " " " " " " " " " 10"	Lin. Ft.	100	13.00	1300.00	6.40	640.00	10.00	1000.00	12.00	1200.00	10.00	1000.00	1.25	125.00
" " " " " " " " " " " " 12"	Lin. Ft.	100	16.00	1600.00	8.60	860.00	13.00	1300.00	12.00	1200.00	12.00	1200.00	1.50	150.00
Shifting New York Central Railroad Tracks	Lin. Ft.	800	3.50	2800.00	12.00	9600.00	75.00	60000.00	25.00	20000.00	25.00	20000.00	20.00	16000.00
Building and equipping Engineer's field office	Lump	1	2200.00	2200.00	2000.00	2000.00	1500.00	1500.00	8000.00	8000.00	25000.00	25000.00	15000.00	15000.00
Temp. timber decking over shafts (excl. of surface restoration)	M.F. B.M.	20	90.00	1800.00	150.00	3000.00	150.00	3000.00	150.00	3000.00	150.00	3000.00	125.00	2500.00
Building tight board fence around shafts and park	Lin. Ft.	700	1.00	700.00	5.00	3500.00	5.00	3500.00	5.00	3500.00	4.00	2800.00	2.00	1400.00
Restoration of roadways with granite block pavement	Sq. Yd.	300	2.75	825.00	4.00	1200.00	8.00	2400.00	5.00	1500.00	5.00	1500.00	6.00	1800.00
" " " " " " " " " " " " sidewalk	Sq. Yd.	190	2.75	522.50	5.00	950.00	3.00	570.00	5.00	950.00	4.00	760.00	3.50	665.00
<b>TOTAL</b>				<b>650,802.50</b>		<b>694,455.00</b>		<b>922,052.50</b>		<b>949,590.00</b>		<b>1,244,220.00</b>		<b>593,191.00</b>

NEW YORK STATE BRIDGE AND TUNNEL COMMISSION AND NEW JERSEY INTERSTATE BRIDGE AND TUNNEL COMMISSION HUDSON RIVER VEHICULAR TUNNEL CONTRACT NO. 3 CANVASS OF BIDS RECEIVED FEBRUARY 15, 1922				BOOTH & FLINN LTD 17 BATTERY PLACE NEW YORK				PATRICK M <sup>o</sup> GOVERN INC. 50 EAST 42 <sup>ND</sup> STREET NEW YORK				KEYSTONE STATE CONSTRUCTION CO. AND HOLBROOK CABOT & ROLLINS CORR 52 VANDERBILT AVE. NEW YORK				ENGINEERS ESTIMATE 26			
ITEM	CLASSIFICATION	UNIT	QUANTITY	SCHEDULE A		SCHEDULE B		SCHEDULE A		SCHEDULE B		SCHEDULE A		SCHEDULE B		SCHEDULE A		SCHEDULE B	
				PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT
1	Earth excavation for pipes etc. above and below M.H.W.	cu. yd.	450	7.00	3,150.00	7.00	3,150.00	17.00	7,650.00	19.00	8,550.00	15.00	6,750.00	15.00	6,750.00	7.00	3,150.00	7.00	3,150.00
5	Shaft excavation in earth below M.H.W.	cu. yd.	9200	25.00	230,000.00	25.00	230,000.00	38.75	354,700.00	37.50	343,500.00	35.50	326,600.00	35.00	323,000.00	20.00	184,000.00	20.00	184,000.00
6	Shaft excavation in rock	cu. yd.	3200	45.00	144,000.00	45.00	144,000.00	54.75	175,200.00	53.50	171,200.00	51.50	164,800.00	51.00	163,200.00	30.00	96,000.00	30.00	96,000.00
8	Tunnel excavation wholly in earth	cu. yd.	67000	25.00	1,675,000.00	25.00	1,675,000.00	38.25	2,560,750.00	37.00	2,509,000.00	35.00	2,345,000.00	34.50	2,311,500.00	20.00	1,340,000.00	20.00	1,340,000.00
9	Tunnel excavation partly in earth partly in rock	cu. yd.	24800	42.00	1,041,600.00	42.00	1,041,600.00	51.25	1,271,000.00	50.00	1,240,000.00	48.00	1,190,400.00	47.50	1,173,000.00	30.00	744,000.00	30.00	744,000.00
10	Tunnel excavation wholly in rock	cu. yd.	630	70.00	44,100.00	70.00	44,100.00	84.25	53,062.50	83.00	52,410.00	81.00	51,330.00	80.50	50,715.00	50.00	31,500.00	50.00	31,500.00
16	Furnishing and erecting junction bulkheads and locks	bulkhead	2	7000.00	14,000.00	7000.00	14,000.00	12277.50	24,555.00	12150.00	24,300.00	11900.00	23,800.00	11800.00	23,600.00	8000.00	16,000.00	8000.00	16,000.00
17	Removing junction bulkheads and locks	bulkhead	2	5000.00	10,000.00	5000.00	10,000.00	6325.00	12,650.00	6200.00	12,400.00	6000.00	12,000.00	5900.00	11,800.00	5000.00	10,000.00	5000.00	10,000.00
18	Dismantling and disposing of shields	shield	4	10000.00	40,000.00	10000.00	40,000.00	13450.00	53,800.00	13300.00	53,200.00	13000.00	52,000.00	12900.00	51,600.00	5000.00	20,000.00	5000.00	20,000.00
21	Permanent blanket	cu. yd.	23000	50	1,150,000.00	50	1,150,000.00	120	2,760,000.00	120	2,760,000.00	120	2,760,000.00	120	2,760,000.00	150	3,450,000.00	150	3,450,000.00
21a	Concrete not otherwise provided for	cu. yd.	30	1500	45,000.00	1500	45,000.00	1080	32,400.00	1080	32,400.00	1080	32,400.00	1080	32,400.00	200	30,000.00	200	30,000.00
27a	Shaft concrete not in compressed air (except item 27c)	cu. yd.	2630	1500	3,945,000.00	1500	3,945,000.00	4080	12,240,000.00	4080	12,240,000.00	4080	12,240,000.00	4080	12,240,000.00	1800	2,700,000.00	1800	2,700,000.00
27b	Concrete not in compressed air (except item 27c)	cu. yd.	620	2000	1,240,000.00	2000	1,240,000.00	3000	6,000,000.00	3000	6,000,000.00	3000	6,000,000.00	3000	6,000,000.00	2500	5,000,000.00	2500	5,000,000.00
27c	Concrete protection outside river shaft	cu. yd.	20300	2100	42,630,000.00	2100	42,630,000.00	1430	2,972,500.00	1430	2,972,500.00	1430	2,972,500.00	1430	2,972,500.00	1900	3,990,000.00	1900	3,990,000.00
27d	Tunnel concrete not in compressed air	cu. yd.	630	2500	1,575,000.00	2500	1,575,000.00	4000	10,000,000.00	4000	10,000,000.00	4000	10,000,000.00	4000	10,000,000.00	2500	6,250,000.00	2500	6,250,000.00
28a	Tunnel concrete in compressed air	cu. yd.	820	3000	2,460,000.00	3000	2,460,000.00	2500	6,250,000.00	2500	6,250,000.00	2500	6,250,000.00	2500	6,250,000.00	2500	6,250,000.00	2500	6,250,000.00
28b	Motor benches used with concreting (cement)	ben.	7000	600	4,200,000.00	600	4,200,000.00	340	2,380,000.00	340	2,380,000.00	340	2,380,000.00	340	2,380,000.00	450	2,700,000.00	450	2,700,000.00
32	Wry stone packing	cu. yd.	35	200	7,000.00	200	7,000.00	300	6,000.00	300	6,000.00	300	6,000.00	300	6,000.00	500	10,000.00	500	10,000.00
35	Granite facing on river shaft	cu. yd.	130	9000	1,170,000.00	9000	1,170,000.00	15000	1,350,000.00	15000	1,350,000.00	15000	1,350,000.00	11000	9,900,000.00	3000	2,700,000.00	3000	2,700,000.00
36	Granite curbing in tunnels	lin. ft.	7950	300	2,385,000.00	300	2,385,000.00	385	3,057,500.00	385	3,057,500.00	385	3,057,500.00	385	3,057,500.00	250	7,500,000.00	250	7,500,000.00
45	Grout No. 1 Portland cement not in compressed air	bl.	100	750	75,000.00	750	75,000.00	410	30,750.00	410	30,750.00	410	30,750.00	410	30,750.00	550	41,250.00	550	41,250.00
46	Grout No. 0 Portland cement not in compressed air	bl.	100	750	75,000.00	750	75,000.00	355	26,625.00	355	26,625.00	355	26,625.00	355	26,625.00	450	33,750.00	450	33,750.00
47	Grout No. 1 Portland cement in compressed air	bl.	300	950	285,000.00	950	285,000.00	655	619,500.00	655	619,500.00	655	619,500.00	655	619,500.00	400	380,000.00	400	380,000.00
48	Grout No. 0 Portland cement in compressed air	bl.	100	950	95,000.00	950	95,000.00	410	390,500.00	410	390,500.00	410	390,500.00	410	390,500.00	500	475,000.00	500	475,000.00
49a	Grout No. 1 mixed cement for Portland cement used	bl.	15000	350	5,250,000.00	350	5,250,000.00	655	9,825,000.00	655	9,825,000.00	655	9,825,000.00	655	9,825,000.00	600	210,000.00	600	210,000.00
49b	Grout No. 1 mixed cement for Natural cement used	bl.	35000	220	7,700,000.00	220	7,700,000.00	555	19,425,000.00	555	19,425,000.00	555	19,425,000.00	555	19,425,000.00	400	88,000.00	400	88,000.00
50a	Grout No. 0 mixed cement for Portland cement used	bl.	100	400	40,000.00	400	40,000.00	550	55,000.00	550	55,000.00	550	55,000.00	550	55,000.00	300	120,000.00	300	120,000.00
50b	Grout No. 0 mixed cement for Natural cement used	bl.	220	220	48,400.00	220	48,400.00	430	94,600.00	430	94,600.00	430	94,600.00	430	94,600.00	300	66,000.00	300	66,000.00
51	Platform ground river shaft	sq. ft.	8570	10	85,700.00	10	85,700.00	120	1,028,400.00	120	1,028,400.00	120	1,028,400.00	120	1,028,400.00	100	857,000.00	100	857,000.00
60a	Waterproofing 1 1/4" not in comp. air without brick	sq. yd.	10	155	1,550.00	155	1,550.00	75	1,125.00	75	1,125.00	75	1,125.00	75	1,125.00	100	1,550.00	100	1,550.00
60b	Waterproofing 2 1/4" not in comp. air without brick	sq. yd.	10	190	1,900.00	190	1,900.00	130	1,950.00	130	1,950.00	130	1,950.00	130	1,950.00	100	1,900.00	100	1,900.00
60c	Waterproofing 3 1/4" not in comp. air without brick	sq. yd.	800	310	248,000.00	310	248,000.00	180	144,000.00	180	144,000.00	180	144,000.00	180	144,000.00	200	160,000.00	200	160,000.00
60d	Waterproofing 4 1/4" not in comp. air without brick	sq. yd.	10	480	4,800.00	480	4,800.00	235	2,350.00	235	2,350.00	235	2,350.00	235	2,350.00	400	1,920.00	400	1,920.00
60e	Waterproofing 5 1/4" not in comp. air without brick	sq. yd.	10	600	6,000.00	600	6,000.00	340	3,400.00	340	3,400.00	340	3,400.00	340	3,400.00	500	5,000.00	500	5,000.00
61a	Waterproofing 1 1/4" in comp. air without brick	sq. yd.	300	700	210,000.00	700	210,000.00	440	132,000.00	440	132,000.00	440	132,000.00	440	132,000.00	1200	360,000.00	1200	360,000.00
61b	Waterproofing 2 1/4" in comp. air without brick	sq. yd.	10	1100	11,000.00	1100	11,000.00	630	6,300.00	630	6,300.00	630	6,300.00	630	6,300.00	1500	15,000.00	1500	15,000.00
61c	Waterproofing 3 1/4" in comp. air without brick	sq. yd.	10	1100	11,000.00	1100	11,000.00	630	6,300.00	630	6,300.00	630	6,300.00	630	6,300.00	1500	15,000.00	1500	15,000.00
61d	Waterproofing 4 1/4" in comp. air incl. brick layer	sq. yd.	400	1650	6,600.00	1650	6,600.00	895	27,800.00	895	27,800.00	895	27,800.00	895	27,800.00	2000	6,000.00	2000	6,000.00
61e	Waterproofing 5 1/4" in comp. air incl. brick layer	sq. yd.	10	2000	20,000.00	2000	20,000.00	895	8,950.00	895	8,950.00	895	8,950.00	895	8,950.00	2500	25,000.00	2500	25,000.00
61f	Waterproofing coating outside river shaft steel	sq. yd.	2200	150	330,000.00	150	330,000.00	20	44,000.00	20	44,000.00	20	44,000.00	20	44,000.00	100	22,000.00	100	22,000.00
70	Build-up steelwork not otherwise provided for	ton.	30	25000	750,000.00	25000	750,000.00	12900	387,000.00	12900	387,000.00	12900	387,000.00	12900	387,000.00	10000	300,000.00	10000	300,000.00
71	Steelwork river shaft	ton.	1800	15000	27,000,000.00	15000	27,000,000.00	27500	412,500.00	27500	412,500.00	27500	412,500.00	27500	412,500.00	25000	375,000.00	25000	375,000.00
72	Steel beams and shapes except items 71 and 73(a)	ton.	34	10000	340,000.00	10000	340,000.00	45000	450,000.00	45000	450,000.00	45000	450,000.00	45000	450,000.00	8500	85,000.00	8500	85,000.00
73	Reinforcing rods	ton.	67	10000	670,000.00	10000	670,000.00	6500	65,000.00	6500	65,000.00	6500	65,000.00	6500	65,000.00	12000	120,000.00	12000	120,000.00
74	Wire mesh	ton.	62	12000	744,000.00	12000	744,000.00	11000	110,000.00	11000	110,000.00	11000	110,000.00	11000	110,000.00	11000	110,000.00	11000	110,000.00
75a	Special rolled section for tunnel roadway	ton.	775	7000	5,425,000.00	7000	5,425,000.00	7300	51,150.00	7300	51,150.00	7300	51,150.00	7300	51,150.00	20000	1,400,000.00	20000	1,400,000.00



