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BUREAU OF ENGINEERING AND SURVEYS

SEMI-ANNUAL REPORT - FIRST HALF OF YEAR 1933

- DRAINAGE -

For the year 1933, there was available for the construction of main sewers \$304,849.07, and for branch sewers \$40,037.59. No new contracts were entered into for main or branch sewers although the completion of one new private sewer contract and drainage structures built under bridges and the sewage treatment project made a total increase of 0.12 miles to the drainage system of the City. At the end of June, 1933, there was a total of 1,781.77 miles of sewers completed within the limits of the City of Philadelphia. \$259,732.28 was available for new sewers in place of old sewers from which one new contract was entered into and 0.11 miles of sewers replaced.

43rd STREET FROM A POINT NORTH OF WALNUT STREET TO A POINT SOUTH OF WALNUT STREET. On August 29, 1932, a section of the Mill Creek Main Sewer between these limits collapsed. A contract to replace this portion was entered into that year and work started. This year work was completed, 118 feet of 17'6" x 18'5" brick sewer being constructed.

6TH STREET BENEATH THE PHILADELPHIA AND NEWTOWN CONNECTING RAILROAD. To abate flooding conditions north of the Railroad, on the line of 6th Street, a temporary stormwater culvert through the embankment carrying this railroad was contracted for and completed this year. 160 feet of 4'0" diameter precast concrete block culvert was constructed.

WINGOHOCKING MAIN SEWER ON LINE OF WINGOHOCKING STREET FROM PHILIP STREET WESTWARD. No physical work was done this year, final payment awaiting settlement of claims. This is a 15'0" x 17'0" reinforced concrete sewer.

Contracts executed and awaiting certification by the City Controller are as follows:

Main Sewer on the line of Tyson Avenue from Shelborne Street to Hasbrook Street and in Hasbrook Street from the line of Tyson Avenue to a connection with the sewer system of Cheltenham Township.

Branch Sewer in 56th Street from Lindbergh Boulevard to Eastwick Avenue

New sewers in place of present old sewers in Cumberland Street from Kensington Avenue to Front Street and 3rd Street from Christian Street to Catherine Street.

ABOLITION OF GRADE CROSSINGS - 1933 (1st six months)

GERMANTOWN AND CHESTNUT HILL ELEVATED - The physical work on this project was completed on June 1, 1933.

PENNSYLVANIA TERMINAL IMPROVEMENTS - Contract was entered into on November 4, 1931 with the Notice to Proceed on September 28, 1932 for Viaducts on the line of Schuylkill Avenue west and Thirtieth Street between Market Street and Arch Street. The work on this contract is completed with the exception of Electrical Bureau ducts southward in Thirtieth Street; installation of two (2) fire hydrants in Thirtieth Street; painting of the viaduct superstructure on the North Side of Market Street, in Thirtieth Street and the installation of copper gutters under the expansion joints in Thirtieth Street and Schuylkill Avenue west.

A contract was entered into on January 19, 1933 to close up the gap on the north shoulder of Market Street with a viaduct between the Schuylkill River Bridge and Thirtieth Street. This work has not as yet been ordered to proceed.

BRIDGE CONTRACT WORK - 1933 (1st six months)

HENRY AVENUE BRIDGE OVER WISSAHICKON CREEK - This bridge was begun in 1930 and at the end of that year was approximately 44% completed. At the end of 1931, the structure was 91% completed with paving of the bridge floor and the sidewalks remaining to be done. The physical work was completed on March 1, 1932, the total cost of the project being approximately \$1,770,000. Final estimate has not been paid.

IMPROVEMENT OF HENRY AVENUE BETWEEN WALNUT LANE AND SCHOOL HOUSE APPROACHES TO HENRY AVENUE BRIDGE OVER WISSAHICKON CREEK - This work was the final step in opening Henry Avenue from Nicetown to Roxborough. The work on the contract consisted of grading, temporary paving with cold mix bituminous macadam, concrete gutters, guard rail fences and drainage. The roadway was opened to traffic on November 12, 1932, with dedication of Wissahickon Memorial Bridge by Mayor Moore. Final estimate has not been paid.

BRIDGE ON LINE OF UNIVERSITY AVENUE UNDER THE PENNSYLVANIA RAILROAD AND THE P. B. & W. RAILROAD - The work under this contract, when completed, will connect South Philadelphia and West Philadelphia via 34th Street in South Philadelphia, the University Bridge over the Schuylkill River, University Avenue, Vintage Avenue and 34th Street in West Philadelphia and consists of the grading, paving and drainage work of Vintage Avenue and University Avenue and the completion of abutments for the Undergrade Bridge supporting the tracks of the Pennsylvania Railroad over University Avenue.

The work started on April 29, 1932 and University Avenue Bridge was opened for traffic on May 10, 1933, after the dedication by Mayor Moore.

MEMORANDA

6-28-33

WORK OF NORTHEAST LABORATORY

for the period Jan. 1 to June 30, 1933.

Northeast Works	935
Frankford Grit Chamber	44
Byberry Sewage Works	78
Schuylkill River Patrol	9
Trade Wastes	117
Experimental	<u>50</u>
Total Samples	- 1233

3A-1933

PAVING 34TH STREET APPROACH TO UNIVERSITY BRIDGE FROM GRAYS FERRY AVENUE NORTHWARD, AND THE UNIVERSITY BRIDGE OVER THE SCHUYLKILL RIVER AND THE DRAINAGE INLETS AND CONNECTIONS NECESSARY THERETO. - The work under this contract is one of the final steps in connecting South Philadelphia and West Philadelphia via University Bridge over the Schuylkill River and consists of paving of 34th Street Approach to University Bridge from Grays Ferry Avenue northward with asphalt on concrete base, which is subject to assessment, drainage, fences, painting the structural steel of University Bridge and the paving of the bascule leaves of University Bridge with asphalt plank.

The work was started on October 7, 1932, and 34th Street, University Bridge and University Avenue were opened for traffic on May 10, 1933 after dedication by Mayor Moore.

EAST LOGAN STREET BRIDGE UNDER THE GERMANTOWN AND CHESTNUT HILL BRANCH OF THE READING COMPANY - The work was started in 1931 and the bridge is a steel plate girder type encased in concrete which was 40% completed at the end of that year. The work is being done under contract by the Reading Railroad under an agreement with the City whereby the City shares to the extent of 29.31%. All the work under the agreement was completed by the Reading Company in February, 1933.

WALNUT LANE BRIDGE OVER LINCOLN DRIVE - The existing iron trestle on the site of the proposed new bridge is inadequate for the present day loads and has become in such bad condition that it has been necessary to close the bridge for traffic. A contract was entered into on January 26, 1932, for the construction of a new bridge which will be a stone-faced arch of 150 ft. span, the contract, however, has not been certified by the Controller which has delayed proceeding with the work.

SEMI-ANNUAL REPORT

January 1 to June 30, 1933 -

DRAINAGE DIVISION

The rainfall for the period January 1 to May 31, 1933, as reported by the Weather Bureau, amounted to 22.90 inches, as compared to an average of 16.32 inches for these months during the past 60 years.

On the evening of May 24, 1933, a rainstorm of marked intensity resulted in flooding of many areas throughout the City. The high wind, with a velocity of 68 miles per hour, accompany^{ing} the storm, did much damage to trees and property.

Mingo Creek Pumping Station

This station is located on the west bank of the Schuylkill River north of Penrose Ferry Road, and was constructed in 1896 to provide surface drainage for the lowlands of the 40th Ward. The surface elevations throughout the lowlands are generally below the high tide level in the surrounding rivers, and this area is therefore protected from flooding by a system of dikes along the water front. The natural creeks traversing this area have been converted into a system of drainage ditches and discharge into the main channel of Mingo Creek, which terminates at the site of the Pumping Station.

Two 150 horsepower oil-fired boilers provide steam for driving 2 horizontal centrifugal pumps of a combined capacity to lift 60 million gallons per day and discharge the water into the Schuylkill River against a head of 13 feet.

The pumpage for the period January 1 to June 30, 1933, is estimated as 1600 million gallons.

Following the rainy period of March 19 to 21, with the accompanying high tides, the banks of Darby Creek failed. This resulted in the flooding of that portion of Delaware County along the County Line banks to an elevation of -4.0 C.D., and the suspension of traffic over Tinicum Avenue. The roadbed of the Chester Short Line of the P. R. T. was flooded to such an extent as to preclude operation.

Much of this flood water escaped into Philadelphia County over the P.R.T. roadbed and necessitated continuous operation at the Mingo Creek Pumping Station during the greater part of April.

Newspaper reports indicate that an arrangement has been entered into between the State of Pennsylvania and Delaware County whereby repairs will be made to these broken dikes some time in the near future.

Until these dikes are repaired, there will remain the possibility of flood waters from Delaware County during high tides in Darby Creek reaching the Mingo Creek Pumping Station through the 40th Ward Drainage Channels.

The hydraulic fill operation over the Hog Island site, by the U. S. Government contractor, has added somewhat to the volume of drainage cared for by this station.

The pumping hours for one unit during this 6-months period is estimated as a total of 1060, and an estimated fuel oil consumption of 100,000 gallons at a cost of \$3500. The total estimated expenditure for operation, maintenance, repairs and equipment for this period amounts to \$7280.

Sewage Disposal Division

General

A permit issued by the Pennsylvania State Department of Health under date of December 22, 1932, extends the time for completion of the Sewage Disposal Project until December 31, 1933, and provides, inter alia, that the City shall forthwith proceed with the construction work necessary to complete the interception of sewage discharged to Frankford Creek and to the Delaware River up-stream from Somerset Street.

A contract carried forward from 1931 for the construction of the Somerset Low Level Collecting Sewer from the Northeast Sewage Treatment Works to Somerset Street is reported as 96% complete.

Southwest Sewage Pumping Station

This Station is located on a 1000 acre tract near Penrose Ferry Road and Island Avenue, the proposed site of the Southwest Sewage Treatment Works.

The motor-driven pumping equipment now installed consists of four vertical volute pumps designed for a total daily pumpage of 50 million gallons against a 40-ft. head. Future installations will increase the pumping capacity of this station to 160 million gallons daily.

This Station was placed in operation August 23, 1927.

The Collecting Sewer has been constructed from the Pumping Station to a point in 75th Street 30 ft. southeast of Wheeler Street, with a branch from 80th Street near Erwig Avenue to 82nd Street and Bartram Avenue.

The small quantity of sewage now collected requires about 3 hours daily pump operation, and will continue to be discharged into Eagle Creek pending the design and construction of the Sewage Treatment Works to be located adjacent to this Station.

The total cost of maintenance, operation and equipment of this Station for the period January 1 to June 30, 1933, is estimated as \$4700.

Frankford Creek High Level Grit Chamber

This Station is located on a tract bounded by "N" Street, Hunting Park Avenue, "O" Street and Locoming Street, and provides coarse screening and preliminary sedimentation for sewage collected by the Wingohocking and Tacony Creek Intercepting Sewers, so as to remove coarse materials and sand from the sewage before it enters the pressure conduit constructed in Wheatsheaf Lane, and leading to the Northeast Sewage Treatment Works.

The Frankford Creek High Level Collector leading to the Grit Chamber is designed for a flow as high as 200% of the average dry weather flow, to afford additional protection to that portion of the Frankford Creek flowing through Juniata Park.

The permit issued by the Pennsylvania State Department of Health provides, and the Grit Chamber and Treatment Works have been designed, for the treatment of sewage flows as high as 141% of the average dry weather flow. Accordingly, a stormwater overflow weir has been constructed at a point in the sewer where it connects with the Grit Chamber, and the excess of stormwater is conveyed directly to Frankford Creek below the park property.

During the period January 1 to June 30, 1933, from an estimated total sewage flow of 6530 million gallons, 7900 cubic feet of wet screenings were intercepted, which equalled 1.2 cubic feet per million gallons of sewage.

12,300 cubic feet of wet grit, equal to 1.9 cubic feet per million gallons of sewage, were intercepted, washed and hauled to the Northeast Sewage Treatment Works for disposal on low ground.

Analysis of the grit removed indicated a volatile matter content of 3.8%.

1165 cubic feet of grease were intercepted and disposed of with the screenings.

The total estimated expenditure for maintenance, operation, repairs and equipment, for the period January 1 to June 30, 1933, amounted to \$3400.

Northeast Low Level Sewage Pumping Station
and Grit Chamber

These Stations, together with the Northeast Sewage Treatment Works, are located on the 160 acre tract along Wheatsheaf Lane between Richmond Street and the Delaware River.

The Low Level Grit Chamber is designed to provide coarse screening and preliminary sedimentation for sewage collected by the Upper Delaware Collecting Sewer, the Pennypack Creek Intercepting Sewer, the Upper and Lower Frankford Creek Low Level Intercepting Sewers, and the Somerset Low Level Collecting Sewer now under construction, so as to remove coarse material and sand from the sewage before it enters the pumping station, at which point the sewage is pumped to the Imhoff Tanks for further sedimentation before discharge into the Delaware River.

In the Low Level Pumping Station, 2 - 36" and 4 - 24" motor driven centrifugal sewage pumps of the vertical volute type have been installed. Two of these 24" pumps are direct connected to variable speed induction motors. The 2 - 36" and 2 of the 24" pumps are direct connected to constant speed synchronous motors.

Electricity service is supplied by the Philadelphia Electric Company at 2300 volts pressure.

These stations were placed in operation July 16, 1930. For the period January 1 to June 30, 1933, the total estimated sewage flow amounted to 2010 million gallons; 3900 cu.ft. of screenings intercepted during this same period equals 1.95 cu.ft. per million gallons of sewage.

11,000 cu.ft. of wet grit were intercepted and conveyed by pneumatic conveyors to the lowland at the site of the work.

The total expenditures for operation, maintenance, repairs and equipment, chargeable against the Low Level Grit Chamber and Pumping Station, is estimated as \$12,500.

Northeast Sewage Treatment Works

The first section of the Northeast Sewage Treatment Works was placed in operation October 29, 1923, and comprises 32 reverse flow Imhoff Tanks and 80 sludge drying beds, and is designed for a sewage flow of 60 million gallons per day at a detention period of 3 hours.

The total estimated volume of sewage treated during the six months period amounted to 8540 million gallons, 6530 million gallons of which reached the works by gravity from the Frankford Creek High Level Collecting Sewer, and 2010 million gallons pumped from the Upper Delaware Low Level Collecting Sewer and Upper Frankford Creek Low Level Intercepting Sewer.

The character of the sewage varies from a rather heavy concentrated day flow containing trade waste colored with dyes, to a more dilute night flow. The

volume of dry weather flow fluctuates between a minimum rate of flow of 30 MGD occurring about 5 A.M., and a maximum rate of about 65 MGD occurring about 5 P.M.

Determination of settling solids by Imhoff settling glasses indicates a consistent removal of 100% throughout the period.

Samples for suspended solids collected at 3-hour intervals and made into a weekly composite sample for Gooch crucible determination indicate the following average total suspended solid content:

Works influent	120 PPM
Works effluent	30 PPM

or a reduction of 75% total suspended solids.

While oxidation processes are not employed at these Works, there is an improvement noted in the effluent, as indicated in the biochemical oxygen demand tests which are reported as follows:

Works influent	292 PPM
Works effluent	208 PPM

The total quantity of sludge withdrawn from the Imhoff Tanks during this period amounted to 6400 cu.yds. This sludge was dark in color, well digested, and flowed freely. Offensive odors were not noted at any time in the vicinity of the lagoon into which the sludge was discharged.

Laboratory analysis of the sludge withdrawn is reported as follows:

Specific gravity	1.018
Moisture	94.4
Dry residue, volatile	56.6
" " fats	17.0
Alkalinity(Methol orange)	1182 PPM

Gas ebullition has been active in nearly all gas vents of the tanks during the six-months period, and foaming was in evidence in varying degrees of intensity from April 1st to the present time.

As no provision was made in the 1933 Budget appropriation for watchmen, a burglar alarm system was installed for the protection of the buildings and equipment located at the Outfall Pier.

Interceptor Patrol

For intercepting all dry weather flow of sewage and the proper amount of rainwater contaminated with sewage, intercepting devices have been provided at the point of connection between existing main sewers and the collecting or intercepting sewers.

For those connections beyond the range of tidal influence of the rivers or creeks, interception has been accomplished by means of a slotted opening built into the invert of the main sewer and provided with an adjustable sliding plate cover. In the larger sewers, adjustment of the flow to the intercepting sewer is accomplished by hand operated sluice gates located in the connection between the main sewer and the intercepting sewer, and behind a dam constructed across the main sewer between this connection and the receiving body of water.

For those connections within the tidal influence of the rivers or creeks, intercepting chambers of concrete construction and with two hydraulically operated sluice gates have been provided; one gate of the vertical type for the interception of the sewage flow and first flush of street wash, and the other of the horizontal type located in and transversely to the main sewer, and between the vertical intercepting gate and the water course. This horizontal gate serves the dual function of passing stormwater to the river or creek when in an open position, and of excluding tidewater from the dry weather interceptor when in a closed position.

The two sluice gates are actuated through a common hydraulic cylinder, direct connected to the horizontal sluice gate and to the vertical sluice gate by means of flexible cable over sheaves.

The rise and fall in elevation of the sewage level in the main sewer transmits motion, through a float located in the sewer, to a 4-way valve which in turn, by City water pressure, actuates the hydraulic cylinder.

Intercepting gates and slots are examined immediately after each storm, and during dry weather periods at least once a week.

Little difficulty is encountered in maintaining the intercepting slots in

service except from falling leaves in the autumn season, and occasionally from grit and sticks reaching the sewers during times of heavy rains from undeveloped areas with unpaved streets.

The operation of the hydraulically controlled intercepting sluice gates is likewise satisfactory, but greater expenditure of time for maintenance is required. The discharge from the sewers into tiday streams during times of storm carries considerable sand and grit which tends to shoal in front of the sewer outlet. The sand backs up into the sewer in some instances to the vicinity of the gates, and until removed interferes with the satisfactory operation of the gates.

Due to difficulty encountered at the outlet of the Kirkbride Street sewer into the Delaware River, from floating timber and boxes entering the sewer before the closing of the tide gate, a swinging metal screen has been installed to exclude this material from the sewer.

At the outlet of the Paul Street sewer in Frankford Creek, debris carried down during times of storm is filling up that portion of the creek which was dredged in 1931. The resultant rise of the surface of the creek at this point delayed the closing of the tide gate for too great a period of time, and it was necessary to make certain changes in the hydraulic control of the interceptor gates to compensate for the higher creek level.

REPORT OF TESTING LABORATORY
BUREAU OF ENGINEERING AND SURVEYS
DEPARTMENT OF PUBLIC WORKS.

JANUARY 1, TO JUNE 30, 1933.

BUREAU OF ENGINEERING AND SURVEYS

DEPARTMENT OF PUBLIC WORKS

CITY OF PHILADELPHIA

CITY HALL ANNEX



REPLY AND REFER TO: AFB:E

June 21, 1933.

FROM: Engineer of Tests
TO: John E. Allen, Principal Assistant Engineer.
SUBJECT: REPORT OF THE TESTING LABORATORY ACTIVITIES
FROM JANUARY 1, 1933, TO JUNE 30, 1933.

The report of the Testing Laboratory of the Bureau of Engineering and Surveys for the period from January 1, 1933, to June 30, 1933, is respectfully submitted.

Work consisted of physical and chemical tests of materials of construction and maintenance submitted by the various City departments and bureaus.

The report shows the total, variety, distribution and percentage of distribution of the submitted specimens.

Encls.

A. F. Burbidge
A. F. Burbidge,
Engineer of Tests.

14-1933

DISTRIBUTION OF SPECIMENS - JAN. 1 TO JUNE 30, 1933.

	<u>No. of Specimens</u>	<u>Per Cent.</u>	<u>No of Specimens</u>	<u>Per Cent.</u>
DEPARTMENT OF CITY TRANSIT			200	7.0
DEPARTMENT OF PUBLIC HEALTH			116	4.1
DEPARTMENT OF PUBLIC SAFETY:			124	4.4
Bureau of Boiler Inspection	1	0.0		
" " Building Inspection	16	0.6		
" " Traffic	3	0.1		
Electrical Bureau	<u>104</u>	<u>3.7</u>		
DEPARTMENT OF PUBLIC WELFARE			132	4.6
DEPARTMENT OF PUBLIC WORKS:			1703	59.8
Bureau of Engineering and Surveys	602	21.1		
" " Highways	508	17.9		
" " Street Cleaning	1	0.0		
" " Water	<u>592</u>	<u>20.8</u>		
DEPARTMENT OF SUPPLIES AND PURCHASES			573	20.1
			<hr/>	<hr/>
	TOTALS		2848	100.0

HYDRAULIC CEMENT SPECIMENS - JAN. 1 TO JUNE 30, 1933.

Portland Cement (Domestic)		<u>279</u>
	TOTAL	279

DISTRIBUTION OF HYDRAULIC CEMENT SPECIMENS - JAN. 1 TO JUNE 30, 1933.

DEPARTMENT OF CITY TRANSIT		99
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DEPARTMENT OF PUBLIC SAFETY		1
Bureau of Building Inspection	1	

DEPARTMENT OF PUBLIC WORKS		179
Bureau of Engineering and Surveys	154	
" " Highways	<u>25</u>	

	TOTAL	<u>279</u>
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CHEMICAL SPECIMENS - JAN. 1 TO JUNE 30, 1933.

BOILER COMPOUNDS		4
BOILER FEED WATER		538
CEMENT (Chemical Analysis)		1
COAL		976
Anthracite	691	
Ash	6	
Bituminous	<u>279</u>	
FERTILIZERS		3
METALS		10
Ferrous	10	
Non-ferrous	<u>00</u>	
MISCELLANEOUS MATERIALS		9
OIL		143
Fuel	80	
Gasoline and Headlight	30	
Lubricating and Lubricants	<u>33</u>	
PAINT AND PAINT MATERIALS		48
ROAD MATERIALS		383
Asphalt (Waterproofing)	4	
" (compounds-miscellaneous)	2	
" Cement (penetration)	210	
" wearing surface	165	
Tar	<u>2</u>	
RUBBER COMPOUNDS		2
SAND (Concrete)		2
STONE		3
SOAP AND SOAP MATERIALS		<u>15</u>
	TOTAL	2137

DISTRIBUTION OF CHEMICAL SPECIMENS - JAN. 1 TO JUNE 30, 1933.

DEPARTMENT OF PUBLIC HEALTH		116
DEPARTMENT OF PUBLIC SAFETY		110
Bureau of Boiler Inspection	1	
" " Building Inspection	2	
" " Traffic	3	
Electrical Bureau	<u>104</u>	
DEPARTMENT OF PUBLIC WELFARE		132
DEPARTMENT OF PUBLIC WORKS		1207
Bureau of Engineering and Surveys	223	
" " Highways	391	
" " Street Cleaning	1	
" " Water	<u>592</u>	
DEPARTMENT OF SUPPLIES AND PURCHASES		572
	TOTAL	<u>2137</u>

PHYSICAL SPECIMENS - JAN. 1 to JUNE 30, 1933.

Brick		7
Paving	5	
Sewer	<u>2</u>	
Cast Iron (Arbitration Bars)		18
Concrete		394
Aggregate, fine	15	
" , coarse	1	
Building blocks	77	
Cores	5	
Cylinders	<u>296</u>	
Granite		7
Miscellaneous Materials		3
Steel		<u>3</u>
	TOTAL	432

DISTRIBUTION OF PHYSICAL SPECIMENS - JAN. 1 TO JUNE 30, 1933.

DEPARTMENT OF CITY TRANSIT		101
DEPARTMENT OF PUBLIC SAFETY		13
Bureau of Building Inspection	<u>13</u>	
DEPARTMENT OF PUBLIC WORKS		317
Bureau of Engineering and Surveys	225	
" " Highways	<u>92</u>	
DEPARTMENT OF SUPPLIES AND PURCHASES		<u>1</u>
	TOTAL	432

TOTAL NUMBER OF SPECIMENS JAN. 1 TO JUNE 30, 1933.

Boiler compounds	4
Boiler Feed Water	538
Brick	7
Cast Iron (Arbitration Bars)	18
Cement (Hydraulic)	280
Concrete Aggregate	21
Concrete Building Block	77
Concrete Cores	5
Concrete Cylinders	296
Fertilizer	3
Fuels	1086
Granite	7
Metals (ferrous)	13
Miscellaneous Materials	12
Oil (mineral)	33
Paint and Paint Materials	48
Road Materials	383
Rubber Compounds	2
Soap and Soap Materials	15
	<hr/>
TOTAL	2848

BUREAU OF ENGINEERING AND SURVEYS

DEPARTMENT OF PUBLIC WORKS

CITY OF PHILADELPHIA

CITY HALL ANNEX



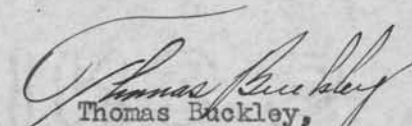
REPLY AND REFER TO: TB:E

June 22, 1933.

FROM: Assistant Chief Engineer
TO: John E. Allen, Principal Assistant Engineer.
SUBJECT: SEMI-ANNUAL REPORT - SURVEY DIVISION.

The attached material is submitted from the City Planning and Registry, Zoning and Survey Divisions, for the report requested covering the period January 1, to June 30, 1933.

Encl.


Thomas Buckley,
Assistant Chief Engineer.

21-1933

CITY PLANS AND REGISTRY

Since the first of the year, the work of completing the details of the Ordinance and maps for Zoning the City, in accordance with the Zoning legislation, now pending in Council, has been considered a function of this Division. Reports, therefore, from three units, i.e., City Plans, Zoning and Registry, are submitted under this general budget classification.

CITY PLANS:

The following important plans were prepared:

Compilation on large chart for the Bureau of Street Cleaning showing personnel distribution;

Compilation on two large charts of graphic interpretations of the use, area and height regulations proposed to be established by the Zoning Ordinance, now pending;

Study Plan covering 25 square miles of the Northeast area of Philadelphia, showing topography, existing and proposed major and secondary street systems, proposed park development and areas planned as logical sites for neighborhood developments;

Preparation, assembling and coloring numerous charts for exhibition purposes, and for illustrated talks delivered at the Swedenborgian Church, 22nd and Chestnut Streets, and the University of Pennsylvania;

The preparation of 61 tracings, 30" X 42", of the 50 Wards of the City, drawn to a scale of 200' and 500' to the inch, as base maps to be used for a compilation of the lighting records in the Bureau of Gas and Lighting and the Electrical Bureau;

The coloring of duplicate sets of a group of 135 topographical plans, showing the lighting conditions in City parks and public squares, under the control of the Bureau of City Property;

A spot map showing the vacant lots and open air parking spaces in the central-city Wards;

Various study plans for street revisions, parks, playgrounds and traffic intersections;

Plans prepared, corrected and assembled for public distribution;

Correcting and bringing up to date the 4 base Zoning plates and correcting lithograph copies of the same.

In addition to the planning work performed, this group assisted in compiling mimeographing and assembling the 68-page Zoning Ordinance prepared by the Bureau and the 44-page list of amendments proposed by this Ordinance.

REGISTRY:

The following work has been accomplished in the Registry Division for the period January 1st to June 30, 1933:

Descriptions filed for registration . . .	31,000
Previous six months	30,000
Books examined by the public.	66,000
Previous six months	63,000
New Registry pages plotted.	25
Old Registry sheets copied.	65
City Plans classified and indexed	55
containing a total of 1,300 sub-plans.	
Subpoenas issued against Registry Division	536
Appearances in Court, on above.	210
New road maps made covering an area of eight (8) City Plans.	
Vouchers issued.	\$15.00

ZONING:

The detailed work of Zoning was assigned to the Bureau of Engineering and Surveys under the 1933 budget, and the headquarters of this function removed from the 8th floor and consolidated with that of the City Plans Division on the 12th floor City Hall Annex.

The Zoning Ordinance, as originally submitted to Council 1932, was revised by the Zoning Commission, in order to adapt it to administration by the Bureau of Engineering and Surveys, and reintroduced in Council in February, 1933. Since the first of the year, four meetings have been held with the Executive Committee of the Zoning Commission. At a meeting, held on March 15th, the Executive Committee of the Zoning Commission appointed a committee consisting of Thomas Buckley, Assistant Chief Engineer, A. Zane Hoffman, Surveyor and Regulator, and George R. Mackenzie, Assistant Engineer, for the purpose

of reviewing the Zoning Ordinance and to suggest the necessary changes required in order to adapt it for administration by this Bureau.

The entire Ordinance was re-arranged and re-written for uniformity and clarity, and the changes recommended were approved by the Executive Committee of the Zoning Commission at a meeting held on April 4, 1933. Two hundred mimeographed copies of the 68-page Zoning Ordinance, as re-written, were prepared by the Committee with the assistance of a group of assistants selected from the Bureau; in addition, fifty mimeographed copies of 44-page List of Amendments were prepared for the use of the Commission and Council's Committee on City Planning and Zoning.

Several joint meetings of the Executive Committee of the Zoning Commission and the Zoning Committee of the Real Estate Board were held and several public meetings addressed in the interest of zoning. Council's Committee on City Planning and Zoning held five meetings for public hearings during the year. The Ordinance was reported out of Committee on June 8, 1933, and has been printed for consideration in the near future by Council.

It has been found necessary to make a great many changes in the Zoning maps, and these corrections have been undertaken by assistants from the City Plans Division and Survey District Offices.

SURVEYS:

The outstanding task performed by the Survey function during the year has been the making of a complete survey of the lighting conditions throughout the City. This work was begun toward the end of the year 1932 and has been carried on continuously to date. The noteworthy features of this work were:

The survey for eliminating thousands of gas and naphtha lights;

The investigation of upward of 3000 complaints brought about by the cutting-out of these lighting facilities;

A survey and preparation of 135 topographical plans showing the physical conditions and lighting arrangements within the various City parks and public squares, under the control of the Bureau of City Property;

A survey to eliminate thousands of electric lights in that portion portion of the City between the two rivers;

A complete field survey to determine the exact location by measurement and character of each individual lighting facility provided on the public highways throughout the City;

The preparation of 61 scaled base drawings of the 50 Wards in the City, (the plotting on these base maps of the geographical location of gas, naphtha and electric lights, - 36 plates comprising 34 Wards have been completed); and

The field checking of the records of the Bureau of Gas and Lighting.

In addition to this work, a group of District assistants have completed 240 tracings of Ward atlas plates, showing lot sub-divisions by blocks for the use of the Board of Revision of Taxes. By this work, the Bureau is effecting a saving of a large outlay by the City of Philadelphia as the Board of Revision of Taxes originally requested Council to appropriate approximately \$200,000 for this work.

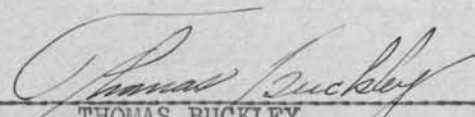
Also, the District Survey Offices, since the first of the year, have served 5,563 delinquent water rent bills for the Department of the Receiver of Taxes.

A summarization of the routine work performed by the Survey function follows:

Number of lots and properties surveyed.	950
Number of conveyance and architects' plans prepared	122
Miscellaneous sketches and descriptions	93
Linear Feet of lines and grades given for new buildings	1,491
Linear Feet of curb regulations given	26,388
Curved corners and inlets staked out.	68
Linear Feet of lines and grades given for gas mains, conduits, passenger railway tracks, driveways	2,555
Linear Feet of Lines and grades furnished for sewers and drains, water pipes	5,391
Linear Feet of lines and grades furnished for grading and paving.	45,865
Cubic Yards of grading measured, - out and fill	140,248
Square Yards of paving and repaving, measured and billed	82,013
Linear Feet of curbing, measured and billed.	5,598
Square Yards of footway paving, measured and billed	3,126

Linear Feet of lines and grades given for alleys.	2,601
Square Yards of alleys, paved or repaved.	3,425
Assessment bills prepared.	267
Small City Plans prepared.	6
Acres surveyed for new plans, revisions and topographical surveys	768
Reports and plans to Chief Engineer, not otherwise classified	288
Stone monuments set	86
Linear Feet of constructed sewers, for which plans were made.	2,848
Number of plans prepared for grading, repaving, alleys, water pipes . . .	51
Linear Feet covered by plans.	27,934
Miscellaneous plans and reports	96
Council's Committee, reports and plans.	16
Department of Law, - plans made for Board of View	9
Acres of property included in same.	115
Completed contracts - Bureau of Engineering & Surveys and Bureau of Highways \$63,477.67	
Vouchers issued.	\$12,695.46
(covering 1056 separate orders for which charges were made under the Ordinance of Council approved September 24, 1924.)	

During the period January 1st to June 30th, 1933, the Board of Surveyors held 10 stated meetings, confirmed 7 City Plans, approved 2 deeds of dedication, and reported favorably on 4 ordinances, and negatively on 2 ordinances to Council.



 THOMAS BUCKLEY,
 Assistant Chief Engineer.

TB:E
6-22-33.

26-1933

BUREAU OF ENGINEERING AND SURVEYS

DEPARTMENT OF PUBLIC WORKS

CITY OF PHILADELPHIA

CITY HALL ANNEX



REPLY AND REFER TO: BES:PSF:C

June 23, 1933.

From : Chief Clerk.
To : John E. Allen, Principal Assistant
Engineer.
Subject : Semi-annual report.

I am giving you herewith the financial statement for the first six months of the current year.

In the nature of economies in the first six months, the Bureau combined the Sixth Survey District and its branch office and moved into new quarters, which will effect an annual saving of \$600. In the case of the Tenth Survey District, the office was moved from leased quarters to a City owned building, effecting a saving of \$1500 per annum.

Expenditures in items other than Personal Services, are being kept within the appropriations and at the end of the first six months, show a surplus.

In the Supply Items, all expenditures will be kept within the appropriations, except in Item 333 for fuel oil, etc., which will be exceeded by approximately \$1,000, due to excess pumping at Mingo. An ordinance transferring \$1,000 from Item 331, has already been forwarded to take care of this deficiency.

The personnel of the Bureau was reduced by furloughing all Loan Fund employees on May 1, 1933. The Bureau is now functioning with 265 employees. There is still one vacancy existing in the Budget, in the position of Engineer.

Employees Jan. 1st, 1932 = 561

P. S. Fisher

P. S. FISHER,
Chief Clerk.

Encl.

27-1933

SUPPLY APPROPRIATIONS - 1933.

<u>Item</u>	<u>Appropriation</u>	<u>6 months Expenditures</u>
330, Ice, Towel Service, etc. * \$1,000.00	\$1,000.00	\$1,000.00
331, Stationery, Office Supplies, etc.	4,000.00	1,217.50
332, Auto Parts	1,300.00	391.14
333, Fuel, etc.,	*12,000.00	12,000.00
334, Lubricants, etc.	700.00	257.25
335, Hardware, etc.	700.00	118.80
336, Furnishing and equipment	1,500.00	245.00
337, Cornerstones and covers	500.00	---
338, Engineering Field Instruments	500.00	---
339, Miscellaneous	---	---

* - Yearly contracts made in these items.

6-23-33.

PSF:C

DEPARTMENT OF PUBLIC WORKS

BUREAU OF ENGINEERING AND SURVEYS

Item No.	1933		1933		1933		1932	
	Appropriation First Half	Expenditures First Half	Appropriation Over	Appropriation Under	Appropriation First Half	Expenditures First Half		
A-35	\$225,000.00	\$224,675.52		\$ 324.48	\$251,825.00	\$287,535.59		
80	4,800.00	2,771.74		2,028.26	9,125.00	3,456.30		
81	400.00	366.72		33.28	1,862.50	125.39		
82	1,600.00	1,564.22		35.78	2,710.00	2,097.17		
83	400.00	424.68	\$24.68*		875.00	556.33		
84	250.00	8.00		242.00	250.00	48.50		
85	6,000.00	6,082.00	82.00**		8,645.00	8,000.00		
86	750.00	739.75		10.25	1,070.00	918.90		
87	175.00	-- --		175.00	175.00	38.35		
88	<u>900.00</u>	<u>560.65</u>		<u>319.35</u>	<u>1,925.00</u>	<u>797.67</u>		
	\$240,275.00	\$237,213.28	\$106.68	\$3,168.40	\$278,462.50	\$303,574.20		

* The appropriation for the first half of the year was exceeded by reason of the survey districts were employed in making a lighting survey for the Bureau of Lighting and Gas. Expenditures will be considerably less for the second half of the year and will bring this item within the appropriation for the year.

** Survey district rent have been reduced and the second half of the year will be somewhat less than the first half and will show a saving for the year.

Expenditures for first six month of 1933.

Budget funds

237,213.28

73

LOAN FUNDS

South Philadelphia Improvement

19,953.00

Pennsylvania Terminal Improvement

200,356.01

Baltimore and Ohio Improvement

0.00

Manayunk, Germantown and Chestnut

Hill Grade Crossing

249,577.91

Branch Sewers

0.00

Sewage Disposal

40,188.84

Main Sewers

53,201.53

New Sewers in place of Old Sewers

40,682.87

Bridges

124,387.57

Total Loan Fund Expenditures

\$738,347.73

All loan fund employees were furloughed on May 1st, 1933.

BUREAU OF ENGINEERING AND SURVEYS

J. H. Neeson, Chief Engineer and Surveyor.

SEMI-ANNUAL REPORT - 1933.

The Bureau of Engineering and Surveys has functions comprising construction, operation, investigation and reports. The construction activities comprise new City bridges; participation, with the railroads entering the City, in the elimination of grade crossings and railroad improvements; the construction of sewers and drainage structures and those of the sewage treatment projects; and such additional operations as may be assigned; plans for street improvements and other classes of construction are prepared for carrying out, under contract, by other bureaus and departments. The routine duties comprise the operation of the sewage treatment works and pumping stations; the operation of drainage pumping stations; the control and operation of a laboratory for the physical and chemical testing of materials entering into construction and also the supplies purchased for the maintenance and operation of the various City institutions and plants; the issuance of permits for connections to the drainage system; the investigation and control of trade wastes from manufacturing processes and discharges from garages and service stations into the sewer system; the investigation of drainage and flooding complaints; the checking and approval of applications for highway occupation by public utilities to the Highway Supervisors; the checking and approval of structural designs submitted for the work of railroads, utilities and private interests; and general engineering investigations of various projects affecting the interests of the City. The Bureau of Engineering and Surveys, also, comprises the Board of Surveyors who are the developers of the City Plan and the official measurers of real estate and of the quantities of work done and materials furnished under contract for City construction work; they also furnish the lines and grades for construction operations within the highways of the City; the registering of land deeds and the recording of transfers of property are also functions of the Bureau. A recent addition is the work connected with the zoning of the City.

Economy conditions have seriously affected the construction activities and organization of the Bureau. During the year 1932, the total personnel was reduced from 591 to 350; this was further reduced on May 1, 1933, by the furloughing of all employees paid from loan funds. The Bureau is now functioning with a total of 265 employees.

Drastic economies have been put into effect in all lines. The combination of offices in the 6th Survey District effected an annual saving of \$600; and in the 10th Survey District, the office was removed from a location under lease to a City-owned building effecting a saving of \$1500 per annum. Maintenance appropriations for the year 1933 were greatly reduced in amount, but the control of expenditures has kept them within the appropriations and a surplus is indicated at the end of the first six months.

In the items appropriated to the Department of Supplies and Purchases, all expenditures are within the appropriations, except that for fuel oil, which will be exceeded due to the excess pumpage at the Mingo Creek Station arising from the broken dikes in Delaware County. This excess, however, will be cared for by a transfer from other items, in which the surplus will be sufficient.

In services other than personnel, the appropriation available for the first half year was a total of \$240,275; the expenditures for the same period have been \$237,213.28, leaving

a surplus of \$3,061.72.

Loan funds for construction purposes on the books of the Bureau, on January 1, 1933, totaled \$6,565,368.68, and was comprised almost entirely of allotments to work in connection with railroad improvement projects and the continuation of the sewage treatment project. Several continued contracts were carried to completion, or to a point where the halting of operations was practicable, and required a loan fund expenditure of \$738,347.73.

The Bureau of Engineering and Surveys has but two sources of income from which funds are paid into the City Treasury, - for services rendered to the public by the district survey offices and the sale of sewer laterals and drainage service charges from the Sewer Registrar.

For the first six months of the current year, the District Survey Offices issued vouchers covering 1,058 orders to the amount of \$12,695.46. The receipts from the Sewer Registrar totaled \$1,620.94, of which service charges against property frontage amounted to \$708.94 and the sale of sewer laterals returned a total of \$912.

The following summary is given of the activities of the Bureau for the first six months of 1933.

BOARD OF SURVEYORS.

During the first six months of 1933, the Board of Surveyors held ten stated meetings, at which seven City Plans were confirmed, two deeds of dedication approved, and reports made on six ordinances of Council, of which two were negative.

On May 1st, the furloughing of employees paid from loan funds eliminated the survey corps assigned to construction project and made necessary the taking over by the District Survey Offices of the lines, grades and measurements connected with contract work for grade crossings elimination and the Pennsylvania Terminal Improvement.

A summarization of the routine work performed by the Survey District Offices, in this first six months, is as follows:

Number of lots and properties surveyed.	950
Number of conveyance and architects' plans prepared	122
Miscellaneous sketches and descriptions	93
Linear feet of lines and grades given for new buildings	1,491
Linear feet of curb regulations given	26,388
Curved corners and inlets staked out.	68
Linear feet of lines and grades given for gas mains, conduits, passenger railway tracks, driveways	2,555
Linear feet of lines and grades furnished for sewers and drains, water pipes	5,391
Linear feet of lines and grades furnished for grading and paving.	45,865
Cubic yards of grading measured, - cut and fill	140,248
Square yards of paving and repaving, - measured and billed.	82,013
Linear feet of curbing, - measured and billed	5,598
Square yards of footway paving, measured and billed	3,126
Linear feet of lines and grades given for alleys.	2,601
Square yards of alleys, paved or repaved.	3,425

Assessment bills prepared.	267
Small City Plans prepared.	6
Acres surveyed for new plans, revisions and topographical surveys.	768
Reports and plans to Chief Engineer, not otherwise classified.	288
Stone monuments set.	86
Linear feet of constructed sewers.	2,848
Number of plans prepared for grading, repaving, alleys, water pipes.	51
Linear feet covered by plans	27,934
Miscellaneous plans and reports.	96
Council's Committee, reports and plans	16
Department of Law, plans made for Board of View.	9

The general lack of available help throughout the City organization made necessary the assuming of operations by the survey function of the Bureau in an endeavor to maintain the work of other agencies. One of the outstanding tasks performed by the Survey Districts was the making of a complete survey of lighting conditions throughout the City. The noteworthy features of this work were the survey for eliminating thousands of gas and naphtha lights; the investigation of more than 3000 complaints arising from the reduction of lighting facilities; the survey and preparation of topographical plans to the number of 135 showing the physical conditions and lighting arrangements within the various City parks and public squares; the survey to eliminate thousands of electric lights in that portion of the City between the Delaware and Schuylkill Rivers; the location, by measurement, of each individual lighting unit on the highways of the City and the character of the same; and the preparation of 61 scale drawings of the 50 wards in the City, upon which is plotted the location of gas, naphtha and electric lights. This work is still in progress. A field check is being carried on of the records of the Bureau of Gas and Lighting.

Assistance is being given to the Board of Revision of Taxes by the preparation of ward atlas plates, showing lot sub-divisions. The group of assistants assigned to this work have completed 240 tracings during the first six months of the year. The assuming of this operation by this Bureau will effect a saving to the City of Philadelphia of approximately \$200,000, which was the estimate of cost upon which a request for appropriation by City Council was made from the Board of Revision of Taxes.

Assistance is also being given to the Receiver of Taxes through the serving of 5563 bills for delinquent water rent by the District Survey forces.

CITY PLANNING DIVISION.

The work of this drafting force was also enlarged in scope and amount by the assistance given to other branches of the City government in the present unusual condition. The following summary is the more important features of the work accomplished:

Compilation on large chart for the Bureau of Street Cleaning, showing personnel distribution;

Compilation on two large charts of graphic interpretations of the use, area and height regulations proposed to be established by the Zoning Ordinance, now pending;

Study plan covering 25 square miles of the northeast area of Philadelphia, showing topography, existing and proposed major and secondary

33-1933

street systems, proposed park development and areas planned as logical sites for neighborhood developments;

Preparation, assembling and coloring numerous charts for exhibition purposes, and for illustrated talks delivered at the Swedenborgian Church, 22nd and Chestnut Streets, and the University of Pennsylvania;

Preparation of 61 tracings, 30" x 42", of the 50 wards of the City, drawn to a scale of 200' and 500' to the inch, as base maps to be used for a compilation of the lighting records in the Bureau of Gas and Lighting and the Electrical Bureau;

Coloring of duplicate sets of a group of 135 topographical plans, showing the lighting conditions in City parks and public squares, under the control of the Bureau of City Property;

A spot map showing the vacant lots and open air parking spaces in the central-city wards;

Various study plans for street revisions, parks, playgrounds and traffic intersections;

Plans prepared, corrected and assembled for public distribution;

Correcting and bringing up to date the 4 base Zoning plates and correcting lithograph copies of the same.

In addition to the planning work performed, this group assisted in compiling, mimeographing and assembling the 68-page Zoning Ordinance prepared by the Bureau and the 44-page list of amendments proposed by this Ordinance.

REGISTRY DIVISION.

The following work has been accomplished in the Registry Division for the period from January 1st to June 30, 1933:

Descriptions filed for registration.	31,000
Previous six months.	30,000
Books examined by the public	66,000
Previous six months.	63,000
New registry pages plotted	26
Old registry sheets copied	65
City Plans classified and indexed. (containing a total of 1,300 sub-plans)	55
Subpoenas issued against Registry Division	536
Appearances in Court on above.	210
New road maps made covering an area of eight (8) City Plans.	
Vouchers issued.	\$15.00

ZONING

The detail work connected with the Zoning project was assigned to the Bureau of Engineering and Surveys, under the 1933 budget, and the activities were transferred to and consolidated with the City Plans Division.

The Zoning Ordinance, as originally submitted to Council in 1932, was revised by the Zoning Commission in order to adapt it to administration by the Bureau of Engineering and Surveys, and was reintroduced in Council in February of 1933. Since the first of January, four meetings have been held with the Executive Committee of the Zoning Commission. At the meeting of March 15th, a sub-committee was appointed for reviewing the Zoning Ordinance and proposing the necessary revisions for operation by the Bureau of Engineering and Surveys.

The sub-committee consisted of Messrs. Thomas Buckley, A. Zane Hoffman and George R. Mackenzie, who revised, rearranged and clarified the entire ordinance, which work was approved by the Executive Committee of the Zoning Commission on April 4, 1933. The revised ordinance was mimeographed and, together with copies of the list of amendments, was submitted for the use of the Commission and Council's Committee on City Planning and Zoning.

Several joint meetings were held of the Executive Committee of the Zoning Commission and the Zoning Committee of the Real Estate Board, and several public meetings addressed in the interest of Zoning.

The Committee of Council on City Planning and Zoning held five meetings for public hearings, the Zoning Ordinance was reported out of Committee on June 8th, and has been printed for consideration in the near future by Council.

Construction activities of the Bureau were confined mostly to the completion of contracts continuing from former years, and are summarized, as follows:

BRIDGES.

APPROACHES TO THE HENRY AVENUE BRIDGES: The improvement of Henry Avenue between Walnut Lane and School House Lane was the final step in making available for use the bridges over Wissahickon Creek and over the tracks of the Reading Company. The roadway was opened to traffic on November 12, 1932, but the contract has not yet been closed as it is desired to place a surface treatment on the macadam paving during the present year.

UNIVERSITY AVENUE UNDER THE PENNSYLVANIA RAILROAD AND THE PHILADELPHIA, BALTIMORE AND WASHINGTON RAILROAD: This contract consisted of grading, paving and drainage work in Vintage Avenue and University Avenue, and the completion of abutments for the undergrade bridge supporting the tracks of the Pennsylvania Railroad over University Avenue. Work was started on April 9, 1932, and was completed to the point where the roadway was opened to traffic on May 10, 1933.

34TH STREET APPROACH TO UNIVERSITY BRIDGE: This contract comprised the paving of 34th Street from Grays Ferry Avenue to University Bridge with asphalt on concrete base, and included drainage work, construction of fences, painting the structural steel of the

and the placing of asphalt plank paving on the bascule leaves of the bridge. Work started on November 7, 1932, and was completed to the point of opening the approach to traffic on May 10, 1933.

EAST LOGAN STREET BRIDGE UNDER THE GERMANTOWN AND CHESTNUT HILL RAILWAY: This structure is a steel plate, girder type, encased in concrete, and was erected by the Reading Company, under an agreement whereby the City shares in the cost to the extent of 29.31%. The work was completed in February of 1933.

WALNUT LANE BRIDGE OVER LINCOLN DRIVE: A contract was entered into on January 26, 1932, for replacing the existing trestle bridge, the condition of which made necessary its closing to traffic. The City's finances have not permitted work under this contract.

The expenditure on the above bridge projects for the first six months of the current year has been \$124,387.57.

ABOLITION OF GRADE CROSSINGS.

Participation in projects of the railroads entering the City of Philadelphia, in the elimination of grade crossings and general improvements required the expenditure, during the first six months of the current year, of \$469,886.92, which was distributed, as follows:

SOUTH PHILADELPHIA IMPROVEMENT: No construction work has proceeded on this project. The expenditures in 1933 have been \$19,953, as the City's proportion in damage awards arising from work previously performed.

PENNSYLVANIA TERMINAL IMPROVEMENT: Contract had been entered into on November 4, 1931, for viaducts on the lines of Schuylkill Avenue West and 30th Street between Market and Arch Streets. Work under this contract has been completed, with the exception of Electrical Bureau ducts in 30th Street, installation of fire hydrants, painting of the viaducts superstructures at the intersection of Market and 30th Streets, and installation of copper gutters under the expansion joints in the deck system of 30th Street and Schuylkill Avenue West. The interference resulting from the constriction of traffic in Market Street between Schuylkill Avenue West and 30th Street lead to the placing under contract, on January 19, 1932, the deck system to close the gap in the south shoulder of Market Street. Financial reasons have prevented the inauguration of work under this contract.

The City expenditure in connection with these projects, during the first six months, has been \$200,356.01.

MANAYUNK ELEVATED: No construction work proceeded this year on the Manayunk project and there still remains the City operation of final street improvement of Main Street between Green Lane and Leverington Avenue, and Leverington Avenue between Main Street and the Pennsylvania Railroad. It is not planned to proceed with this work in the near future.

Expenditures were made only on land damage awards.

GERMANTOWN AND CHESTNUT HILL ELEVATED: The participating work of the City with the Reading Company, on the elimination of grade crossings along the Philadelphia, Germantown and Norristown Railroad and the Chestnut Hill Railroad between Wister Street and Bethlehem Pike, was completed on June 1, 1933, with the exception of the repaving of certain streets affected by the work. The City operation of carrying Mount Airy Avenue over the tracks of the Reading Company will not proceed in the near future, owing to the

condition of the City's finances.

The expenditure by the City on this project, including the damage claims satisfied on the Manayunk project, was \$249,577.91, since January 1, 1933.

DRAINAGE.

On January 1, 1933, the books of the City showed amounts credited for drainage work, as follows:

Main Sewers.	\$ 304,849.07
Branch Sewers.	40,057.59
New Sewers in place of old sewers. .	259,732.28

No work was inaugurated on main sewers, although a contract remains in force for a main sewer on the line of Tyson Avenue from Shelborne to Hasbrook Streets, and in Hasbrook Street from the line of Tyson Avenue to a connection with the sewer system of Cheltenham Township.

Work was completed on the section of the Mill Creek Main Sewer, which failed on August 29, 1932, in 43rd Street at Walnut Street.

No physical work was done during the current year on the Wingohocking Main Sewer in Wingohocking Street from Phillips Street westward. Payment for the work previously performed is delayed by negotiations over claims presented.

The expenditure, since January 1, 1933, on Main Sewer work has been \$53,201.53.

No new contracts were entered into for branch sewers and no expenditure was made therefor. A contract is in force for a branch sewer in 56th Street from Lindbergh Boulevard to Eastwick Avenue, but is not proceeding for financial reasons.

The length of the drainage system was increased by the completion of a sewer at private cost and drainage structures built under bridge and sewage treatment projects. This increase amounted to .12 miles, making a total length of sewers within the City of Philadelphia, as of June, 1933, 1,781.77 miles.

Under the authorization for new sewers in place of old sewers, one contract was entered into for work in Carlton Street from 12th to 13th Streets, and was completed. Contracts remain in force for replacing sewers in Cumberland Street from Kensington Avenue to Front Street, and 3rd Street from Christian to Catharine Streets, but, work is not proceeding for financial reasons.

The expenditure under this item, since January 1st, has been \$40,632.87.

In an attempt to relieve a condition of flooding in the vicinity of 6th Street and the Philadelphia & Newtown Connecting Railroad, a culvert was constructed on the line of 6th Street through the embankment carrying the railroad tracks. There was constructed 160 feet of 48" diameter precast concrete block conduit as a temporary provision. The work has been completed, together with the hard surface paving of 6th Street, south of the embankment, as a protection against wash of the unpaved street.

AGO CREEK PUMPING STATION: This station provides drainage for the lowland

section of the 40th Ward, adjacent to the City-Delaware County Line. It is steam operated and uses fuel oil under the boilers. Its duties were greatly increased by the failure of the dikes in Delaware County along the Darby Creek. These dikes, through lack of maintenance, were unable to confine the waters of the Darby Creek, and gave way at several locations, flooding Delaware County lands adjacent to the City. The water attained access within the City limits at several locations and necessitated continuous operation of the Mingo Creek pumps to maintain the City area in a condition which would prevent extensive property damage. As a result, the pumpage for the period of January 1st to June 30th rose to a total of 1,600,000,000 gallons, - an increase of 116,000,000 gallons over the pumpage for the like period of 1932. This excess required fuel oil beyond the estimated consumption and overran the item of appropriation. The flooding of Delaware County was so extensive that traffic was suspended on Tinicum Avenue and on the Chester Short Line of the Philadelphia Rapid Transit Company.

The rainfall for the 6-month period amounted to 22.9", as compared to 18.32" for the average of a like period during the past sixty years. The period was likewise marked by a storm, on the evening of May 24th, which resulted in flooding the City. The storm was accompanied by a wind attaining a maximum of 68 miles per hour and did extensive damage to property and trees throughout the City.

SEWAGE TREATMENT PROJECTS.

No contracts were entered into for work under the sewage treatment project during the current year.

The SOMERSET LOW LEVEL COLLECTING SEWER remained under contract in a condition of 96% completion, owing to approximately 400 feet of the work being not acceptable to the City. A reconstruction of this section is in progress.

The expenditure since January 1, 1933, has been \$40,188.84.

There still remains to be placed under contract, of the requirements in the Northeast Section, the intercepting devices along the lower reaches of Frankford Creek and along the Somerset Low Level Collecting Sewer. The estimated cost of this work is \$200,000 and it is required to be completed prior to December 31, 1933, under the terms of a permit issued by the Sanitary Water Board on December 22, 1932. Funds are not now available for this work.

The SOUTHWEST SEWAGE PUMPING STATION continued in operation for a period of three hours daily, at a cost of maintenance, operation and equipment, for the period January 1st to June 30th, of \$4,700.

The FRANKFORD CREEK HIGH LEVEL GRIT CHAMBER, during the 6-month period, intercepted the grit from 6,530,000,000 gallons of sewage. The resulting grit removal amounted to 12,300 cubic feet, or about 1.9 cubic feet per million gallons of sewage. This grit was washed and hauled to the Northeast Sewage Treatment Works for disposal in the low areas. Also, 7,900 cubic feet of screenings were intercepted, as were 1,165 cubic feet of grease.

The total expenditure at this Station for the 6-month period was \$3,400.

The NORTHEAST LOW LEVEL GRIT CHAMBER STATION AND GRIT CHAMBER accommodated a sewage flow of 2,010,000,000 gallons, from which we intercepted 11,000 cubic feet of grit and 3,900 cubic feet of screenings.

The total expenditure at this Station for the 6-month period was \$12,500.

Deterioration of two motors driving sewage pumps was halted and the units restored to operating efficiency by chromium plating bearings, which had become worn, - a new and unusual procedure, which corrected a condition at trifling cost that would otherwise have required a large expenditure for renewal of parts.

The NORTHEAST SEWAGE TREATMENT WORKS removed the solids from 8,540,000 gallons of sewage, which was delivered at rates varying from a minimum of 30,000,000 gallons daily to a maximum of 65,000,000 gallons daily. Sludge was withdrawn from the tanks to an amount of 6,400 cubic yards. The sludge was well-digested and without offensive odors.

As a measure of economy, all positions of watchman were abandoned in the budget for 1933, and a burglar alarm system was installed for the protection of the buildings and equipment. The opening of doors or windows operates a siren and summons the plant operators who may be on duty at the time.

A further economy was effected by placing the pumping station for delivering Delaware River water to the plant under full automatic control, and reducing operation needs to periodical inspections for oiling and observation.

The interceptor patrol maintained in successful operation all of the mechanical devices located at the junctions of the collecting sewers with the service sewers.

Difficulty has been encountered at the outlet of the Kirkbride Street sewer into the Delaware River from floating timber and boxes interfering with the operation of the tide gate. In an effort to prevent this occurrence, a metal screen has been installed at the mouth of the sewer. Difficulty is also being experienced with the sewers discharging to Frankford Creek. The filling of the Frankford Creek Channel has attained such a depth that the sewer outlets are becoming obstructed.

The LABORATORY at the Northeast Works, where chemical, bacteriological and physical determinations are made, carried out tests on 1,233 samples. Of this total, 935 were in connection with the operation of the Northeast Works; 50 were in connection with research work; 44 from the Frankford Grit Chamber; 117 were in connection with the investigation of trade wastes and industrial discharges; 9 were analyses of river samples for the information of the Department of Law, as collected by the Schuylkill River patrol; and 78 were from the Byberry Sewage Treatment Works, operated by the Department of Health, and taken for the purpose of maintaining a check on the operation of that plant.

DRAINAGE PERMIT DIVISION.

During the 6-month period ending June 30th, the Drainage Permit Division answered inquiries and gave connection data for 427 locations; issued 156 permits, covering 355 new connections; and issued permits for connection repairs at 72 locations. The records of the Bureau were increased by the filing of five construction diaries and seven plans of sewers, as built.

TESTING LABORATORY.

The Testing Laboratory maintained and operated by the Bureau of Engineering and Surveys conducts the physical and chemical tests of materials to be used in carrying out City contracts, and for the supplies purchased for the maintenance and operation of City institutions. This service is rendered to all City departments and bureaus. The system of boiler water treatment worked out in 1932 is being extended to other City installations and has been found to be very satisfactory and of marked economy. The necessary observations of the character of feed water is retained as routine work of the Laboratory.

During the period from January 1st to June 30th, the Laboratory was called on to make physical and chemical tests on 2,848 samples, submitted from the various departments and bureaus. They were contributed, as follows:

Public Works	1,703
City Transit	200
Public Safety	124
Public Health	116
Supplies and Purchases	573
Public Welfare	132

In most cases, this service included inspection, collection of samples and transportation to the Laboratory, in addition to the testing operation.

The range of materials submitted is indicated by the following:

Boiler compounds	4
Boiler feed water	538
Brick	7
Cast iron (arbitration bars)	18
Cement (hydraulic)	280
Concrete aggregate	21
Concrete building block	77
Concrete cores	5
Concrete cylinders	296
Fertilizer	3
Fuels	1,036
Granite	7
Metals (ferrous)	13
Miscellaneous materials	12
Oil (mineral)	33
Paint and paint materials	48
Road materials	393
Rubber compounds	2
Soap and soap materials	15

RESPECTFULLY SUBMITTED,

J. H. Neeson,
Chief Engineer and Surveyor.

JEA:E
6-28-33.

Bureau of Engineering and Surveys.

EXPENDITURES FOR FIRST SIX MONTHS OF 1933.

BUDGET FUNDS. \$ 237,213.28

LOAN FUNDS:

South Philadelphia Improvement.....	\$ 19,953.00	
Pennsylvania Terminal Improvement.....	200,356.01	
Baltimore and Ohio Improvement.....	-	
Manayunk, Germantown & Chestnut Hill		
Grade Crossing.....	249,577.91	
Branch sewers.....	-	
Sewage Disposal.....	40,188.84	
Main Sewers.....	53,201.53	
New sewers in place of old sewers.....	40,682.87	
Bridges.....	<u>124,387.57</u>	\$ 738,347.73

All loan fund employees were furloughed on May 1, 1933.

Bureau of Engineering and Surveys.

SUPPLY APPROPRIATIONS - 1933.

<u>ITEM</u>		<u>APPROPRIATION</u>	<u>6 MONTHS EXPENDITURES</u>
330	Ice, towel service, etc.	\$1,000.00*	\$1,000.00
331	Stationery, office supplies, etc. . . .	4,000.00	1,217.50
332	Auto parts.	1,300.00	391.14
333	Fuel, etc.	12,000.00*	12,000.00
334	Lubricants, etc.,	700.00	257.25
335	Hardware, etc.,	700.00	118.80
336	Furnishing and equipment.	500.00	245.00
337	Cornerstones and covers	500.00	-
338	Engineering field instruments	500.00	-
339	Miscellaneous	-	-

* Yearly contracts made in these items.

Bureau of Engineering and Surveys.

APPROPRIATIONS - 1933.

ITEM NO.	APPROPRIATION	EXPENDITURES	APPROPRIATION	
	1ST HALF	1ST HALF	OVER	UNDER
A-35	‡ 225,000.00	‡ 224,675.52	-	‡ 324.48
80	4,800.00	2,771.74	-	2,028.26
81	400.00	366.72	-	33.28
82	1,600.00	1,564.22	-	35.78
83	400.00	424.68	‡ 24.68*	-
84	250.00	8.00	-	242.00
85	6,000.00	6,032.00	82.00**	-
86	750.00	739.75	-	10.25
87	175.00	-	-	175.00
88	900.00	580.65	-	319.35
TOTALS	‡ 240,275.00	‡ 237,213.28	‡106.68	‡ 3,168.40

* The appropriation for the first half of the year was exceeded by reason of the survey districts being employed in making a lighting survey for the Bureau of Gas and Lighting. Expenditures will be considerably less for the second half of the year and will bring this item within the appropriation for the year.

** Survey district rents have been reduced and the second half of the year will be somewhat less than the first half, and will show a saving for the year.

BUREAU OF ENGINEERING, SURVEYS AND ZONING.

J. H. Neeson, Chief Engineer and Surveyor.

ANNUAL REPORT - 1933.

The Bureau of Engineering, Surveys and Zoning has functions comprising construction, operation, investigation and reports. The construction activities comprise new City bridges; participation, with the railroads entering the City, in the elimination of grade crossings and railroad improvements; the construction of sewers and drainage structures and those of the sewage treatment projects; and such additional operations as may be assigned; plans for street improvements and other classes of construction are prepared for carrying out, under contract, by other bureaus and departments. The routine duties comprise the operation of the sewage treatment works and pumping stations; the operation of drainage pumping stations; the control and operation of a laboratory for the physical and chemical testing of materials entering into construction and also the supplies purchases for the maintenance and operation of the various City institutions and plants; the issuance of permits for connections to the drainage system; the investigation and control of trade wastes from manufacturing processes and discharges from garages and service stations into the sewer system; the investigation of drainage and flooding complaints; the checking and approval of applications for highway occupation by public utilities to the Highway Supervisors; the checking and approval of structural designs submitted for the work of railroads, utilities and private interests; and general engineering investigations of various projects affecting the interests of the City. The Bureau of Engineering, Surveys and Zoning, also, comprises the Board of Surveyors who are the developers of the City Plan and the official measurers of real estate and of the quantities of work done and materials furnished under contract for City construction work; they also furnish the lines and grades for construction operations within the highways of the City; the registering of land deeds and the recording of transfers of property are also functions of the Bureau. A recent addition to the Bureau is the work of the Zoning Division, which was authorized by Ordinance of Council and approved by the Mayor on August 10, 1933.

Economy conditions have seriously affected the construction activities and organization of the Bureau. During the year 1932, the total personnel was reduced from 591 to 350; this was further reduced on May 1, 1933, by the furloughing of all employees paid from loan funds. The financial program of the City of Philadelphia for the year 1933, provided a budget for the Bureau of Engineering, Surveys and Zoning, with 266 positions, and an appropriation for "Personal Services" - \$450,000., an appropriation for "Other than Personal Services" - \$30,550., appropriation to the Department of Supplies and Purchases, for the use of this Bureau - \$20,700., or a total appropriation of \$501,250.

Drastic economies have been put into effect in all lines. The combination of offices in the 6th Survey District effected an annual saving of \$600; and in the 10th Survey District, the office was removed from a location under lease to a City-owned building, effecting a saving of \$1500. Maintenance appropriations for the year 1933 were greatly reduced in amount, but the control of expenditures has kept them within the appropriations for the year.

In the items appropriated to the Department of Supplies and Purchases, all expenditures were within the appropriations, except that for fuel oil, which was exceeded due to the excess pumpage at the Mingo Creek Station arising from the broken dikes in Delaware County. This excess, however, was cared for by a transfer from other items.

Loan funds for construction purposes on the books of the Bureau, on January 1, 1933, totaled \$6,565,368.68, and was comprised almost entirely of allotments to work in connection with railroad improvement projects and the continuation of the sewage treatment project. Several continued contracts were carried to completion or to a point where the halting of operations was practicable, and required a loan fund expenditure of \$938,762.08.

The Bureau of Engineering, Surveys and Zoning, has three sources of income from which funds are paid into the City Treasury, - for services rendered to the public by the district survey offices and the Zoning Division, and the sale of sewer laterals and drainage service charges from the Sewer Registrar.

For the year 1933, the District Survey Offices issued vouchers covering 2,261 orders to the amount of \$28,340.25. The receipts from the Sewer Registrar totaled \$5,838.19, of which service charges against property frontage amounted to \$4,270.19 and the sale of sewer laterals returned a total of \$1,568.

On December 8th, the Mayor appointed an official committee to promote the activities of the Civil Works Administration in Philadelphia. J. H. Neeson, Chief Engineer and Surveyor, of this Bureau, was made secretary of this committee and in order to facilitate the work of selecting available projects to start with the least delay, turned over the resources of the Bureau of Engineering, Surveys and Zoning, to help in this work. As a result of the work by the Bureau, projects approved by Civil Works Administrator, up to December 31, 1933, authorized the placing of 8448 men to work at once.

The projects approved, provided work for foremen, superintendents, engineers, architects, draftsmen, clerks, laborers, etc.

The following summary is given of the activities of the Bureau for the year 1933.

BOARD OF SURVEYORS.

During the twelve months of 1933, the Board of Surveyors held 20 stated meetings, at which thirteen City Plans were confirmed, nine deeds of dedication approved, and reports made on nine ordinances of Council, of which two were negative.

On May 1st, the furloughing of employees paid from loan funds eliminated the survey corps assigned to construction project and made necessary the taking over by the District Survey Offices of the lines, grades and measurements connected with contract work for grade crossings elimination and the Pennsylvania Terminal Improvement.

A summarization of the routine work performed by the Survey District Office, in the year 1933, is as follows:

Number of lots staked out for building purposes, scattered four or less.....	618
Number of lots staked out for building purposes, operations over four.....	48
Number of line surveys - single line.....	347
Number of properties surveyed for conveyance purposes, old properties.....	287
Number of properties surveyed or resurveyed for conveyance purposes, operations.	480
Number of plans made for conveyance purposes.....	221
Number of plans made for subdivision of vacant lots.....	24
Number of lots shown thereon.....	164
Number of farm surveys and plans made.....	12
Number of acres of farm land surveyed.....	71
Number of descriptions of property prepared (incl. lien descriptions charged for)	32
Number of plans made for architects.....	30
Number of plans prepared for legal purposes, wharf surveys, etc.....	25

45-1933

Number of miscellaneous plans and grade sketches.....	158
Number of linear feet of grades given for erection of new buildings.....	5,959
Number of linear feet of curb regulations given	62,616
Number of curb corners staked out.....	144
Number of stone monuments set.....	19
Number of linear feet of lines and grades given for passenger railway tracks.....	941
Number of plans prepared for passenger railway tracks.....	5
Number of linear feet of track covered by passenger railway plans made.....	1,520
Number of linear feet of lines and grades given for gas mains, conduits, etc.....	6,289
Number of linear feet of lines and grades given for driveways.....	2,168
Number of blue prints of former surveys made.....	35
Number of linear feet of lines and grades furnished for sewers and drains.....	5,798
Number of linear feet of lateral pipes measured.....	1,989
Number of inlets staked out.....	38
Number of sewer assessment bills prepared	2
Number of preliminary plans for private sewers and temporary drains.....	7
Number of linear feet of street covered by same.....	4,834
Number of linear feet of lines and grades fur. for grading, etc.,.....	44,389
Number of cubic yards grading measured, cut and fill.....	121,867
Number of linear feet of street grades.....	2,368
Number of square yards of paving measured and billed.....	27,011
Number of linear feet of street covered by the same.....	8,751
Number of paving assessment bills prepared.....	2
Number of square yards repaving, etc.,.....	65,647
Number of linear feet of street covered by same.....	6,938
Number of linear feet of curb measured and billed.....	7,199
Number of square yards of footway paving and repaving measured and billed.....	4,134
Number of curb and footway assessment bills prepared.....	109
Number of linear feet of alleys for which lines and grades were given	4,329
Number of square yards of alleys paved or repaved.....	6,560
Number of assessment bills prepared for same.....	487
Number of current estimates furnished.....	19
Number of linear feet of inlet connections furnished.....	656
Number of cubic yds., masonry, excav., bridge found. abutment walls and ret. walls.	19,325
Small city plans prepared.....	13
Sectional city plans prepared or revised	7
Acres covered by new sectional city plans.....	170
Acres surveyed for new plans or plan revisions.....	613
Reports on deed of dedications, releases and affidavits.....	7
Reports made to Chief Engineer.....	1,315
Descriptions prepared for deeds of dedication.....	15
Plans of new streets considered for tentative approval.....	5
Miscellaneous plans made for Chief Engineer or Board of Surveyors.....	77
Stone monuments set.....	178
Cubic yds. of excavation measured for sewers F.P.W.P.....	612,759
Linear feet measured revision surveys or bridge approaches.....	110,217
Linear feet levels to established benches recording highwater - Creek.....	29,000
Properties posted for Board of Adjustment.....	73
Number of feet of streets considered for repaving and resurfacing.....	108,237
Number of feet of streets considered for repaving and paving of alleys.....	10,271
Number of feet of stakes for lines and grades for grading, surfacing, etc.....	116,118
Number of delinquent water bills serves.....	12,000
Preliminary plans, estimates and reports on street improvements.....	19
Plans made for Board of View.....	13
Number of lien descriptions prepared.....	69
Number of lights examined and complaints investigated for Bureau of L.&G. and Electrical Bureau	40,397

The general lack of available help throughout the City organization made necessary the assuming of operations by the survey function of the Bureau in an endeavor to maintain the work of other agencies. One of the outstanding tasks performed by the Survey Districts was the making of a complete survey of lighting conditions throughout the City. The noteworthy features of this work were the survey for eliminating thousands of gas and naphtha lights; the investigation of many complaints arising from the reduction of lighting facilities; the survey and preparation of topographical plans showing the physical conditions and lighting arrangements within the various City parks and public squares; the survey to eliminate thousands of electric lights in that portion of the City between the Delaware and Schuylkill Rivers; the location, by measurement, of each individual lighting unit on the highways of the City and the character of the same; and the preparation of scale drawings of the 50 wards in the City, upon which is plotted the location of gas, naphtha and electric lights.

Assistance is being given to the Board of Revision of Taxes by the preparation of ward atlas plates, showing lot sub-divisions. Assistance was also given to the Receiver of Taxes through the serving of approximately 12,000 bills for delinquent water rent by the District forces.

CITY PLANNING DIVISION.

The work of this drafting force was also enlarged in scope and amount by the assistance given to other branches of the City government in the present unusual condition. The following summary is the more important features of the work accomplished:

Compilation on large chart for the Bureau of Street Cleaning, showing personnel distribution;

Preparation of compiled Annual Statistical Report of the eleven survey districts;

Study plan covering 25 square miles of the northeast area of Philadelphia, showing topography, existing and proposed major and secondary street systems, proposed park development and areas planned as logical sites for neighborhood developments;

Preparation, assembling and coloring numerous charts for exhibition purposes.

Preparation of 116 tracings of wards in Philadelphia;

Coloring numerous plans of parks under control of Bureau of City Property

Plans prepared, corrected and assembled for public distribution;

Various study plans for revisions (street), parks, playgrounds and traffic intersections;

Correcting and bringing up to date the 4 base Zoning plates and correcting lithograph copies of the same.

In addition to the planning work performed, this group assisted in compiling, mimeographing and assembling the 68-page Zoning Ordinance prepared by the Bureau and the 44-page list of amendments proposed by this Ordinance.

REGISTRY DIVISION.

The following work has been accomplished in the Registry Division for the period from January 1, 1933 to December 31, 1933.

Descriptions filed for registration	58,916
Books examined by the public	133,918
Transfers plotted	49,050
Original lots plotted	1,764
Descriptions filed	58,916
Descriptions filed from 1865 to 1933	2,745,676
Titles examined for plan book entries	3,405
Deeds of Dedication filed	10

ZONING

The official activities of the Zoning Division began August 10, 1933. On this date the ordinance known as the "Philadelphia Zoning Ordinance" was signed by the Mayor, and became effective immediately. The ordinance was passed by City Council two weeks prior to this date, and the Bureau therefore proceeded to the organization of a Zoning Division on August first. A Division head was assigned and personnel selected from various divisions of the Bureau, principally from Survey Districts. The men selected were all men who had appropriate engineering or architectural experience and who were fitted for daily contact with applicants for permits.

Activities of Zoning Division from August 10, 1933 to December 31, 1933.

Number of requests for information	5,315
Number of applications filed	1,965
Number of Zoning Permits issued	508
Number of Use Registrations Permits issued	365
Number of applications refused	261
Number of applications referred to Board of Adj.	71
Number of applications stamped "Permits not required"	790
Number of refusals appealed to Board of Adjustment	142
Number of vouchers issued	664
Amount of cash receipts	\$3,046.00
Number of complaints investigated	35
Number of inspections	281
Number of Board of Adjustment notices delivered	70

BRIDGES

APPROACHES TO THE HENRY AVENUE BRIDGE: The improvement of Henry Avenue between Walnut Lane and School House Lane was the final step in making available for use the bridges over Wissahickon Creek and over the tracks of the Reading Company. The roadway was opened to traffic on November 12, 1932, and the contract was completed October 23, 1933.

UNIVERSITY AVENUE UNDER THE PENNSYLVANIA RAILROAD AND THE PHILADELPHIA BALTIMORE AND WASHINGTON RAILROAD: This contract consisted of grading, paving and drainage work in Vintage Avenue and University Avenue, and the completion of abutments for the undergrade bridge supporting the tracks of the Pennsylvania Railroad over University Avenue. Work was started on April 9, 1932, and was completed to the point where the roadway was opened to traffic on May 10, 1933.

34TH STREET APPROACH TO UNIVERSITY BRIDGE: This contract comprised the paving of 34th Street from Grays Ferry Avenue to University Bridge with asphalt on concrete base, and included drainage work, construction of fences, painting the structural steel of the University Bridge and the placing of asphalt plank paving on the bascule leaves of the bridge. Work was started on November 7, 1932, and was completed to the point of opening the approach to traffic on May 10, 1933.

EAST LOGAN STREET BRIDGE UNDER THE GERMANTOWN AND CHESTNUT HILL RAILWAY: This structure is a steel plate, girder type, encased in concrete, and was erected by the Reading Company, under an agreement whereby the City shares in the cost to the extent of 29.31%. The work was completed in February of 1933.

WALNUT LANE BRIDGE OVER LINCOLN DRIVE. A contract was entered into on January 26, 1932, for replacing the existing trestle bridge, the condition of which made necessary its closing to traffic. The City's finances have not permitted work under this contract.

ABOLITION OF GRADE CROSSINGS.

During the year 1933, improvements carried on under agreements with the Railroad Companies, were as follows:

SOUTH PHILADELPHIA IMPROVEMENT: No construction work has proceeded on this project, owing to lack of available funds.

PENNSYLVANIA TERMINAL IMPROVEMENT: Contract for the construction of viaducts on the line of Schuylkill Avenue west, and 30th Street between Market and Arch Street, was completed December 20, 1933. Contract entered into January 19, 1933, for viaduct on the south side of Market Street from the Schuylkill River bridge to 30th Street, which provides for the opening of Market Street to two way traffic, approximately 90% completed.

MANAYUNK ELEVATED: No construction work proceeded this year on the Manayunk project and there still remains the City operation of final street improvement of Main Street between Green Lane and Leverington Avenue, and Leverington Avenue between Main Street and the Pennsylvania Railroad.

GERMANTOWN AND CHESTNUT HILL ELEVATED: The participating work of the City with the Reading Company, on the elimination of grade crossings along the Philadelphia, Germantown and Norristown Railroad and the Chestnut Hill Railroad between Wister Street and Bethlehem Pike, was completed on August 20, 1933; the City operation of carrying Mount Airy Avenue over the tracks of the Reading Company will not proceed in the near future, owing to the condition of the City's finances.

DRAINAGE.

On January 1, 1933, the books of the City showed amounts credited for drainage work, as follows:

Main Sewers	\$ 304,849.07
Branch Sewers	40,037.59
New Sewers in place of old sewers. .	259,732.28

No work was inaugurated on main sewers, although a contract remains in force for a main sewer on the line of Tyson Avenue from Shelborne to Hasbrouk Streets, and in Hasbrouk Street from the line of Tyson Avenue to a connection with the sewer system of Cheltenham Township.

Work was completed on the section of the Mill Creek Main Sewer, which failed on August 29, 1932, in 43rd Street at Walnut Street.

No physical work was done during the current year on the Wingohocking Main Sewer in Wingohocking Street from Phillips Street westward. Payments for the work previously performed is delayed by negotiations over claims presented.

No new contracts were entered into for branch sewers and no expenditures were made. A contract is in force for a branch sewer in 56th Street from Lindbergh Boulevard to Eastwick Avenue, but is not proceeding for financial reasons.

The length of the drainage system was increased by the completion of a sewer at private cost and drainage structures built under bridge and sewage treatment projects. This increase amount to .12 miles, making a total length of sewers within the City of Philadelphia, as of December 31, 1933, 1,781.77 miles.

Under the authorization for new sewers in place of old sewers, one contract was entered into for work in Carlton Street from 12th to 13th Streets, and was completed. Contracts remain in force for replacing sewers in Cumberland Street from Kensington Avenue to Front Street, and 3rd Street from Christian to Catharine Streets, but, work is not proceeding for financial reasons.

In an attempt to relieve a condition of flooding in the vicinity of 6th Street and the Philadelphia & Newtown Connecting Railroad, a culvert was constructed on the line of 6th Street through the embankment carrying the railroad tracks. There was constructed 160 feet of 48" diameter precast concrete block conduit as a temporary provision. The work has been completed, together with the hard surface paving of 6th Street, south of the railroad embankment, as a protection against wash of the unpaved street.

MINGO CREEK PUMPING STATION. This station provides drainage for the lowland sections of the 40th Ward, adjacent to the City-Delaware County Line. It is steam operated and uses fuel oil under the boilers. Its duties were greatly increased by the failure of the dikes in Delaware County along the Darby Creek. These dikes through lack of maintenance, were unable to confine the waters of the Darby Creek, and gave way at several locations, flooding Delaware County land adjacent to the City. Also, the unusually heavy rains during the week of August 21st, caused breaks in the dikes. This excess required fuel oil beyond the estimated consumption and overran the item of appropriation, which additional cost was taken care of by a transfer from other Maintenance and Supply Items from the Bureau.

SEWAGE TREATMENT PROJECTS.

THE SOMERSET LOW LEVEL COLLECTING SEWER was completed July, 1933. This will carry all sewage north of Somerset Street, to the Northeast Sewage Treatment Works, Wheat-sheaf Lane and Richmond Streets.

There still remains to be placed under contract, of the requirements in the North-east Section, the intercepting devices along the lower reaches of Frankford Creek and along the Somerset Low Level Collecting Sewer. The estimated cost of this work is \$200,000. Funds are not now available for this work.

SOUTHWEST PUMPING STATION. The operations at this Station were about normal for the year.

FRANKFORD CREEK HIGH LEVEL GRIT CHAMBER, During the year 1933, from a total sewage flow of 13,193 million gallons, 15,195 cubic feet of wet screenings were intercepted, which equalled 1.2 cubic feet per million gallons of sewage. 32,234 cubic feet of wet grit, equal to 2.8 cubic feet per million gallons of sewage, were intercepted, washed and hauled to the Northeast Sewage Treatment Works for disposal on low ground. 1703 cubic feet of grease were intercepted and disposed of with the screenings.

NORTHEAST LOW LEVEL GRIT CHAMBER STATION AND GRIT CHAMBER accomodated a sewage flow of 4449 million gallons, from which 7020 cu. ft. of screenings and 20,250 cu. ft. of wet grit were intercepted.

NORTHEAST SEWAGE TREATMENT WORKS. The total volume of sewage treated during 1933 amounted to 17,642 million gallons, 13,193 million gallons of which reached the works by gravity from the Frankford Creek High Level Collecting Sewer, and 4449 million gallons pumped from the Upper Delaware Low Level Collecting Sewer and Upper Frankford Creek Low Level Intercepting sewer. The total amount of sludge withdrawn from the Imhoff Tanks during 1933 amounted to 16,000 cu. yds. This sludge was dark in color, well digested, and flowed freely.

Due to difficulty encountered at the outlet of the Kirkbride Street sewer into the Delaware River, from floating timber and boxes entering the sewer before the closing of the tide gate, a swinging metal screen was installed to exclude this material from the sewer.

At the outlet of the Paul Street sewer in Frankford Creek, debris carried down during times of storm is filling up that portion of the creek which was dredged in 1931. The resultant rise of the surface of the creek at this point delayed the closing of the tide gate for too great a period of time, and it was necessary to make certain changes in the hydraulic control of the interceptor gates to compensate for the higher creek level.

The LABORATORY at the Northeast Works, where chemical, bacteriological and physical determinations are made, carried out tests on 3,454. Of this total, 2,506 samples were in connection with the operation of the Northeast Sewage Treatment Works, 474 samples from the Experimental Station, 136 trade waste samples, 138 samples from Frankford Grit Chamber, 141 samples from Byberry Sewage Treatment Works, and 69 samples from the River Patrol Work.

DRAINAGE PERMIT DIVISION.

During the year, the Drainage Permit Division answered inquiries and gave connection data for 1,004 locations; issued 312 permits. The records of the Bureau were increased by the filing of five construction diaries and seven plans of sewers, as built.

TESTING LABORATORY

The Testing Laboratory maintained and operated by the Bureau of Engineering, Surveys and Zoning, conducts the physical and chemical tests of materials to be used in carrying out City contracts, and for the supplies purchased for the maintenance and operation of City institutions.

During the period from January 1st to December 31, 1933, the Laboratory was called on to make physical and chemical tests on 6,019 samples, submitted from the various departments and bureaus. They were contributed as follows:

Public Works	3,872
City Transit	424
Public Safety	252
Public Health	269
Supplies and Purchases	829
Public Welfare	370
Wharves, D. and F.	1
Municipal Court	2
	<hr/>
	6,019

In most cases, this service included inspection, collection of samples and transportation to the Laboratory, in addition to the testing operation.

The range of materials submitted is indicated by the following:

Boiler Compounds	11
Boiler Feed Water	1157
Brick	22
Cast Iron	43
Cement	632
Concrete aggregate	20
Concrete Building Block	80
Concrete cores	20
Concrete cylinders	799
Fertilizers	3
Fuels	1916
Granite	11
Metals	44
Misc. metals	53
Oil (mineral)	105
Paint and Paint Mtls.	120
Road materials	957
Rubber compounds	2
Soap and soap mtl.	23
Tile	1

The Bureau is still actively engaged in the preparation of projects and the purchase of supplies and materials in cooperation with the Civil Works Administration.

RESPECTFULLY SUBMITTED,

J. H. Neeson,
Chief Engineer and Surveyor.

BUREAU OF ENGINEERING, SURVEYS AND ZONING

ANNUAL REPORT FOR 1933

DRAINAGE

For the year 1933 there was available for the construction of main sewers \$304,849.07, and for branch sewers \$40,037.59. No new contracts were entered into for main or branch sewers, although the completion of two new private sewer contracts and drainage structures built under bridges and the sewage treatment project made a total increase of 0.21 miles to the drainage system of the City. At the end of 1933, there was a total of 1,781.86 miles of sewers completed within the limits of the City of Philadelphia. \$259,732.28 was available for new sewers in place of old sewers from which one new contract was entered into and 0.11 miles of sewers replaced.

43rd STREET FROM A POINT NORTH OF WALNUT STREET TO A POINT SOUTH OF WALNUT STREET. On August 29, 1932, a section of the Mill Creek Main Sewer between these limits collapsed. A contract to replace this portion was entered into that year and work started. This year work was completed, 138 feet of 17'6" x 18'5" brick sewer being constructed.

in 1932 and completion in March 27-33 at a cost of 49612.43

6TH STREET BENEATH THE PHILADELPHIA AND NEWTOWN CONNECTING RAILROAD. To abate flooding conditions north of the Railroad, on the line of 6th Street, a temporary stormwater culvert through the embankment carrying this railroad was contracted for and completed this year. 160 feet of 4'0" diameter precast concrete block culvert was constructed.

5561.99

WINGOHOCKING MAIN SEWER ON LINE OF WINGOHOCKING STREET FROM PHILIP STREET WESTWARD. No physical work was done this year, final payment awaiting settlement of claims. This is a 15'0" x 17'0" reinforced concrete sewer.

Contracts executed and awaiting certification by the City Controller are as follows:

Main sewer on the line of Tyson Avenue from Shelborne Street to Hasbrook Street and in Hasbrook Street from the line of Tyson Avenue to a connection with the sewer system of Cheltenham Township.

Branch Sewer in 56th Street from Lindbergh Boulevard to Eastwick Avenue.

New sewers in place of present old sewers in Cumberland Street from Kensington Avenue to Front Street and 3rd Street from Christian Street to Catharine Street.

BRIDGE CONTRACT WORK - 1933

HENRY AVENUE BRIDGE OVER WISSAHICKON CREEK - This bridge was begun in 1930 and at the end of that year was approximately 44% completed. At the end of 1931, the structure was 91% completed with paving of the bridge floor and the sidewalks remaining to be done. The physical work was completed on March 1, 1932, the total cost of the project being approximately \$1,770,000. Final estimate has not been paid.

IMPROVEMENT OF HENRY AVENUE BETWEEN WALNUT LANE AND SCHOOL HOUSE LANE - APPROACHES TO HENRY AVENUE BRIDGE OVER WISSAHICKON CREEK - This work was the final step in opening Henry Avenue from Nicetown to Roxborough. The work on the contract consisted of grading, temporary paving with cold mix bituminous macadam, concrete gutters, guard rail fences and drainage. The roadway was opened to traffic on November 12, 1932, with dedication of Wissahickon Memorial Bridge by Mayor Moore. The total cost of this work was \$61,968.99.

BRIDGE ON LINE OF UNIVERSITY AVENUE UNDER THE PENNSYLVANIA RAILROAD AND THE P. B. & W. RAILROAD - The completion of this contract connected South Philadelphia and West Philadelphia via 34th Street in South Philadelphia, the University Bridge over the Schuylkill River, University Avenue, Vintage Ave. and 34th Street in West Philadelphia and consisted of the grading, paving and drainage work of Vintage Avenue and University Avenue and the completion of abutments for the Undergrade Bridge supporting the tracks of the Pennsylvania Railroad over University Avenue.

The work started on April 29, 1932 and University Avenue Bridge was opened for traffic on May 10, 1933, after the dedication by Mayor Moore. This work cost \$230,819.39.

ABOLITION OF GRADE CROSSINGS - 1933

*Grade crossings
between W. 1st & 2nd*

GERMANTOWN AND CHESTNUT HILL ELEVATED - The physical work on this project was completed on June 1, 1933.

PENNSYLVANIA TERMINAL IMPROVEMENTS - Contract was entered into on November 4, 1931, with the Notice to Proceed on September 28, 1932 for Viaducts on the line of Schuylkill Avenue west and Thirtieth Street between Market Street and Arch Street. The work on this contract was completed on December 20, 1933 at a cost of \$225,530.39.

A contract was entered into on January 19, 1933, to close up the gap on the north shoulder of Market Street with a viaduct between the Schuylkill River Bridge and Thirtieth Street. This work is proceeding satisfactorily. The contract involves an expenditure of approximately \$120,000.00.

PAVING 34TH STREET APPROACH TO UNIVERSITY BRIDGE FROM GRAYS FERRY

AVENUE NORTHWARD, AND THE UNIVERSITY BRIDGE OVER THE SCHUYLKILL RIVER AND THE DRAINAGE INLETS AND CONNECTIONS NECESSARY THERETO - This work was the final step in connecting South Philadelphia and West Philadelphia via University Bridge over the Schuylkill River and consisted of paving of 34th Street Approach to University Bridge from Grays Ferry Avenue northward with asphalt on concrete base, which is subject to assessment, drainage, fences, painting the structural steel of University Bridge and the paving of the bascule leaves of University Bridge with asphalt plank.

The work was started on October 7, 1932 and 34th Street, University Bridge and University Avenue were opened for traffic on May 10, 1933 after dedication by Mayor Moore. The cost of this work was \$33,905.12.

EAST LOGAN STREET BRIDGE UNDER THE GERMANTOWN AND CHESTNUT HILL

BRANCH OF THE READING COMPANY - The work was started in 1931 and the bridge is a steel plate girder type encased in concrete which was 40% completed at the end of that year. The work was done under contract by the Reading Railroad under an agreement with the City whereby the City shared to the extent of 29.31% . All the work under the agreement was completed by the Reading Company in February, 1933.

WALNUT LANE BRIDGE OVER LINCOLN DRIVE - The existing iron trestle

on the site of the proposed new bridge is inadequate for the present day loads and has become in such bad condition that it has been necessary to close the bridge for traffic. A contract was entered into on January 26, 1932, for the construction of a new bridge which will be a stone-faced arch of 150 ft. span, the contract, however, has not been certified by the Controller which has delayed proceeding with the work.

BUREAU OF ENGINEERING AND SURVEYS

DEPARTMENT OF PUBLIC WORKS

CITY OF PHILADELPHIA

CITY HALL ANNEX



REPLY AND REFER TO: BES - GKH

January 4, 1934

From: Clerk
To: Mr. P. S. Fisher, Chief Clerk
Subject: ACTIVITIES FOR YEAR - 1933

The following is the annual report for the year of 1933, from the Permit Division, Room 203.

Permits - 312	
Connections made to single system	522
Connections made to double system	372
Connections - special inspection	25
Repairs to connections to sewers	<u>85</u>

1,004

Also inspection made of sump systems
in NW and NE districts -

Plans filed	15
Inspection diaries -	8
and the general routine work of the office	

Receipts

Sewer bills	\$4,270.19
Sewer permits -	<u>1,568.00</u>
	\$5,838.19

Increase in receipts over 1932 - \$1,409.50

THOMAS TAGUE
Clerk

57-1933

ANNUAL REPORT FOR THE YEAR 1933.

Drainage Division

The rainfall for the year 1933, as reported by the United States Weather Bureau, amounted to 51.37 inches, as compared to a normal precipitation of 40.41 inches for the preceding 61 years.

This total of 51.37 inches rainfall has not been exceeded since the year 1906.

Following the rainy period of March 19 to 21, with the accompanying high tides, the banks of Darby Creek failed. This resulted in the flooding of that portion of Delaware County along the County Line banks to an elevation of -4.0 C.D., and the suspension of traffic over Tinicum Avenue. The roadbed of the Chester Short Line of the P.R.T. was flooded to such an extent as to preclude operation.

Much of this flood water escaped into Philadelphia County over the P.R.T. roadbed and necessitated continuous operation at the Mingo Creek Pumping Station during the greater part of April.

During the later part of the year, the roadbed of the P.R.T. Chester Short Line and the roadbed of the Chester Branch of the Phila. & Reading Railway were raised at this point to about zero City Datum.

On the evening of May 24, 1933, a rainstorm of marked intensity resulted in flooding of many areas throughout the City. The high wind, with a velocity of 68 miles per hour, which accompanied the storm, did much damage to trees and roofs.

The rainfall of 9.84 inches for the month of August exceeds the total precipitation of any month since July 1919, when 10.30 inches was reported.

During the week beginning Aug. 21, 1933, a storm of great intensity accompanied by heavy rains and gales, moved along the Atlantic seaboard from Florida to Maine and extended far inland. The Weather Bureau reports

indicate rainfall as follows: Aug. 21 - 1.07"; Aug. 22 - 0.83"; Aug. 23 - 3.74".

The water in both the Schuylkill and Delaware Rivers overflowed the banks and flooded adjacent areas. During the morning of Aug. 24, the water in the Schuylkill River rose to elevation +2.29 C.D. at the Mingo Creek Pumping Station, and overflowed and destroyed the dikes protecting the 40th Ward lowlands at this point.

Along the Delaware River and Darby Creek, the water likewise overflowed and destroyed the dikes protecting these lowlands. Both pumping units were in service at the Mingo Creek Pumping Station at this time, but the water elevation in the forebay continued to rise until the level of the engine and boiler room was reached, when it was necessary to suspend operation to save the machinery.

Employees of the Bureau of Highways and of the Bureau of Engineering and Surveys made hurried repairs to the broken dikes and it was possible to resume operation of the Mingo Creek Pumping Station on September 1, with both pumping units operating continuously until 4.30 P.M. September 23, one pump continuing in operation until 9.34 P.M. on September 26.

Mingo Creek Pumping Station

This station is located on the west bank of the Schuylkill River north of Penrose Ferry Road, and was constructed in 1896 to provide surface drainage for the lowlands of the 40th Ward. The surface elevations throughout the lowlands are generally below the high tide level in the surrounding rivers, and this area is therefore protected from flooding by a system of dikes along the water front. The natural creeks traversing this area have been converted into a system of drainage ditches and discharge into the main channel of Mingo Creek, which terminates at the site of the Pumping Station.

Two 150 horsepower oil-fired boilers provide steam for driving 2 horizontal centrifugal pumps of a combined capacity to lift 60 million gallons per day and discharge the water into the Schuylkill River against a head of 13 feet.

The pumpage for the year 1933 is estimated as 4268 million gallons, which is considerably higher than normal, due to the flood waters of March and of August.

The hydraulic fill operation over the Hog Island site, by the U.S. Government contractor, has added somewhat to the volume of drainage cared for by this station during the year.

The pumping hours for one unit during the year is estimated as a total of 2843, and an estimated fuel oil consumption of 243,219 gallons at a cost of \$8513.29. The total estimated expenditure for operation, maintenance, repairs and equipment for the year amounts to \$17,012.50.

Sewage Disposal Division

A contract carried over from 1931 for the construction of the Somerset Low Level Collecting Sewer from the Northeast Sewage Treatment Works to Somerset Street, was completed at a cost of \$562,337.81.

Southwest Sewage Pumping Station

This Station is located on a 1000 acre tract near Penrose Ferry Road and Island Avenue, the proposed site of the Southwest Sewage Treatment Works.

The motor-driven pumping equipment now installed consists of four vertical volute pumps designed for a total daily pumpage of 50 million gallons against a 40-ft. head. Future installations will increase the pumping capacity of this station to 160 million gallons daily.

This Station was placed in operation August 23, 1927.

The Collecting Sewer has been constructed from the Pumping Station to a point in 75th Street 30 ft. southeast of Wheeler Street, with a branch from 80th Street near Erwig Avenue to 82nd Street and Bartram Avenue.

The small quantity of sewage now collected requires about 3 hours daily pump operation, and will continue to be discharged into Eagle Creek pending

the design and construction of the Sewage Treatment Works to be located adjacent to this Station.

The total cost of maintenance, operation and equipment of this Station for the year 1933 amounted to \$9536.63, of which \$3268 was expended for power and light, \$5603.98 for labor, and \$664.70 for material and supplies.

Frankford Creek High Level Grit Chamber

This Station is located on a tract bounded by "N" Street, Hunting Park Avenue, "O" Street and Lycoming Street, and provides coarse screening and preliminary sedimentation for sewage collected by the Wingohocking and Tacony Creek Intercepting Sewers, so as to remove coarse materials and sand from the sewage before it enters the pressure conduit constructed in Wheatsheaf Lane, and leading to the Northeast Sewage Treatment Works.

Photo

The Frankford Creek High Level Collector leading to the Grit Chamber is designed for a flow as high as 200% of the average dry weather flow, to afford additional protection to that portion of the Frankford Creek flowing through Juniata Park.

The permit issued by the Pennsylvania State Department of Health provides, and the Grit Chamber and Treatment Works have been designed, for the treatment of sewage flows as high as 141% of the average dry weather flow. Accordingly, a stormwater overflow weir has been constructed at a point in the sewer where it connects with the Grit Chamber, and the excess of stormwater is conveyed directly to Frankford Creek below the park property.

During the year 1933, from a total sewage flow of 13,193 million gallons, 15,195 cubic feet of wet screenings were intercepted, which equalled 1.2 cubic feet per million gallons of sewage.

36,234 cubic feet of wet grit, equal to 2.8 cubic feet per million gallons of sewage, were intercepted, washed and hauled to the Northeast Sewage Treatment Works for disposal on low ground.

Analysis of the grit removed indicated a volatile matter content of 3.8%.
1703 cubic feet of grease were intercepted and disposed of with the screenings.
The total estimated expenditure for maintenance, operation, repairs and equipment for the year 1933, amounted to \$7936.47.

Northeast Low Level Sewage Pumping Station
and Grit Chamber

These Stations, together with the Northeast Sewage Treatment Works, are located on the 160 acre tract along Wheatsheaf Lane between Richmond Street and the Delaware River.

The Low Level Grit Chamber is designed to provide coarse screening and preliminary sedimentation for sewage collected by the Upper Delaware Collecting Sewer, the Pennypack Creek Intercepting Sewer, and Upper and Lower Frankford Creek Low Level Intercepting Sewers, and the Somerset Low Level Collecting Sewer now under construction, so as to remove coarse material and sand from the sewage before it enters the pumping station, at which point the sewage is pumped to the Imhoff Tanks for further sedimentation before discharge into the Delaware River.

In the Low Level Pumping Station, 2 - 36" and 4 - 24" motor driven centrifugal sewage pumps of the vertical volute type have been installed. Two of these 24" pumps are direct connected to variable speed induction motors. The 2 - 36" and 2 of the 24" pumps are direct connected to constant speed synchronous motors.

Electricity service is supplied by the Philadelphia Electric Company at 2300 volts pressure.

These Stations were placed in operation July 16, 1930. For the year 1933, the total estimated sewage flow amounted to 4449 million gallons; 7020 cu.ft. of screenings intercepted during this year equals 1.50 cu.ft. per million gallons of sewage.

20,250 cu.ft. of wet grit were intercepted and conveyed by pneumatic conveyors to the lowland at the site of the work.

The total expenditures for operation, maintenance, repairs and equipment, chargeable against the Low Level Grit Chamber and Pumping Station, amounted to \$27,762.32.

Northeast Sewage Treatment Works

The first section of the Northeast Sewage Treatment Works was placed in operation October 29, 1923, and comprises 32 reverse flow Imhoff Tanks and 80 sludge drying beds, and is designed for a sewage flow of 60 million gallons per day at a detention period of 3 hours.

The total volume of sewage treated during 1933 amounted to 17,642 million gallons, 13,193 million gallons of which reached the works by gravity from the Frankford Creek High Level Collecting Sewer, and 4449 million gallons pumped from the Upper Delaware Low Level Collecting Sewer and Upper Frankford Creek Low Level Intercepting sewer.

Gooch
The character of the sewage varies from a rather heavy concentrated day flow containing trade waste colored with dyes, to a more dilute night flow. The volume of dry weather flow fluctuates between a minimum rate of flow of 30 MGD occurring about 5 A.M., and a maximum rate of about 70 MGD occurring about 5 P.M.

Determination of settling solids by Imhoff settling glasses indicates a consistent removal of 100% throughout the period.

Samples for suspended solids collected at 3-hour intervals and made into a weekly composite sample for Gooch crucible determination indicate the following average total suspended solid content:

Works influent	154 PPM
Works effluent	32 PPM

or a reduction of 79% total suspended solids.

While oxidation processes are not employed at these Works, there is an improvement noted in the effluent, as indicated in the biochemical oxygen demand tests which are reported as follows:

Works influent	260 PPM
Works effluent	174 PPM

The total quantity of sludge withdrawn from the Imhoff Tanks during 1933 amounted to 16,000 cu.yds. This sludge was dark in color, well digested, and flowed freely. Offensive odors were not noted at any time in the vicinity of the lagoon into which the sludge was discharged.

Laboratory analysis of the sludge withdrawn is reported as follows:

Specific gravity	1.016
Moisture	93.1
Dry residue, volatile	55.1
" " fats	17.3
Alkalinity(methyl orange)	1065 PPM

Gas ebullition has been active in nearly all gas vents of the tanks during the year, and foaming was in evidence in varying degrees of intensity from April 1 to November 1.

Interceptor Patrol

For intercepting all dry weather flow of sewage and the proper amount of rainwater contaminated with sewage, intercepting devices have been provided at the point of connection between existing main sewers and the collecting or intercepting sewers.

For those connections beyond the range of tidal influence of the rivers or creeks, interception has been accomplished by means of a slotted opening built into the invert of the main sewer and provided with an adjustable sliding plate cover. In the larger sewers, adjustment of the flow to the intercepting sewer is accomplished by hand operated sluice gates located in the connection between the main sewer and the intercepting sewer, and behind a dam constructed across the main sewer between this connection and the receiving body of water.

For those connections within the tidal influence of the rivers or creeks, intercepting chambers of concrete construction and with two hydraulically operated sluice gates have been provided; one gate of the vertical type for the interception of the sewage flow and first flush of street wash, and the other of the horizontal type located in and transversely to the main sewer, and between the vertical inter-

cepting gate and the water course. This horizontal gate serves the dual function of passing stormwater to the river or creek when in an open position, and of excluding tidewater from the dry weather interceptor when in a closed position.

The two sluice gates are actuated through a common hydraulic cylinder, direct connected to the horizontal sluice gate and to the vertical sluice gate by means of flexible cable over sheaves.

The rise and fall in elevation of the sewage level in the main sewer transmits motion, through a float located in the sewer, to a 4-way valve which in turn, by City water pressure, actuates the hydraulic cylinder.

Intercepting gates and slots are examined immediately after each storm, and during dry weather periods at least once a week.

Little difficulty is encountered in maintaining the intercepting slots in service except from falling leaves in the autumn season, and occasionally from grit and sticks reaching the sewers during times of heavy rains from undeveloped areas with unpaved streets.

The operation of the hydraulically controlled intercepting sluice gates is likewise satisfactory, but greater expenditure of time for maintenance is required. The discharge from the sewers into tidal streams during times of storm carries considerable sand and grit which tends to shoal in front of the sewer outlet. The sand backs up into the sewer in some instances to the vicinity of the gates, and until removed interferes with the satisfactory operation of the gates.

Due to difficulty encountered at the outlet of the Kirkbride Street sewer into the Delaware River, from floating timber and boxes entering the sewer before the closing of the tide gate, a swinging metal screen was installed to exclude this material from the sewer.

At the outlet of the Paul Street sewer in Frankford Creek, debris carried down during times of storm is filling up that portion of the creek which was dredged in 1931. The resultant rise of the surface of the creek at this point

delayed the closing of the tide gate for too great a period of time, and it was necessary to make certain changes in the hydraulic control of the interceptor gates to compensate for the higher creek level.

Northeast Sewage Laboratory.

photo
The total number of samples on which chemical, bacteriological and physical determinations were made, totalled 3454. Of this total, 2506 samples were in connection with the operation of the Northeast Sewage Treatment Works, 474 samples from the Experimental Station, 136 trade waste samples, 138 samples from Frankford Grit Chamber, 141 samples from Byberrrt Sewage Treatment Works, and 59 samples from the River Patrol Work.