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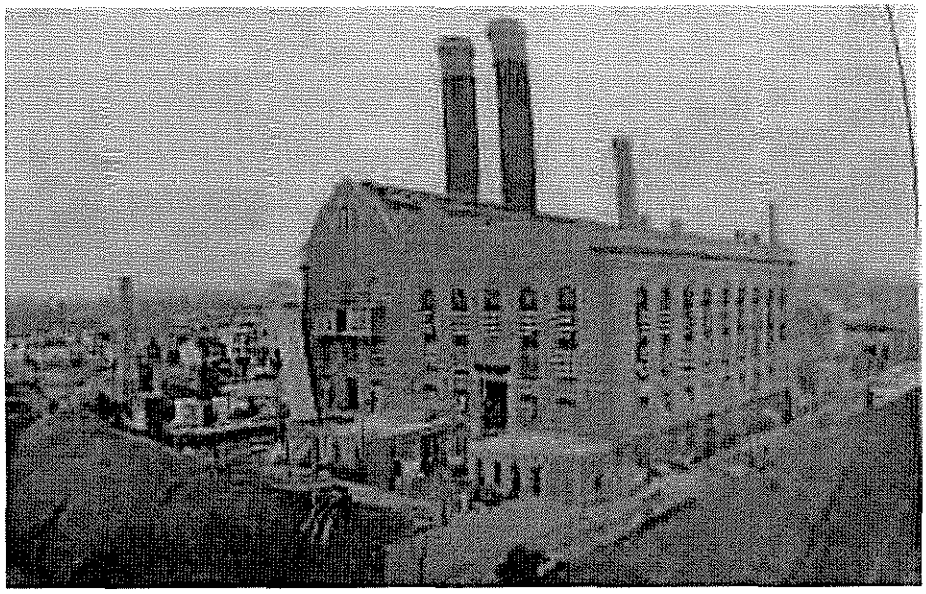
B.R.T. Central Powerhouse

153 Second Street

Brooklyn, New York



DRAFT

Historical Background Report

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Higgins & Quasebarth
270 Lafayette Street
New York, NY 10012
(212) 274-9468

This draft report has been compiled by Higgins & Quasebarth for Gowanus Village LLC to explore the historical development of the site to inform the process for the potential redevelopment of the parcel. The documentation included in this report is based on historical map research, various written sources including early newspapers, and correspondence with historians at Metropolitan Transit Authority (MTA). Other possible sources which have not yet been reviewed include the records of MTA, and possibly ConEdison, and the resources available at the Brooklyn Historical Society which has been closed due to construction. Also, an additional site visit and inspection of the existing fabric would be helpful in revealing the amount of historic fabric that remains.

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153 Second Street is a monumental, three-story brick powerhouse located immediately east of the Gowanus Canal on Second Street in Brooklyn, New York. The block is bounded by the Gowanus Canal to the west, Third Avenue to the east, to the south by Second Street, and, historically, to the north by the First Street Basin, which has been infilled. Constructed between 1900 and 1904, the building was part of the Brooklyn Rapid Transit's Central Powerhouse complex, which fully occupied this block. The north section of the building was demolished between 1938 and 1950.

The Central Powerhouse was constructed as part of the Brooklyn Rapid Transit (BRT) electrification project when all of the consolidated Brooklyn surface and elevated railways were electrified. As the central electrical station of the BRT, electrical power was generated there and was then delivered to substations. The substations then disseminated electricity over the vast area of tracks controlled by BRT. The station, which replaced one of the original 1892-93 DC powerhouses, used reciprocating steam engines and made both AC and DC power for the BRT. The new facility was built adjacent to the old station. The powerhouse made power until October 10, 1938 when all power production was shifted to a powerhouse at Kent Avenue. Between 1938 and 1972 it was used to generate DC for trolleys in the area and to power sections of the Fourth Avenue BMT subway. In the mid-1970s operations at the powerhouse ceased and all of the equipment was removed.[1]

The powerhouse was designed by Thomas E. Murray and construction was supervised by C.E. Roehl, engineer of electrical equipment for Brooklyn Rapid Transit. Construction of the powerhouse cost over $3,000,000 and when completed it was reported to be "one of the largest as well as finest power plants owned by any street railway company in the country".[2] Thomas E. Murray designed and built many of the large AC powerhouses at the turn of the century. In addition to the BRT Central Powerhouse, he designed many of the substations it supplied. Other stations designed by Murray include, the two Waterside stations in Manhattan, and the central station of the Citizen's Light & Power Company of Rochester, New York.[3]

The powerhouse was designed in the industrial Romanesque-revival style, a robust architectural expression which conveyed the powerful function of the building. It was clad in red brick and trimmed in bluestone. The roof was composed of terra-cotta tile laid in Portland cement and covered with a slag and cement roofing. Historically, the building was composed of two sections, the south section, which remains, and a north section, which was razed sometime between 1938 and 1950. These spaces were separated by a dividing wall. The north section housed the boiler house, and the south section accommodated the engine and dynamo room.

The original structure was 183 ft., 3 in. wide along the east and west elevations. The southern section was 186 ft. 9 in. in length, projecting twenty feet beyond the north section along the east elevation. The powerhouse was oriented east – west, with the front façade facing west toward the canal. The north section was roughly one story taller than the south section and was capped by a gambrel roof. Revealing the function of the space within, the north section was surmounted by two massive smoke stacks.

The east and west elevations of the north section were three bays wide and organized by a base, body and gable. The base had a central entry flanked by two windows. A sillcourse separates the base from the upper portion of

the façade, which were occupied by three double-height arched openings separated by massive brick piers. These openings were infilled with industrial awning sash and a fanlight at the top. A brick architrave caps the three arches. In the gable were three attenuated arched windows, with the center window slightly taller. Decorative bartizans marked the top of the outside walls and cast-iron letters reading "Brooklyn Rapid Transit Company" align at the base of the gable. The massive smoke stacks were located at the west end of the north section, one on either side of the ridge.

The south section was five bays wide at the ends and nine bays wide along the south façade. Along the ends, the base was occupied by five window openings and was capped by the continuous sill course from the north section. Above the base were five double-height arched openings which were smaller that those on the north section. The arches were crowned by a brick architrave. This section of the building was finished with an arched corbel table and simple projecting brick cornice. Situated behind a stepped parapet was a glazed monitor skylight that ran the entire length of the building. The south elevations continued the vocabulary established at the end elevations.

Currently, only the south section of the building remains. The north elevation has been infilled with brick, but retains remnants of the structure from the razed north section. The east, west and south elevations retain their historic configuration. The cornice has been removed. The windows have been infilled with various materials, some sealed completely and others are occupied with a combination of infill and replacement windows. All equipment has been removed and interior is configured with open floor plates. The monitor skylight has been retained.

The Central Powerhouse was constructed as the central electrical station of the Brooklyn Rapid Transit Company. Coal-generated electricity was created there and was transported to the various substations that disseminated electricity over the vast area of tracks of the various surface and elevated lines controlled by Brooklyn Rapid Transit.

The Central Power Station of the Brooklyn Rapid Transit Company offered a system of high tension distribution with rotary converter substations, and was a radical departure from the earlier system of operating trolley systems by primary generation or direct current with reliance on boosters for long distances. The single large station delivered current to any part of the system without excessive loss. It also provided for the replacement of overhead cables by underground high-tension feeders.

The site at Third Avenue and Second Street was selected due to its proximity to the Gowanus Canal, allowing for the ease of obtaining coal, which could be received directly from the canal boats, and access to the water. The site was centrally located in Brooklyn, making it a prime choice for distribution of electricity. The plot of ground was sufficiently large to provide for future growth, and at the same time there was an abundance of room for the storage of coal. The site of the power station was formerly the bed of the Gowanus Canal and the structure was built entirely on piles surmounted by a concrete bed. The central powerhouse was developed adjacent to the old DC power station (1892-1902).

Ancillary buildings were scattered throughout the block, each accommodating a specific step in the process of making and disseminating electricity. Water tanks were located at the far east end of the block along Third Avenue. A storage battery was located in a small building just outside the powerhouse. Along the waterfront, coal was hoisted from barges at the dock by a clam-shell bucket and was dropped into a receiving hopper where the coal slid down a chute to a conveyor. The conveyor carried the coal down to the weighing hoppers in the weigh house. From the weigh house, the coal was transferred to the coal storage piles or to a bucket conveyor. Each coal conveyor consisted of an endless chain of buckets connected by links and mounted on wheels. The conveyors carried the coal from the loaders, through a tunnel underground, up through the boiler house, and along the monitor, discharging the contents into the bunkers. The coal conveyors were capable of distributing 125 tons of coal per hour.

The interior of the engine room (the south section) was furnished with a series of galleries to accommodate for the switchboard apparatus and feeders. These galleries were constructed largely of wrought iron, and were reached by an elevator and iron staircases. The room was lighted by large windows on the south, east and west elevations, as well as by the glazed monitor in the center of the roof span. At the east end of the room were switchboards which distributed the power.

The steam generating plant (the north section) was originally composed of 32 boilers organized in two tiers. There were sixteen boilers on each tier, eight lining each side of the building. Discharge from the boilers was released by the two stacks which projected above the boiler house. The plant would produce vast quantities of ash which was would pass through a downtake from the boilers to ash cars in the basement. The cars moved along a track to a storage area just outside the building line. From there the ash was transported to an area by the dock where it could be loaded directly onto the barges or train cars.

In 1896 Brooklyn Rapid Transit Corporation was established as a holding company to acquire the properties of the many independent streetcar, elevated and steam railroad concerns in Brooklyn. The private companies under the Brooklyn Heights Railroad (BHRR) and the Brooklyn City Railroad (BCRR) began in 1892 to electrify street cars/trolleys. Using technology of the day, seven Thomas Edison style DC powerhouses were constructed to power the respective systems.[5]

In 1895, the Niagara Falls powerhouse opened using the newly developed alternating current technology (AC). This powerhouse set the standard of power generation at a central powerhouse with distribution to outlying sub-stations.

By 1901, every Brooklyn line was under BRT control except the Brooklyn and Rockaway Beach Railroad (the Canarsie Line), which was absorbed by the BRT in 1906. Under BRT control, the entire system was electrified.

In 1913, BRT developed 111 miles of new rapid transit routes in Brooklyn, Manhattan and the Bronx. The new lines unified the system and provided its rider with a direct route from Brooklyn to Manhattan. The BRT declared bankruptcy in 1918 and when it emerged it was renamed the Brooklyn-Manhattan Transit Corporation (BMT). The BMT struggled through the depression and finally in 1940 the City of New York acquired the corporation's assets. The BMT lines are now part of the New York City transit system.[6]

[1] Based on information from Robert Lobenstein, General Superintendent of Power Operations, New York City Transit Authority, 12 January 2005.

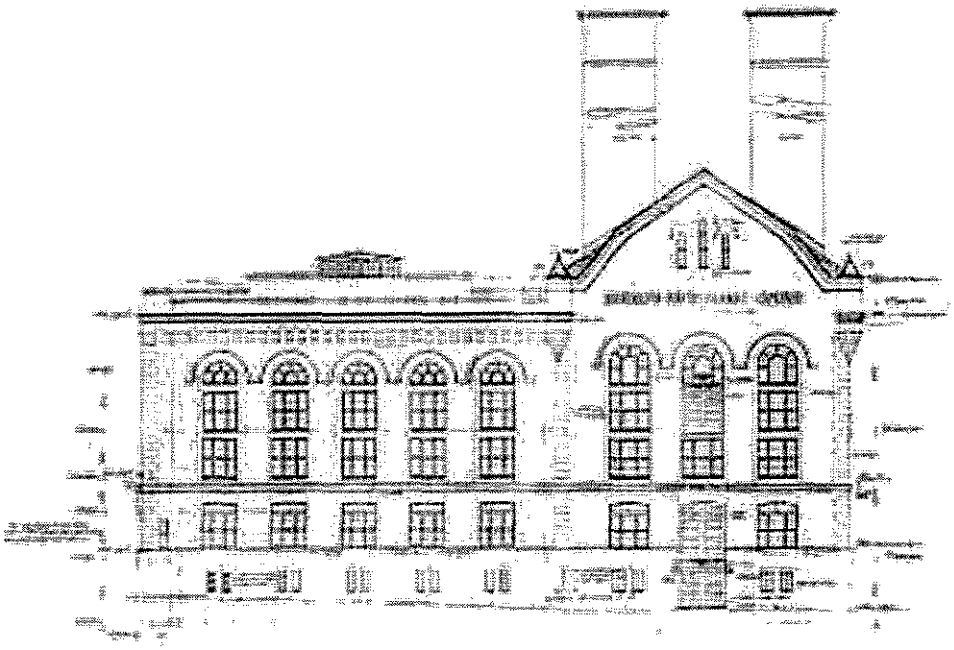
[2] "New B.R.T. Power House," *Brooklyn Daily Eagle*, 20 January 1902.

[3] Thomas Edward Murray, *Electric Power Plants, A Description of a Number of Power Stations Designed by Thomas Edward Murray* (New York, 1910)

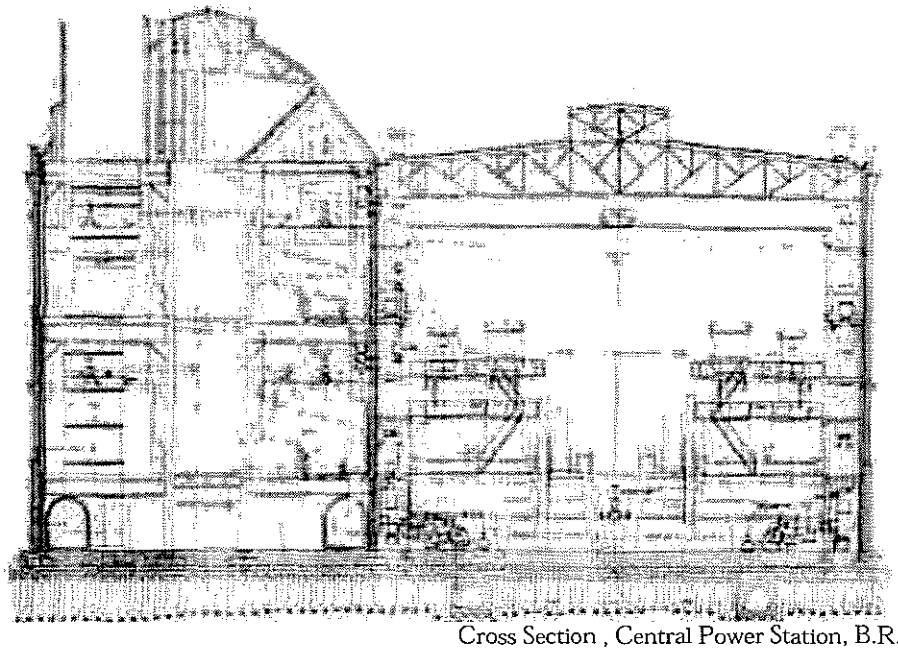
[4] This description of the powerhouse and how it functioned is largely based on Murray's description in *Electric Power Plants.*

[5] Lobenstein.

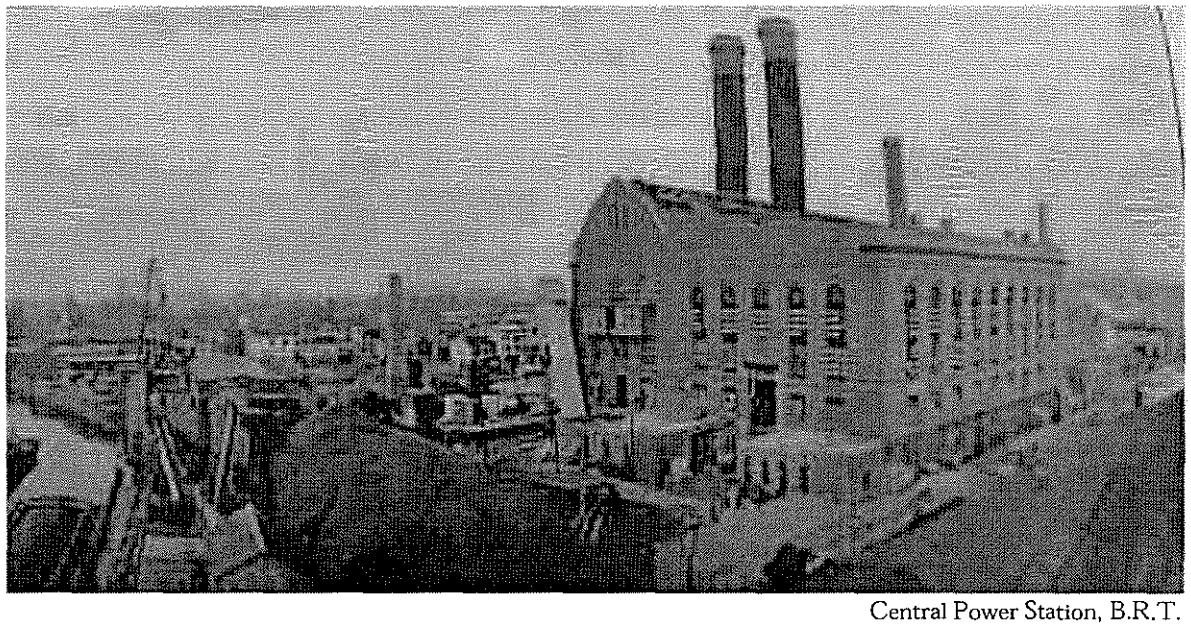
[6] Kenneth T. Jackson, ed., *The Encyclopedia of New York City* (New Haven: Yale University Press, 1995),158-59.



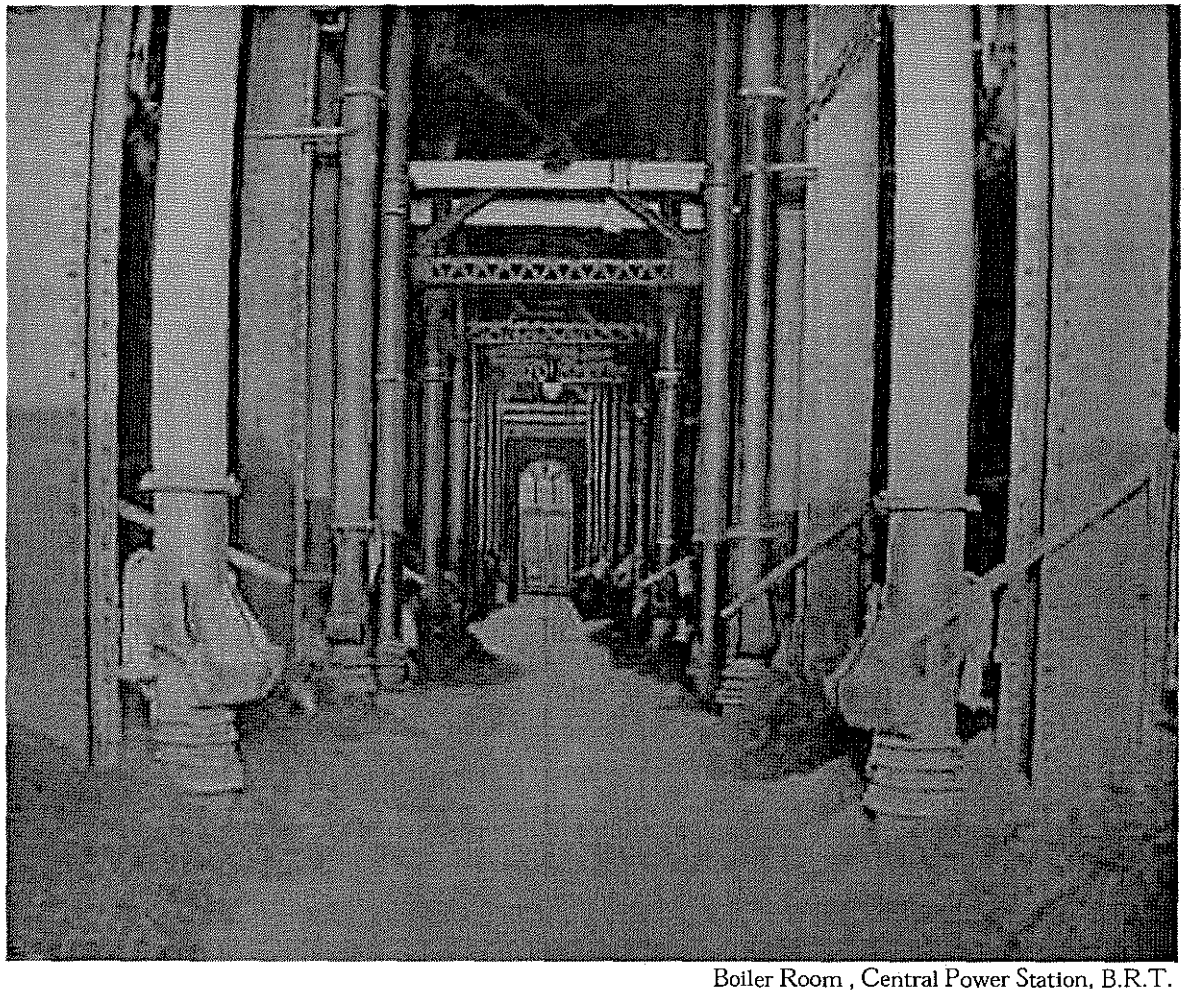
East Elevation , Central Power Station, B.R.T.



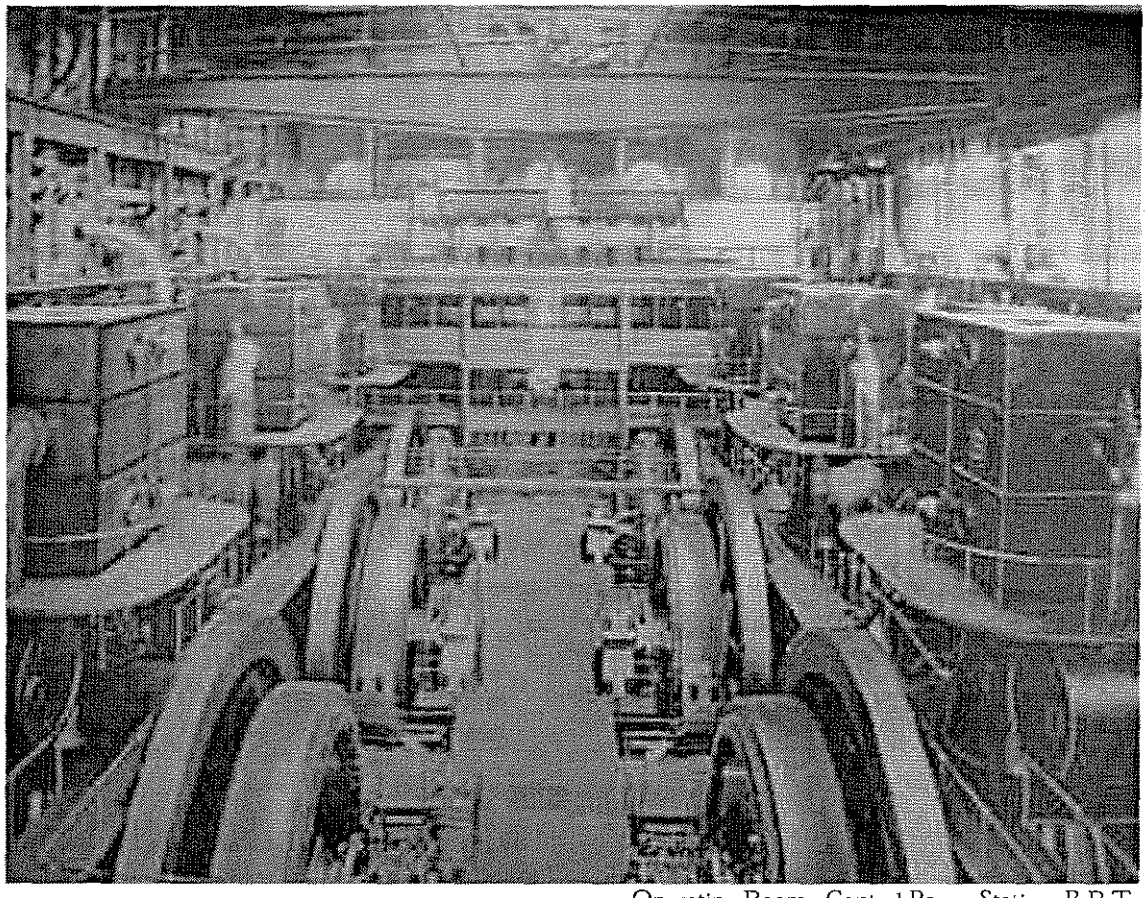
Cross Section , Central Power Station, B.R.T.



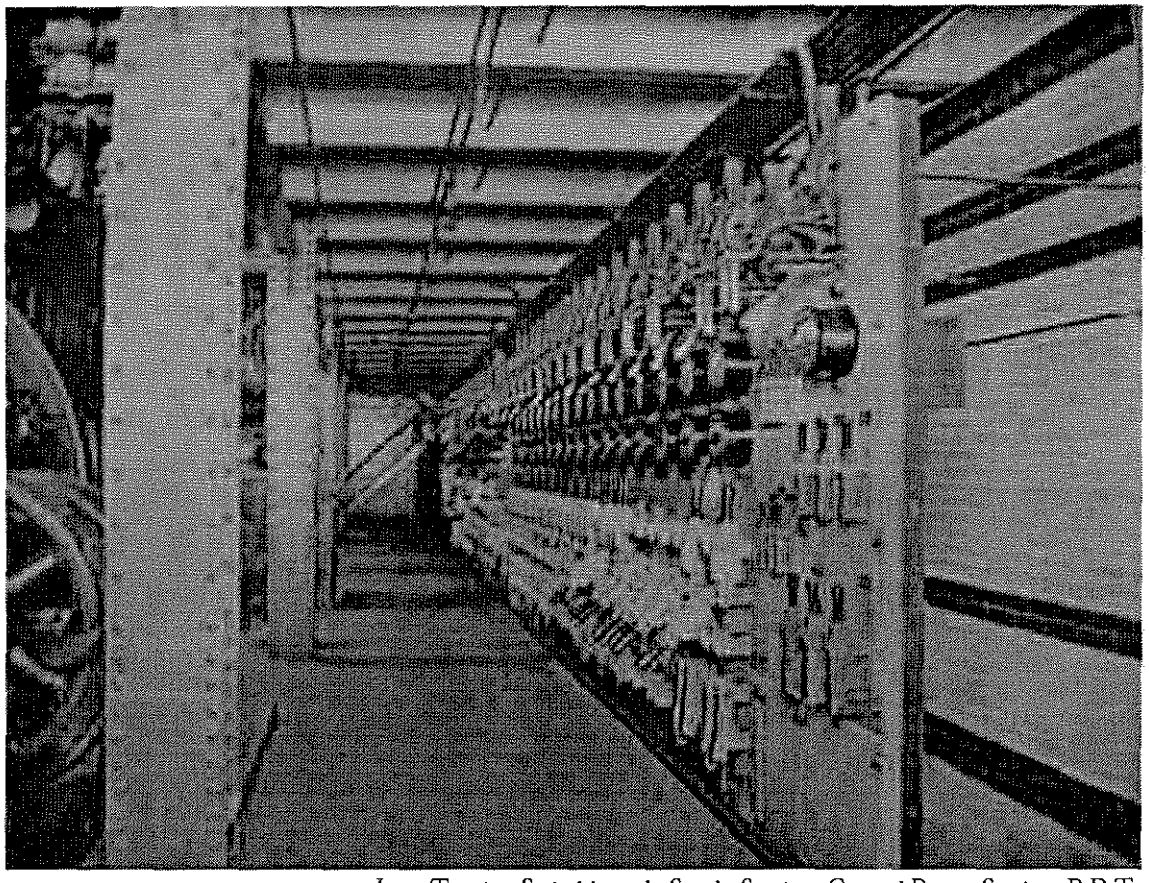
Central Power Station, B.R.T.



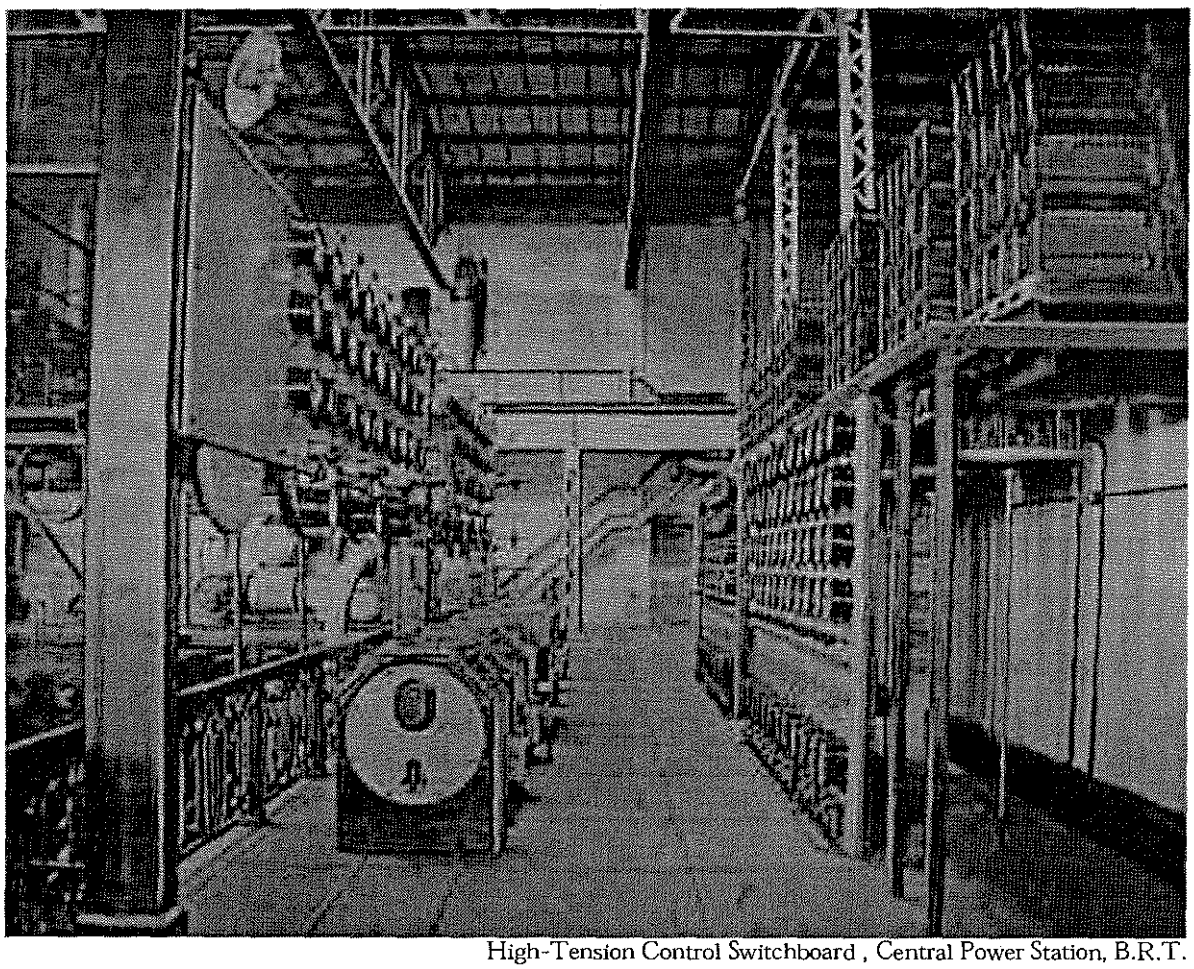
Boiler Room , Central Power Station, B.R.T.



Operating Room , Central Power Station, B.R.T.



Low Tension Switchboard , South Section, Central Power Station, B.R.T.



High-Tension Control Switchboard , Central Power Station, B.R.T.

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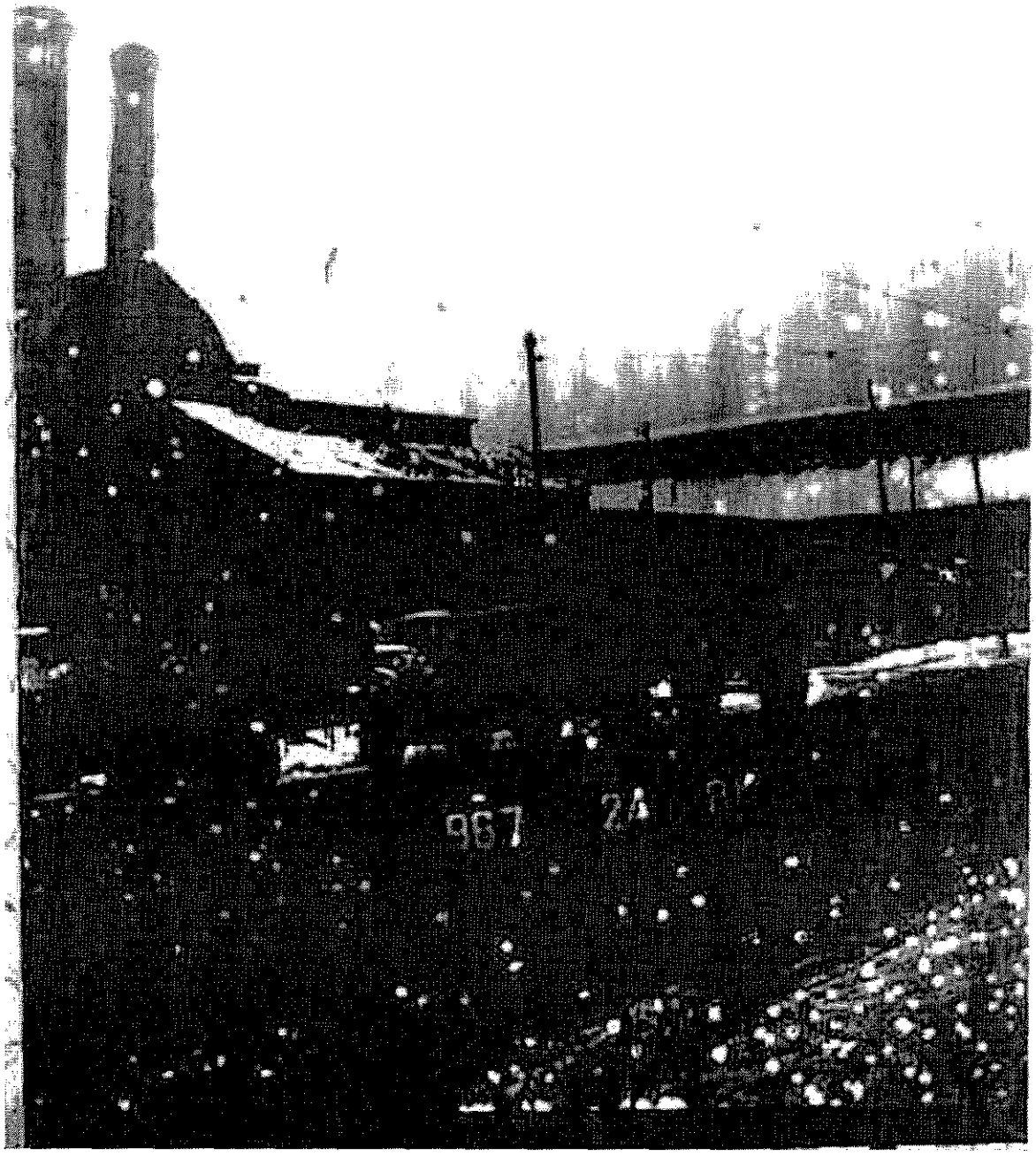

Tax Department Photograph
ca. 1940