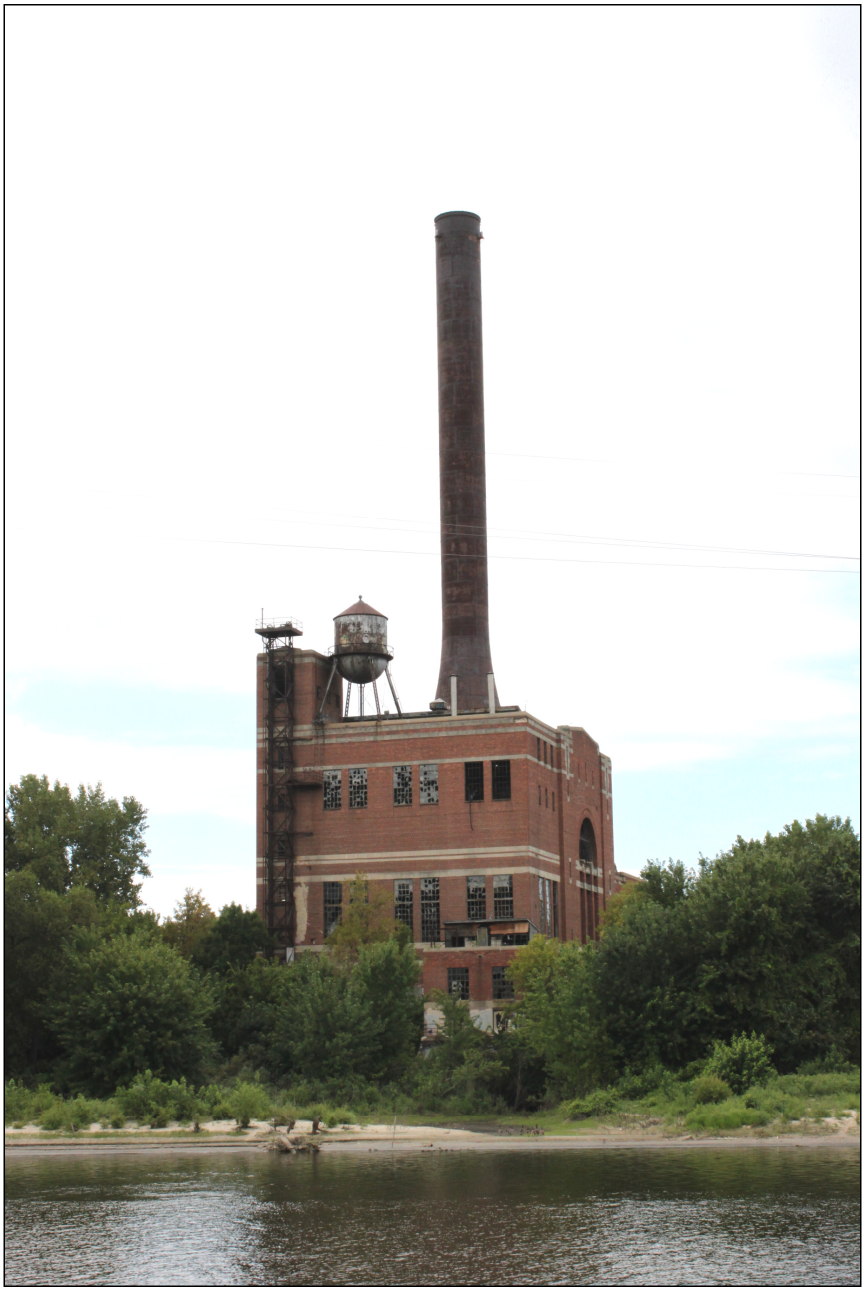
St. Paul Gas Light Company Island Station
St. Paul Heritage Preservation Site

St. Paul Heritage Preservation Commission



July 10, 2013

City Council Draft

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METES AND BOUNDS DESCRIPTION
R. L. S. NO. 447
TRACT B
MISSISSIPPI RIVER

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St. Paul Gas Light Company Island Station

Part 1

SITE DESCRIPTION

SITE DESCRIPTION

1.1 Property Location and Setting

The St. Paul Gas Light Company Island Station Plant at 380 Randolph Avenue (437 Shepard Road, formerly 1 Ross Road; RA-SPC-3323) is located in Section 12 of Township 28N R23W, about two miles upstream from downtown St. Paul. It is in Planning District 9 (known as the West 7th/Fort Federation). The electric-steam plant occupies the foot of a peninsula on the west side of the Mississippi River about 100 feet from the shoreline. This peninsula was originally the 6-acre Ross Island and was reached by a wood bridge (razed). The west half of the island is now infilled in part by ashes sluiced out of the plant furnaces (Figure 2; Westbrook 1983:33).

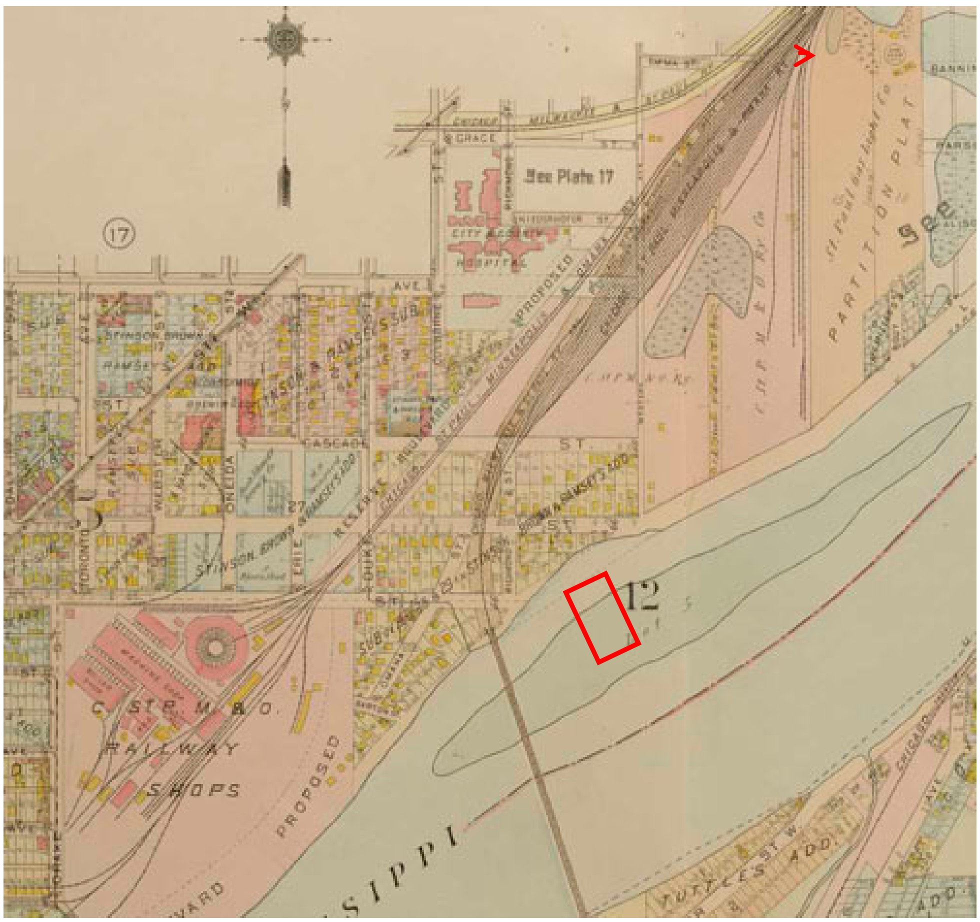


Figure 2. Ross Island and future site of Island Station. Plat Book of the City of Saint Paul, Minnesota (G. M. Hopkins 1916). The St. Paul Gas Light Company's Gas Storage facility (ca. 1914, razed) was located on what is now Xcel Energy's High Bridge Generating Station property (see arrow).

At the time of construction, the plant was part of an industrial district that included the Chicago, St. Paul, Minneapolis and Omaha Railroad shops (1882-) and stockyard and meatpacking facilities. Its own gas storage tank (ca. 1914) stood northeast of the plant near the NSP High Bridge Plant (1924) then also under construction (Figure 2). During the 1930s, development of the 9-Foot Channel by the U. S. Army Corps of Engineers facilitated barge traffic and the 1937 construction of the Shell Petroleum and Socony Vacuum Oil company tank farms (*SPD* 16 March 1937; Phelps 1984:8-5). The area immediately downriver under the High Bridge was part of Little Italy, an Upper Levee immigrant community.

The riverfront site provided an ideal river water supply for plant condensers and a good rail connection for coal delivery. The site was originally served by a Chicago, St. Paul, Minneapolis & Omaha Railway spur line elevated on wood trestles (Figures 3, 4, 17). The Omaha Swing Bridge Number 15 (1915) is located immediately west of the plant.

A "Study for the Arrangement of the Grounds" prepared by landscape architect George Nason in April 1924 shows a landscaped service court and forecourt for parking and circulation placed on the east and north sides of the building (NWAA). A lawn was planted on the bottom of the land that sloped away from the river, and coal storage was placed along the river's edge.

Today, despite visual competition from the bulk of the downriver High Bridge (1987) and Excel High Bridge Generating Station (2008), the historic Island Station plant remains a prominent landmark visible from many points along the river.

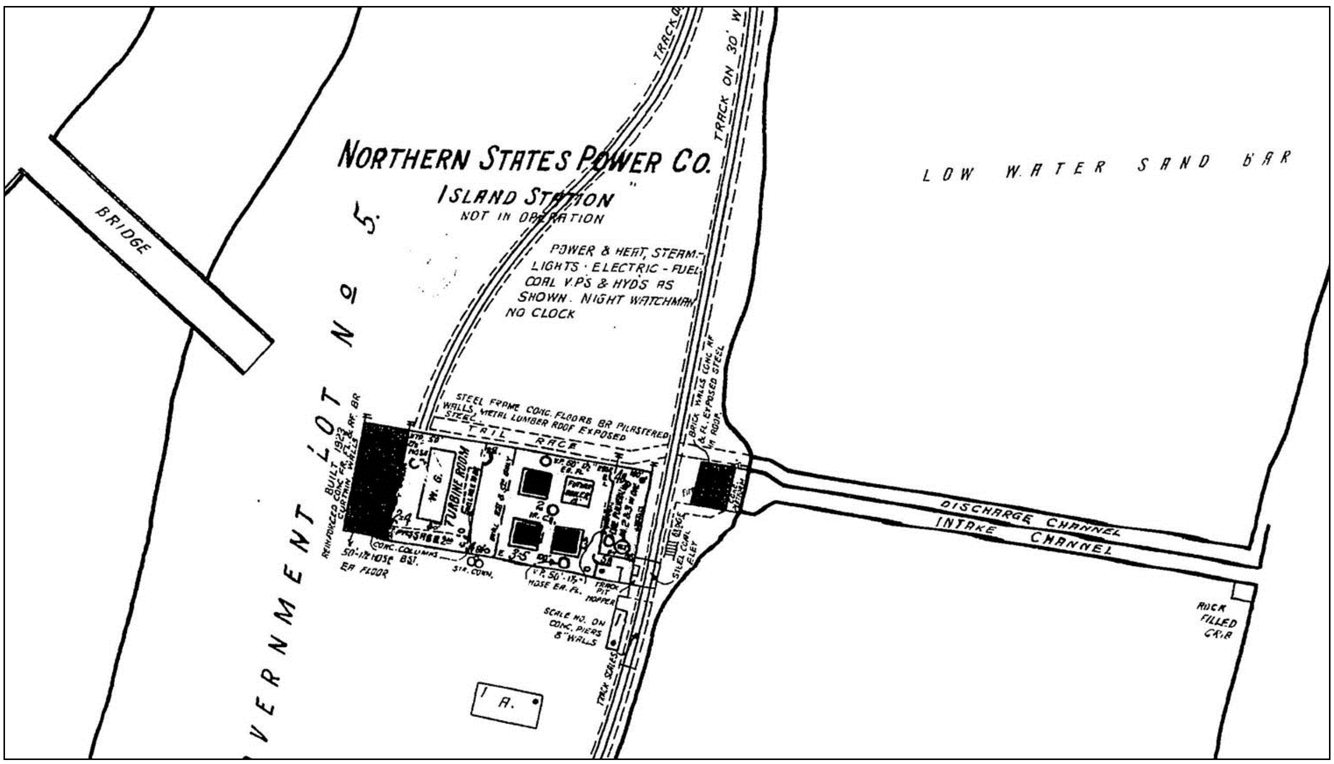


Figure 3. Island Station, Sanborn Map Company, 1926-1951, vol. 1, Sheet 34. Detail of plant and site.

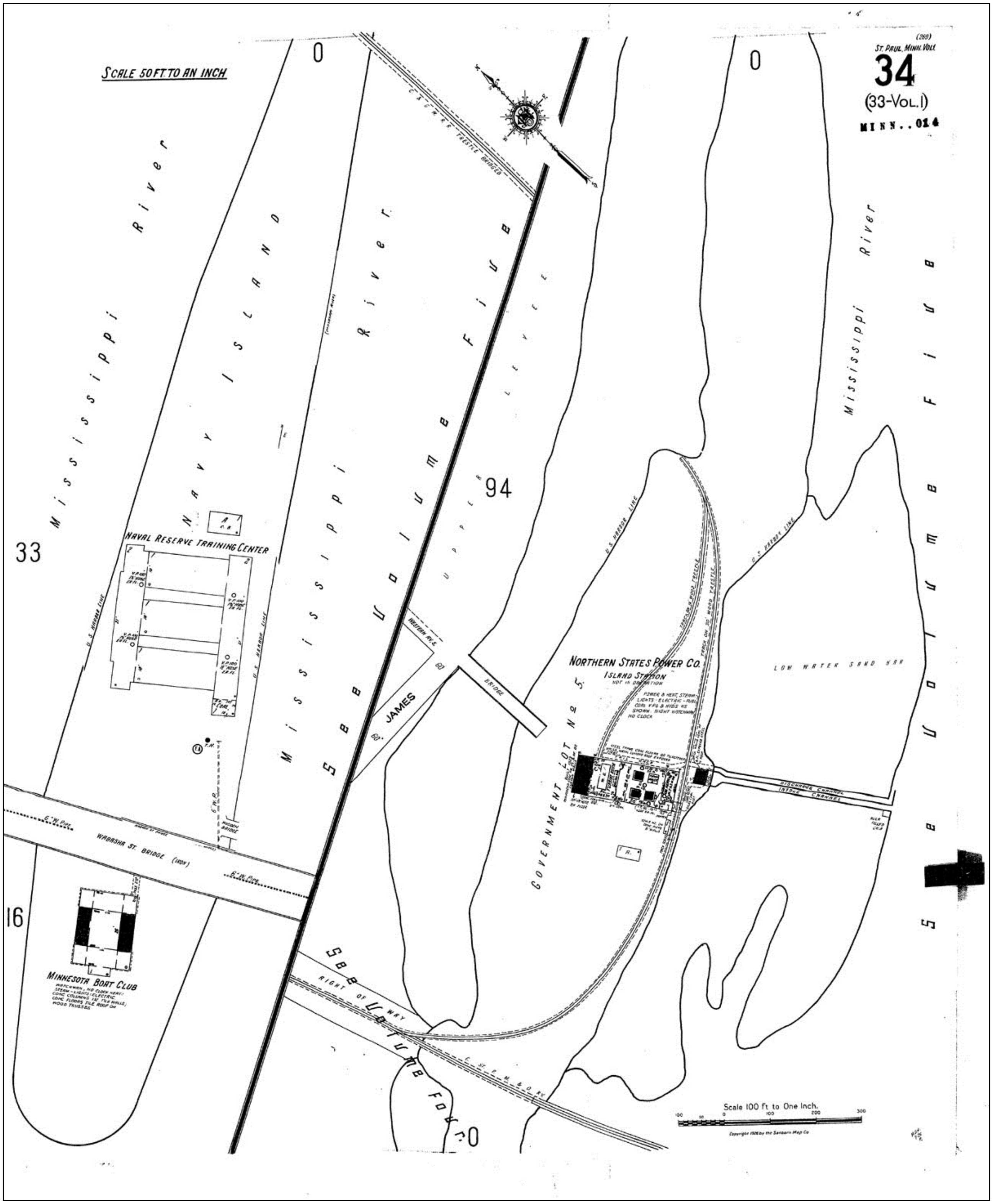


Figure 4. Island Station, Sanborn Map Company, 1926-1951, vol. 1, Sheet 34.

1.2 Island Station Engineers and Architects: Toltz, King & Day

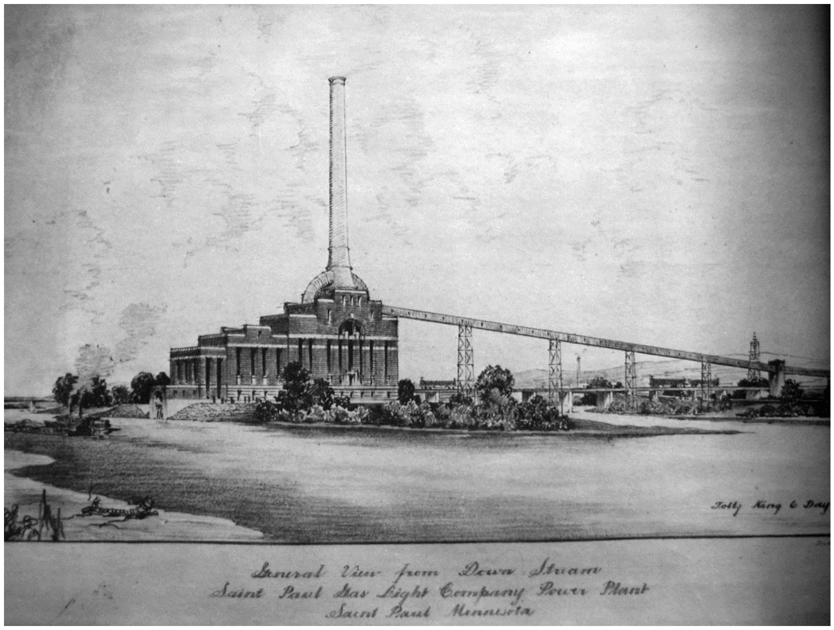


Figure 5. Toltz, King and Day, "Saint Paul Gas Light Company Power Plant," General View, 1923. (NWAA)

The selection of Toltz, King & Day brought a highly experienced firm to the task of designing the $1.6 million plant (Figure 5). The St. Paul firm was founded in 1910 by civil engineer Maximilian Toltz (1857-1932) and structural engineer Wesley E. King (1879–1959). Architect Beaver Wade Day (1884-1931) joined the firm in 1919. In 1956, the firm changed its name to Toltz, King, Duvall, Anderson, and Associates, with the addition of Arndt Duvall, Gerald Anderson, and employees of the firm. Lathrop calls them "One of the most important architecture and engineering firms in Minnesota." He notes, "the company grew into one of the largest and most successful in the Twin Cities, designing and constructing many bridges, power plants, and commercial buildings of all types" (Lathrop 2010:213). The firm is now TKDA.

Toltz was an 1877 graduate of the Royal Academy of Science and Engineering in Berlin. He arrived in St. Paul in 1882 after working in Germany, Switzerland, and Canada. He was chief engineer with the St. Paul, Minneapolis, and Manitoba Railway (later the Great Northern Railway). King was a 1905 graduate of the University of Minnesota with previous experience with the Bridge Department of the Great Northern. Day was a North Dakota native and graduated from the University of Pennsylvania in 1908. His previous experience was with the office of architect Allen Stem of St. Paul (1908-1919; NWAA).

During the period when Island Station was in design and under construction, the firm completed many types of projects in the Upper Midwest, including factories, power plants, schools, courthouses, and railroad and office buildings. They were lauded for bridge design, including the multi-span, reinforced concrete, 1,500-foot-long Robert Street Bridge in St. Paul (1926; NRHP). Notable engineering and/or architectural commissions include the Como Park Conservatory (1915; NRHP), Hamm Building (1920, staff architect Roy Childs Jones, NRHP); Stearns County Courthouse and Jail (1920; NRHP); structural work for the St. Paul Union Depot (1923; NRHP), and the Krank Building (1926; NRHP). About the time of the Island Station project, the firm was also completing the Flaxilinum Insulation Company Power Plant in St. Paul (1923), the Louis F. Dow Company Building in St. Paul (1923), the First Merchants State Bank in Fargo, North Dakota (1924), and the Moorhead, Minnesota Power Plant (1925; NWAA).

George Grant Construction was hired for Island Station foundation work, and Siems, Helmers and

Schaffner were general contractors. Construction took place between March 1, 1923, and November 24, 1924, when the plant was placed in service (Phelps 1984:8-3; *SPPP* 24 April 1925).

1.3 Exterior Description

The following description is based on very limited exterior building inspection (see Section 2.1); completion photographs, ca. 1923-24; architectural plans by Toltz, King & Day on file at the Northwest Architectural Archives. Much of the following description was developed for the “Island Power Plant National Register Nomination (Draft),” on file, State Historic Preservation Office, St. Paul (Phelps 1984). The building is oriented southeast; for purposes of this description the river-facing elevation is described as “south” and the elevation facing Shepard Road is “north.”

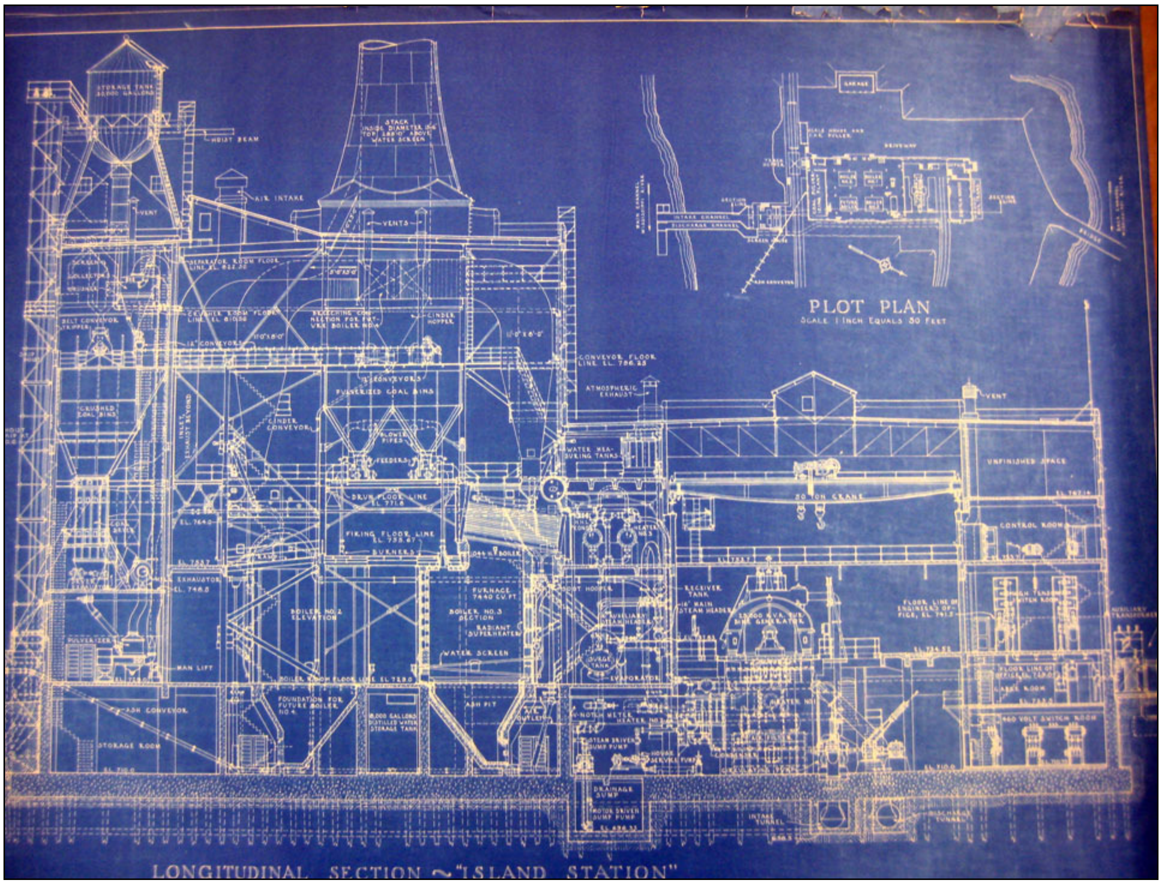


Figure 6. Toltz, King & Day, Island Station Power Plant, Longitudinal Section, 1923. NWAA.

Figure 7. Island Station, looking northeast, 2012. (Bing)

Figure 8. Island Station, looking northwest, 2012. (Bing)

Figure 9. Island Station, looking south, 2012. (Bing)

Figure 10. Island Station, looking north, 2012. (Bing)

The plant structure rests on a concrete slab supported by more than 1,400 wooden piles. A one-foot poured concrete base slab surmounts four feet of concrete reinforced with 140 tons of steel that comprises the plant foundation. Sidewalls of reinforced concrete 24 inches thick rise from the second slab 19 feet on the river-facing (south) elevation and 24.5 feet on the north elevation. A waterproof membrane covered these walls and was protected by a backfilled, four-foot brick wall.

The building is 227 feet long and 89 feet wide, with a stepped roofline 97.6 feet high running horizontally from the river 134 feet to near the center of the plant. Here it drops vertically to 61.7 feet and runs horizontally to the building's north terminus. No major alterations have been made to original dimensions.

The building exterior is articulated as four sections—coal preparation and pulverizing at the south end, followed by boiler, turbine, and switching sections—corresponding to four interior areas of operation. The exterior is clad in hard burned red brick laid in five-course American bond, with curtain walls of sand-lime faced brick. Each of the four sections are linked by paired white stone beltcourses at three levels.

Most of the building is framed in structural steel; only the switching section is reinforced concrete. The switching section is 30 feet long; the turbine section is 89 feet; the boiler section is 107 feet, and the coal preparation plant is 27 feet. The boiler section and coal preparation plant are 97.6 feet high.

The exterior elevations are united by white stone trim edging the parapet and white stone beltcourses that integrate grouped windows of varying heights and dimensions. On the north elevation corresponding to the switching section there are six bays with square windows divided by beltcourses. On the lateral walls of the switching section, two bays of four windows each are similarly divided. The sashes in this section were Lupton sidewalls with central pivoting ventilators operated from the floor by a chain and spring catch (Phelps 1984:7-1). Here, and elsewhere throughout the building, there has been extensive loss of glazing although some metal sash remains. The extent of missing glazing and exterior trim could not be verified.

A smooth stone enframement surrounds a pair of glazed doors at an entry at the northwest corner of the switching section. A shallow, pitched stone cornice above the entry is surmounted by a stone-trimmed window. The entry is accessed by concrete steps.

Shallow brick piers on the east and west elevations separate the switching section from the turbine room. Five bays filled with multi-paned Pond-wire ribbed windows are bisected by a deep beltcourse and brick panels. On the east side of the plant, two of the bays are filled by a large set of double doors allowing rail access. A shallow parapet wall edges the roofline of the switching section and turbine room; a gable-roofed monitor placed perpendicular to the building's long axis contained three-way prism patent windows.

The boiler section is adjacent to the turbine section of the building and rises nearly 35 feet above the turbine section. It is crowned by a riveted 6-gauge cold rolled steel smokestack lined with common brick. The 289-foot stack, erected by Wilhelm Bros Boiler and Manufacturing Company of Minneapolis, has a maximum diameter of 25 feet and is 15.5 inches in diameter at its top. The rise above the turbine section is accentuated by a brick-banded, round-arch window formerly filled with multi-paned glazing. Slender brick piers rising from the building foundation to the base of the arch divided (missing) panels of multi-paned windows. The sashes in these windows were also Lupton types with pivoting ventilators. Gun-slit window openings with stone sills accent the piers framing the arch. A trio of three gun-slit windows surmount the arch below a stone-trimmed, slightly pitched parapet wall.

The coal preparation plant occupies the south end of the structure adjacent to the boiler section. Its east and west elevations are comprised of three bays, each filled with rectangular windows at the central and lower level. The upper story is illuminated with small gunslit windows. The bays in the central level are filled with paired rectangular windows, and the upper and lower level bays are filled with paired square windows.

A rectangular brick hopper house for coal storage stands on the roof at the southeast corner of the building. A bucket from a vertical skip hoist with a 130-foot lift attached filled the hopper. A 30,000-gallon storage tank is adjacent to the hopper house. The tank furnished water for plant service and fire protection. Water came from an eight-inch, 300-foot-deep artesian well and was pumped by three Cameron centrifugal pumps.

The south elevation facing the river has four bays. The window openings in the west bay are obscured by a lift extending to the roof. The remaining three bays are filled with paired windows separated by beltcourses.

The material and condition of the existing roof is unknown. The original roof consisted of Barrett's 4-ply, 20-year specific pitch and gravel roofing on a reinforced base. The base for the roof varied. In the turbine section and coal preparation plant, the base consisted of a reinforced gypsum slab poured in place over sheet rock supported by 25-pound standard rails resting directly on cross channels of steel. The base in the boiler room was a concrete slab because calcination of gypsum was feared from breeching radiation. The switching section was built on a reinforced concrete slab base (Phelps 1984:7-2; 7.3).

Interior Plan

The work flow began at the river on the south side of the building where coal was loaded and next proceeded through the coal preparation and pulverizing plant to the boiler section, and then into the turbine section. The switching section controlled the electrical equipment and generation. Water for the condensers received from the intake canal was screened with a traveling water screen in the brick and concrete screen house on the riverbank, and run through a tunnel to the condenser.

The switching section was comprised of five levels. The first contained auxiliary switching equipment; level two, the cable room; level three, the high tension switch room; level four, the control room, battery room, and switchboard repair shops. Level five was unfinished and unoccupied.

The main office was placed between the second and third levels, and the operating engineer's office had windows looking into the turbine room. The first, second, third, and fifth level had unfinished walls, while the control room was finished with salt-glazed brick walls, quarry tile floor, and a plaster ceiling.

The turbine room had only two levels. The upper level contained a 25,000-kw turbo-generator unit and a Whiting four-motor electric overhead 50-ton crane with a 60-foot span and 56-foot lift. The room was finished with a 10-foot wainscoting of salt-glazed brick and steel-clay buffed brick laid to the ceiling. Quarry tile covered the floor. The lower level of the turbine section contained the room and related condenser equipment along with boiler feed pumps. A light well was placed on each side of a generating unit. A mezzanine subway grating floor around the generating unit supported water heaters, high pressure traps, oil cooler storage, the air ejector, and settling tanks. Irving's Iron Works of New York City produced the subway grating.

The boiler section had five levels or floors serviced by a Lee-Hoff Company 4,000-pound- capacity combined freight and passenger elevator. The first floor or basement contained the ash pits and two 18,000-gallon distilled water storage tanks placed between the ash pits. The second level housed the boiler combustion chambers, evaporator, surge tank, and steam headers. The third or “firing” floor contained boiler meters, master gauges, master and feeder controls, burners, water reservoirs, last stage heaters, condenser and feed water lines, and the boiler room foreman’s office. Feeders, feeder blowers, test-coal weighers, and water measuring tanks were found on the fourth floor. The pulverizing fuel conveyors were on the fifth level. The pulverized coal storage bins were suspended between the fourth and fifth levels.

The coal handling and preparation plant had four floors. The basement was devoted to storage and the remaining levels were divided with one fifth of the space consumed by stairways, the coal foreman’s office, locker and washrooms, a skip hoist, crushers, and feeders. Most of the second level contained the pulverizers with the exhausters and driers placed above the third level. The fourth level held the crushed-coal belt conveyor, cyclone collectors, and pulverized screw conveyors (Phelps 1984:7-2).

A gable-roofed metal garage of unknown date is located northwest of the plant. There is a brick scale house and car puller near the southwest corner of the building.

1.3.1 Plant Operation

The workflow is documented in drawings and contemporary descriptions of the plant. Much of the following summary was developed for the NRHP Draft Nomination (Phelps 1984) and is supplemented with information from original plans and contemporary engineering journals. Some of the equipment described in 1984 is reported to have been subsequently removed.

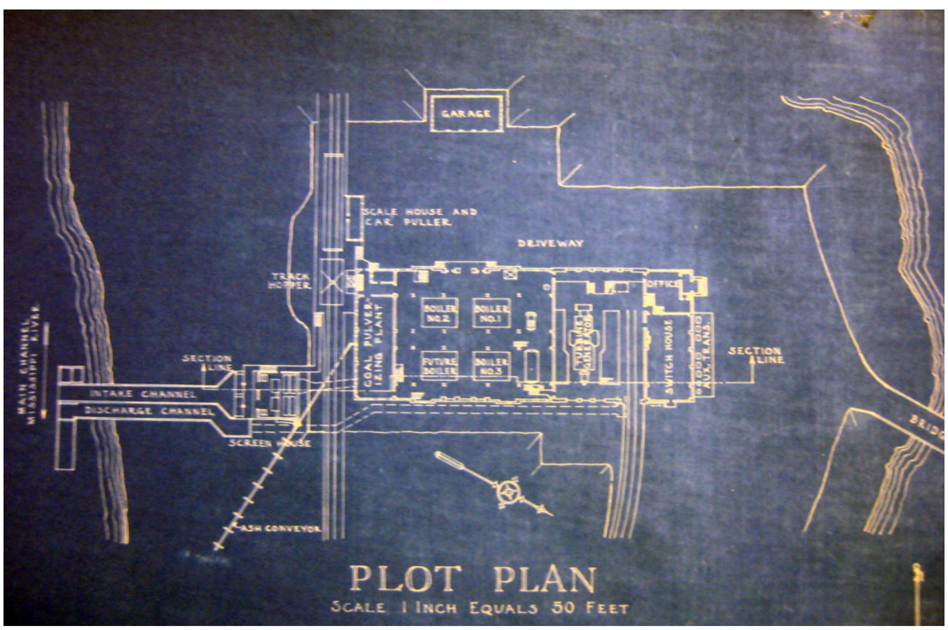


Figure 11. Toltz, King & Day, Island Station, Plot Plan, 1923. NWAA.

A steam-powered turbine, fueled by burning pulverized coal, generated electricity. Coal was delivered over a five-pile bent railroad trestle with switch connections to the Chicago, St. Paul, Minneapolis and Omaha line. The spur wrapped in a semi-circle around the south side of the building and followed along the east side with a wishbone switchback to the turbine room. A motor-driven cable car puller moved drop-bottom coal cars to a track scale on the east side of the building. Coal was next dumped into a concrete pit where it was delivered by the bucket attached to a 130-foot Beaumont Company Lift to a hopper on the roof of the coal preparation plant. A reciprocating feeder took the coal from the hopper to a belt over a pulley-type magnetic separator to a "grizzly." The fine coal was separated in the grizzly and the coarse coal passed over on its way to a crusher. Conveyors transferred the fine and crushed coal to three 200-ton coal storage bins. (Before coal entered the coke oven, it was screened to 2 inches or less.) Once sized, different types were mixed and pulverized by the crusher to fit through a 1/8-inch screen. The Island Station crusher had 1.5- inch pyramid teeth.

Coal from the bins next descended directly through two Lopuco "Wood type" driers fed by flue gas from the boiler and returned to the flue by a parallel duct. The dry coal was gravity-fed to the Raymond-impact, low-side pulverizers at a rate of six tons per hour. A low-pressure air system picked up the fine pulverized coal and elevated it 80 feet to collectors where the air was removed. The pulverized coal next dropped from the collectors to a screw conveyor, which took the pulverized coal to three, 75-ton capacity storage bins. These bins were placed above three Heine-type "M.C." cross-drum, three-pass, inclined baffle-water tube boilers (Phelps 1984:7-2).

Boiler Construction

Each boiler contained 520 tubes, 20 feet in length and 3½ inches on diameter with a total heating surface of 10,440 square feet. The boilers were designed for 325 pounds of pressure, which gave a total steam temperature of 650 degrees F. The boilers were fed by water from either the artesian well or from an intake tunnel running from the river on the east side of the plant. A hopper bottom chamber below the boilers had a volume of 10,420 cubic feet separated into a 2,680 cubic foot ash pit and a 7,440 cubic foot combustion chamber. The entire combustion chamber was contained in a steel casting lined with 22 inches of fire brick and silocell. Burners entered the combustion chamber vertically.

A Lopuco duplex screw feeder removed coal from the 75-ton storage bins and delivered it to mixing chambers supplied with air by two low pressure blowers. The air and coal were mixed by revolving paddles and blown through Lopulco burners into the combustion chamber. A Girtanner jet conveyor removed ashes and refuse from the combustion chamber and deposited on the river flat.

Steam from the boilers powered the turbine attached to the generator. The turbine was a Westinghouse straight-flow reaction type with low-pressure blading designed for bleeding at four points. It operated at 275 pounds of pressure with 650 degrees F. total steam temperature and was cooled by air drawn from a condenser room. Also, water cooled the turbine's oil before being dumped. The Westinghouse generator with a 25,000-kw capacity connected directly to the turbine.

A Westinghouse two-pass surface condenser with a cooling surface of 25,000 square feet received steam directly from the turbine. Condenser cooling water came from the main channel of the river. Two LeBlanc two-stage steam jet surface condenser type air ejectors removed air, and the condenser water ran back to the river. The intake and outtake tunnels to and from the condenser had parallel gates to permit recirculation of the water to keep channels free from ice.

Designation Criteria

The St. Paul Legislative Code establishes seven criteria for the designation of heritage preservation sites (§73.05). The St. Paul Gas Light Company Island Station Site meets criteria 1 and 7.

Designation Criterion 1 (§73.05(a)(1)) states that the Commission shall consider the following about the district:

1. ***Its character, interest or value as part of the development, heritage or cultural characteristics of the City of St. Paul, the State of Minnesota, or the United States.***

    Island Station represented the St. Paul Gas Light Company's attempt to compete with NSP at a time when acquisition and consolidation of such companies was standard practice. St. Paul Gas Light Company became the city's chief gas supplier, but was never its leader in electric power production. The investment in this plant and its new coal pulverization technology, and in a Service Center at Rice and Atwater Streets (1925), demonstrates that the company intended to expand production to meet increasing demand. Investment in this plant did not actually result in a significant contribution to power generation in St. Paul, because after acquisition by NSP it was only used in a standby capacity.

    The planning and construction of this plant, however, is associated with the city's early 1920s neighborhood growth. This was based on reinvigorated railroad, warehousing, retail, and manufacturing interests and corresponding demand for housing supplied with many types of electrical equipment. This included widely advertised, labor-saving household devices. As detailed in St. Paul's Historic Context, "Residential Real Estate Development: 1880-1950" (Zellie and Peterson 2001) and in "The St. Paul Gas Light Company and the Growth of Early Twentieth-Century St. Paul Neighborhoods" the early 1920s were an exceptional period for new housing and neighborhood infrastructure, particularly in the western half of the city including the Highland Park area.

7. ***Its unique location or singular physical characteristic representing an established familiar visual feature of a neighborhood, community, or City of St. Paul.***

    Island Station and its 289-foot smokestack are prominent landmarks against the downtown St. Paul skyline and upriver landscape of bluffs and bottomland forest. The vacant building, which declines in condition each passing year, is a well-known local landmark. Since decommissioning in 1973 the building and its setting have inspired artists, designers, explorers, students, neighbors, developers, and all those who imagine the possibilities of the place. Criterion 7 offers a way to address the importance of the building in the public's imagination and therefore, it is meets Criterion 7.

1.4 Integrity

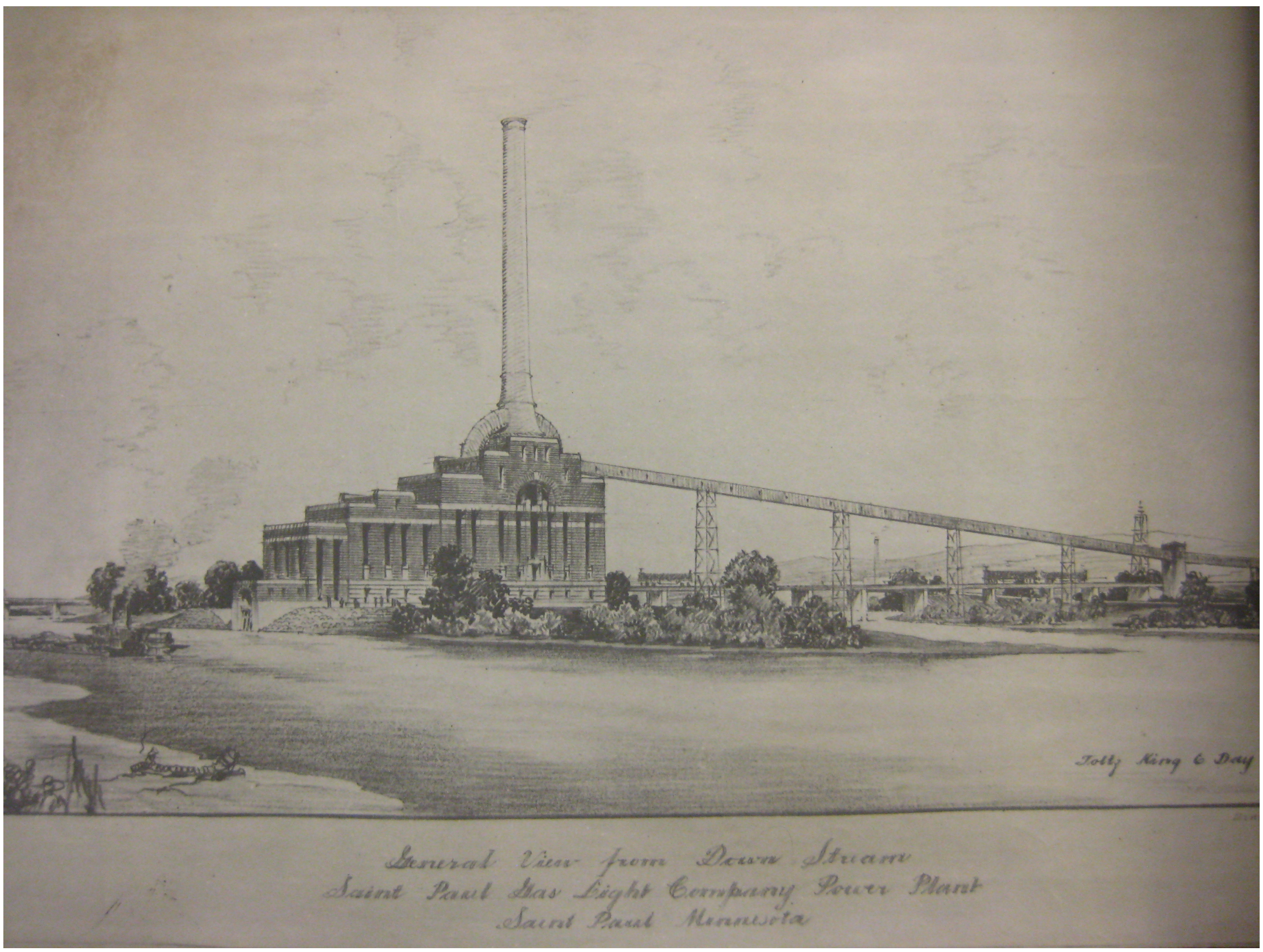
Island Station has been mostly vacant since 1973. The building appears to be in very poor condition. It retains fair exterior historic integrity, with extensive areas of missing glass or sash, sections of missing masonry, and graffiti. The surrounding site also retains fair historic integrity, despite removal of railroad trestles and other site circulation. Overall, integrity of design, materials, setting and feeling has been diminished. According to the owner's representative, major interior mechanical equipment has been removed (Tim Pinsen, personal communication, 2/7/13).

PERIOD OF SIGNIFICANCE (1924-1973)

The period of significance for the site is from 1924 when the building was constructed through 1973 when NSP decommissioned the site from use as an electric plant.

PART 2

SITE SIGNIFICANCE



The St. Paul Gas Light Company and Electric-Steam Power Generation in Early Twentieth-Century St. Paul

At the time of Island Station's completion in 1924, the St. Paul Gas Light Company had been associated with gas and electric production for more than 40 years. Emerson McMillin & Co. and its American Light and Traction Company of New York had owned the St. Paul firm since 1895. The company's name, however, had remained unchanged since 1856. The original charter granted the right to construct a coal gasification plant to supply the City of St. Paul and its citizens with illuminating gas for lamps and street lights.

The manufacturing process for gas was well understood in the United States by the late eighteenth century, and the first gas company was incorporated in Baltimore, Maryland in 1816 (Hershmann 1948:78). Coal gasification plants converted raw coal into gas piped to customers through gas mains installed in city streets.

2.1 Pioneer Period, 1856-1882

The prominent incorporators of the St. Paul Gas Light Company were Alexander Ramsey, Edmund Rice, Charles Oaks, William L. Banning, and Joseph (James) Hoy. Ramsey, who served as the first company president, was the first territorial governor of Minnesota and Rice was a member of the 1851 territorial legislature and also president of the St. Paul and Pacific Railway. Oaks would become a partner in the St. Paul banking firm Borup and Oaks, and Banning was a Philadelphia legislator, banker, and lawyer. Hoy, a resident of Trenton, New Jersey, was a partner with Gregory A. Perdicaris in Perdicaris & Hoy, gasworks contractors (Trenton City Directory 1859: 167). Henry Sibley, Minnesota's first governor, became company president in 1867 and served until his death in 1891 (Meyer 1957:10).

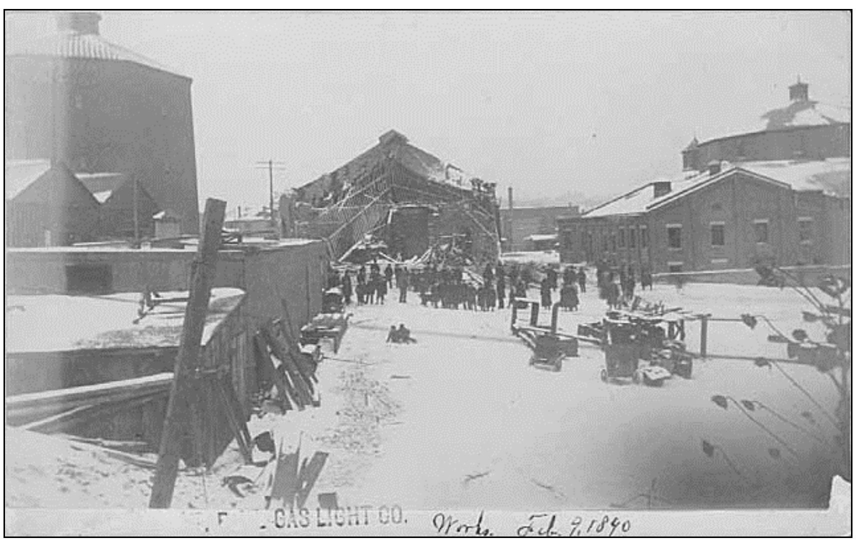


Figure 12. St. Paul Gas Light Company Gas Works after an explosion, 5th and John streets, February 9, 1890.

Perdicaris and Hoy constructed the company's gas works at 5th and John streets in 1857. The plant was put in operation during a severe point in the Panic of 1857 (Meyer 1957:8; Williams 1876:381). The facility produced about 15,000 cubic feet of gas per day and initially served fewer than 100 customers (*SPPP* 4 Dec 1924). The plant complex included a 30- by 54-foot generating room, a 27- by 29-foot purifying house, a 13- by 13-foot office and meter room, and a 40,000-cubic-foot storage tank. The City of St. Paul contracted with St. Paul Gas Light Company to supply 155 gas lamps, but only 60 were installed by 1861 (Phelps 1984:8; Meyer 1957:8). The firm struggled through the 1860s and early 1870s, despite extension of the initial system of gas mains to the old State Capitol and along St. Peter and Summit Avenues (Phelps 1984:8). Business increased, however, and by 1873 there were 160 street lamps. Gas mains reached up Fort Road to Ramsey Street and by 1879 the company operated "20 miles of mains, generated 25 million cubic feet of gas, consumed over 3,500 tons of coal and employed 25 to 40 men depending on the season" (Phelps 1984:8-1).

During the poor economy of the early 1870s, one characterized by financial depression and industrial bankruptcies yet a need for improved public works and utilities, investors in firms such as St. Paul Gas Light Company managed to capture lucrative government contracts. Under the leadership of Henry Sibley, the St. Paul Gas Light Company "acquired both exclusive privileges in city contracting and virtually unlimited powers to determine where and when businesses and residences received wrought iron pipe, gas fittings, and gas and steam services" (Willis 2005:155).

2.2 Electric Service: 1882

The St. Paul Gas Light Company expanded into electric service in 1882, when it acquired an electric arc generator from the Fuller Electric Company of Brooklyn, New York (Meyer 1957:8). In 1885 the St. Paul Gas Light firm built an electric generating plant on Hill Street. This short street extended from Eagle Street and Kellogg Boulevard across a parcel now occupied by the Science Museum (Sanborn 1885:27b; Meyer 1957:9). The area surrounding the plant was occupied by foundries and other riverfront industries. In 1894 the company began a series of acquisitions, beginning with the franchise of the East Side Electric Company. Also in 1894, they acquired the Edison Electric Light and Power Company's seven-year-old plant at College and Cedar Streets (Meyer 1957:8; Sanborn 1904 Sheet 458). In 1896, they purchased the franchise of the West Side Electric Company (Meyer 1957:10). Through this period they offered both alternating and direct current to their customers (Meyer 1957:9).

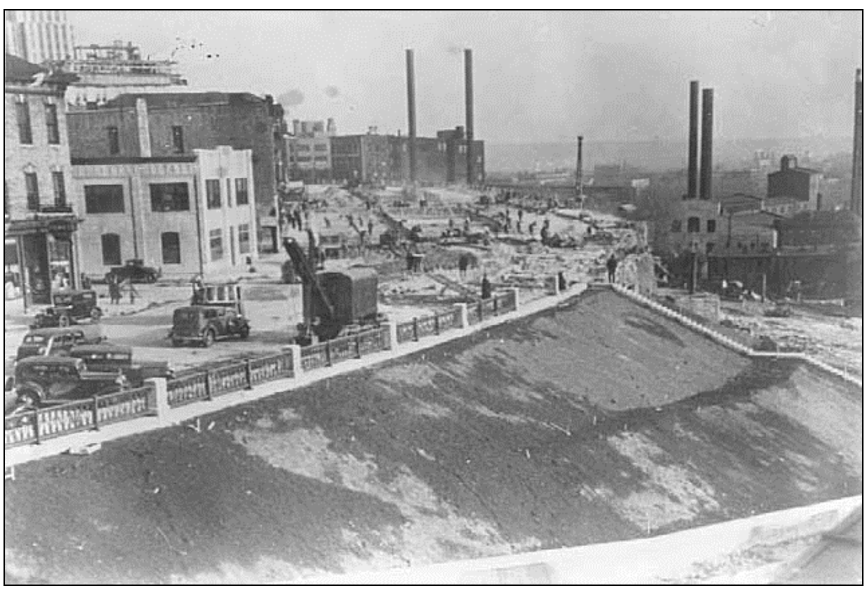


Figure 13. Hill Street Station (1885), at far right below Kellogg Boulevard, 1938.

Company offices occupied a number of locations, including 4th and Jackson streets (1860-1891) and the New York Life Building (1891-1896); between 1919 and 1925 the office was located at 6th and Cedar (Meyer 1957:10).

Downtown St. Paul was served by several other small firms, including the St. Paul Light, Heat and Power Company and the Economy Steam Heat Company. They each provided several large business blocks. St.

Paul Light, Heat and Power, on 4th Street between Wabasha and Cedar, was acquired by St. Paul Gas Light in 1894 and was known as the 4th Street Station (Meyer 1957:9). The Hill and 4th Street stations supplied both alternating and direct current and the Hill Street station supplied 500-volt direct current for the St. Paul City Railway (Meyer 1957:9). Hill also served as a steam heating plant, and steam mains and electric cables were tunneled through the sandstone underlying the plant and downtown area (Meyer 1957:9).

Concurrently, the company's customer base for gas expanded with the development of consumer appliances such as stoves. Street light service also initially expanded but gas was gradually being replaced by arc electric systems. In 1884 St. Paul had a total of 905 public street lamps, of which 45 were electric, 345 gas, and 515 oil (Phelps 1984:8-1).

In 1891 company ownership was transferred from local control to financier Henry Villard of New York. In 1893, Crawford Livingston, James J. Hill, William R. Merriam, and H. M. Byllesby led a return to local ownership (Meyer 1957:10). This lasted only until 1895, when the company turned over 8,000 of 15,000 company shares to Emerson McMillin & Co. of New York (*Minneapolis Tribune* 2 Nov 1894:6). Emerson McMillin & Co. was among national firms that, like H. M. Byllesby's, consolidated small local energy suppliers into large conglomerates. American Light and Company, an Emerson McMillin & Co. subsidiary formed in 1900, controlled the St. Paul Gas Light Company after that date.

Wrangling over gas rates with customers and the State Board of Equalization and local municipalities was common. In 1894, for example, company president Crawford Livingston defended the Minneapolis Gas Light Company's rates, noting "the popular impression is, I think, that nearly every one uses gas; it is like that other mistaken idea about gas companies, that they are robbers and thieves . . . (*Minneapolis Tribune* 9 Jan 1894:3; 3 Oct 1905:2).

By 1897 the St. Paul Gas Light Company had installed a total of 3,362 street lamps and a number had been abandoned because of conversion to electricity. In 1901, the company unsuccessfully attempted to recover damages from the City of St. Paul on the cost of setting lamps that had been discontinued (St. Paul Gas Light Co. v. St. Paul 1901:181).

2.3 Electrical Expansion, 1900-1925

Electrical capacity increased in 1900 with construction of the St. Croix Power Company's hydroelectric plant at Apple River Falls, Wisconsin (Morton 1900:879). Power was transmitted 28 miles to the St. Paul Gas Light Company's new Cedar Street Substation at 381 Cedar Street between 5th and 6th streets (Phelps 1984:8-2). The Wisconsin plant, like the St. Paul Gas Light Company, was controlled by the American Light and Traction Company of New York. The substation allowed the St. Paul company to connect with a 25,000-volt line from the Wisconsin plant; Meyer notes that the three miles of line extending from Cedar Street were composed of lead-covered cables, one insulated in paper and the other in rubber. He described these as "the highest voltage cables in use anywhere in the world for a number of years" (Meyer 1957:10-11; American Institute of Electrical Engineers 1900:834).
In this period, "although some large buildings in St. Paul had combination steam heat and electric plants and provided electricity to the immediate area, the St. Paul Gas Light Company had no significant competition" (Bradley 2004:10). This would end in 1910, when Consumers Power purchased the Northern Heating and Electric Company, a St. Paul firm that owned a steam plant at 76 Kellogg Boulevard known as the 3rd Street Station (Westbrook 1983:31; Phelps 1984:2).

Although the St. Croix Power Company's plant provided additional electrical capacity, by 1913, it was calculated that nearly 25 percent of the power was lost in transmission (Phelps 1984:8-2). Possibly, with its focus on gas, "some observers noted" that the St. Paul Gas Light Company "did not push the electric business vigorously enough" (Phelps 1984:8-2). This statement, however, does not seem compatible with the investment made in a new plant during 1922-24.

Gas Utility Development

St. Paul Gas Light Company's gas customer base expanded with the growth of the city. In 1914, the National Gas Association sponsored a conference at the Minneapolis Armory that exhibited "new inventions, new ideas, the improvements for lighting, heating and power by gas." More than 14,000 square feet of space featured exhibits for the "housekeeper, the merchanter or the manufacturer . . . including thousands of different lamps, heaters, bake ovens, furnaces, and engines" (*Minneapolis Morning Tribune* 29 No. 1914:D10).

A conflict arose in 1910 over location of a gas storage facility on a 20-acre tract near Randolph Avenue southwest of the High Bridge; the site was deemed by the City Council to be too close to the city's general hospital (*SPPP* 3 Nov 1910). The ordinance prohibiting the facility was repealed in 1913 and the structure was erected (Phelps 1984:8-2; Figures 2, 14, 17).
At this time, 343 miles of gas mains lined St. Paul and annual sales were 1.23 billion cubic feet (Phelps 1984:8-2). The company may have eyed expansion of its gas capacity: in 1915 the Western State Coke Company announced that it would build a gas plant on a 50-acre tract in the St. Paul Midway. One source noted, "it is asserted that gas will be furnished to the St. Paul Gas Light Company" (*Minneapolis Morning Tribune* 30 Sept 1915:11). This became the Koppers Coke Plant at 1000 Hamline Avenue (razed 1979).

2.4 H. M. Byllesby & Company and Northern States Power

H. M. Byllesby established Byllesby & Co. in 1902. With his partners, H. M. Byllesby's purpose "was to purchase small struggling utility companies and transform them into well-run operations" (Bradley 2004:8). In 1910 Byllesby led the merger of the Washington County Light and Power Co. and the Stillwater Gas and Electric Co. into the Consumer's Power Company (Meyer 1957:12). Northern States Power was initially a holding company and financier for the subsidiary Consumer's Power. Prior to reorganization in 1916 and adoption of the name Northern States Power, Consumer's Power expanded across southern Minnesota to Faribault and Mankato, Minnesota, to Galena, Illinois, and northwest to Fargo, North Dakota. In 1912 Consumers Power acquired the Minneapolis General Electric Company. In 1915, the company relocated its general office from Chicago to Minneapolis. During this period they also constructed transmission lines to its market areas and added two units to their Riverside plant in Minneapolis. A 4,000-kw steam turbine was added to the 3rd Street Station (Meyer 1957:11).

Reorganization in 1916 included adoption of the name Northern States Power Company and financial restructuring. Byllesby & Co. remained the parent of NSP (Meyer 1957:157; Bradley 2004:9). In this period, St. Paul Gas Light Company continued to provide electric power to St. Paul, along with NSP. St. Paul Gas Light, with the larger customer base, purchased power from NSP, but NSP limited the amount to 15,000 kw. Meyer characterized the competition between the firms as intense (1957:12, 13).

Such consolidation was typical of the early twentieth century across the United States. The many small independent electric companies that proliferated during the late nineteenth century were incorporated into larger firms resulting in more economy of scale. Across the river in Minneapolis, by 1893 the Minneapolis General Electric Company (MGE) absorbed the Minnesota Brush Electric Company, the West Side Power Company and the Minneapolis Electric Light and Power Company as well as properties of the Minneapolis Electric Subway Company (Meyer 1957:3; Stark 2005:8).

2.5 NSP High Bridge Plant

In 1922 NSP announced plans for a new High Bridge Plant because the demand for power taxed all of its facilities, including those at the Riverside Plant and Main Street Station in Minneapolis as well as its 3rd Street Steam Plant in St. Paul (Bradley 2004:10). The $5,000,000 plant, designed by the Byllesby Engineering & Management Corporation, was part of an $ 80,000,000, 10-year-development program that would triple the amount of power available to the Twin Cities (Bradley 2004:10, 20). Transmission lines linked the new plant and existing plants, allowing them to act as reserve suppliers and ensuring cost saving and continuity of service. The High Bridge Plant was one of six placed in service by Byllesby & Co. in 1924, including those in Oklahoma and Washington (*Byllesby Monthly News* Feb 1925:cover).

Bradley observes, "Simplicity, economy, and convenience, rather than the use of the newest and most expensive equipment, guided planning for the [NSP] plant. Its design drew upon standard plans for spaces and equipment arrangements adopted by Byllesby & Co. The engineers decided to use mechanical stokers instead of the newer pulverized coal system to feed the boilers" (Bradley 2004:21).

Figure 14. NSP High Bridge Plant (1924), in 1958, looking northeast.

2.6 Island Station Power Plant

Growth of the St. Paul Gas Light Company had been hampered by direct competition from NSP as well as the limit set on electric power that could be purchased from NSP. Phelps notes, "although the Gas Light Company still possessed a majority of St. Paul customers its facilities were unable to meet customer demand. Consequently it began to buy power from NSP through a connection between NSP's Third Street Station and the Hill Street Station. Squabbles arose between the two companies over the power contract," resulting in limits on the amount of power available for sale (Phelps 1984:2-8).

In 1922 the St. Paul Gas Light Company hired Toltz, King & Day to produce plans for its new 25,000-kw Island Station steam plant less than a mile from the NSP High Bridge Plant. Unlike the NSP facility, it was designed to burn pulverized coal, a new technology for steam generation developed in the United

States. By 1918, the City of Milwaukee's use of pulverized coal at its 200,000-kw Super-Power Station caught the attention of a national and international audience. Such pulverized fuel was also employed for stationery boilers, steam locomotives, steamships, cement kilns, and many types of steel-manufacturing furnaces (Harvey 1920:89-91). Island Station was designed to burn lignite coal, which was believed to be eight to ten percent less expensive than burning lump coal (*SPPP* 27 Aug 1924).

In 1918, the *EMF Electrical Year Book* noted that pulverized or powdered coal was being used in several large installations, "notably in Milwaukee and Seattle" (EMF 1918: 566). Pulverized coal provided "closer control and better mixing of fuel and air" (EMF 1918: 566). Coal was pulverized to a flour-like fineness, and injected into the furnace under high pressure along with heated air. Preparation of coal for pulverizing required extensive equipment, which limited the use of pulverized coal to large boiler rooms.

However, the high cost of the initial installation, difficulty disposing and removing the molten ash and eliminating ash dust, and danger of explosion were among potential problems of the new technology (Harvey 1920:94). Because of the additional cost of building a pulverized coal plant, one English engineer speculated in 1920 that until more plants giving "successful and economical results" in England and in Europe were seen in operation, the "real expansion and general use of pulverized coal will perhaps be somewhat slow" (Harvey 1920:95).

Neverthless, the *St. Paul Pioneer Press* described pulverized coal as one of the "latest advances in steam engineering" (*SPPP* 4 Dec 1924). Wesley King of Toltz, King & Day predicted, "the plant will be one of the most modern in the United States, representing engineering practice not found in more than ten steam-electric plants in the country" (*SPD* 29 May 1923). According to the *St. Paul Dispatch,* the initial construction was to be the first unit of a plant planned to eventually produce 100,000 kw.

Construction took place between March 1, 1923, and December 1, 1924, when the plant was placed in service (Phelps 1984:8-3; *SPPP* 24 April 1925). Construction cost was estimated at between $1,125,000 and $1,500,000 (*SPPP* 21 Dec 1924). The company boasted, "fifty-two million gallons of water, more than twice as much as the entire city uses through the city water department, passes through the new Island plant" (*SPPP* 21 Dec 1924).

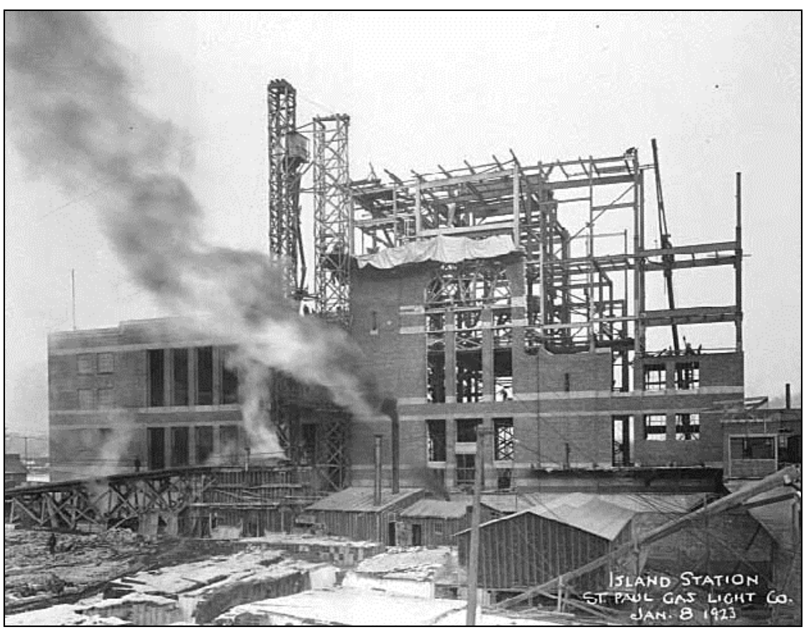


Figure 15. Island Station construction, looking east, January 8, 1923.

Figure 16. Island Power Plant Station construction, looking northwest, ca. 1924. (NWAA)

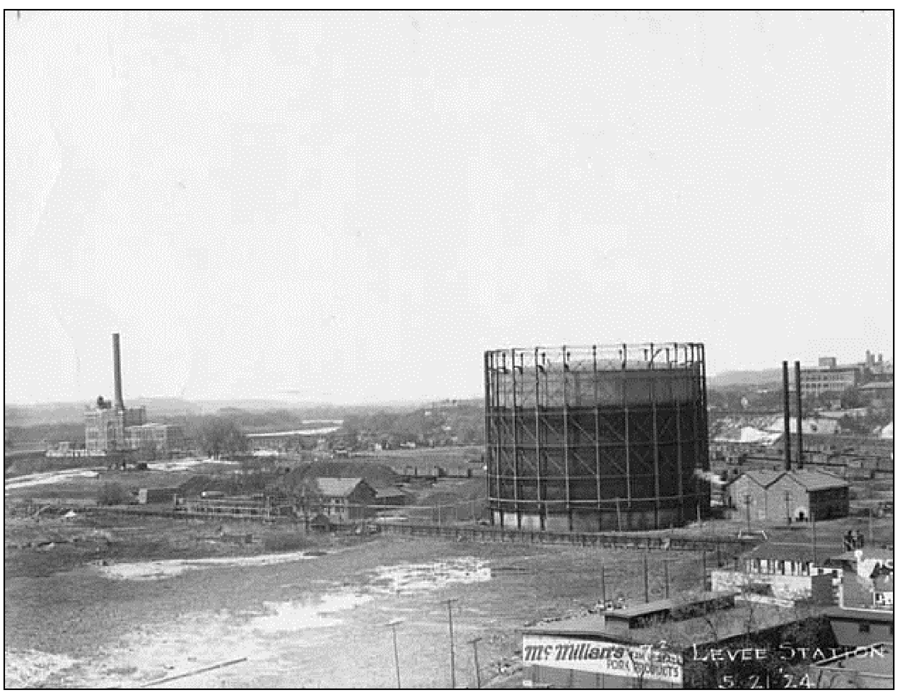


Figure 17. Island Station landscape, 1924. The recently completed plant is in the background at right; the St. Paul Gas Light Company gas storage facility is in the foreground, along with the McMillan pork packing plant.

Figure 18. Island Station from plant bridge, looking south, 1924.

In 1924 the company claimed 47, 933 electric customers and 58, 694 gas customers in St. Paul, calling itself "St. Paul's Gas and Electric Company" (*Current-Gas* 1924; *SPPP* 24 April 1925). At the time, the company was characterized as supplying a city of 257,000 "all of the gas service and approximately 70 percent of the electric light and power service" (Phelps 1984:8-3). It employed more than 800 workers, and maintained more than 700 miles of electric lines (*SPD* 4 Dec 1924).

In 1925, its gross earnings were $5,347,165 and net earnings totaled $1,676,741.00 (Phelps 1984:8-3). In April 1925, construction began on the St. Paul Gas Light Company Service Building and Warehouse at Rice and Atwater streets. Also designed by Toltz, King & Day, it was "necessitated by the company's rapid growth" (*Current-Gas* 1925). Other company advertisements featuring the new facility exclaimed "For Better Service and a Bigger St. Paul."

Figure 19. St. Paul Gas Light Company Service Building (1925), Rice and Atwater streets. (NWAA)

At the same time, plans were underway for the construction of a hydropower plant at the High Dam opposite the proposed Ford automotive plant, and the *St. Paul Dispatch* announced that the Island Station Plant and NSP plants, as well as “other numerous other important plants beginning to take form, lent “absolute assurance that St. Paul is on the verge of a great era of industrial development unparalleled in its history” (SPD 27 Dec 1922:1).

On December 31, 1925, NSP acquired the St. Paul Gas Light Company. This was part of NSP’s acquisition of a number of small Minnesota power companies, and part of their strategy to purchase, rehabilitate, and build public utility properties. A total of 42 companies were acquired in seven years during the 1920s under Byllesby's leadership (Meyer 1957:150). Between 1926 and decommissioning in 1973 it was used a “subsidiary power plant to supplement increased consumer demand” (Phelps 1984:8-4). Rail coal delivery was replaced by truck shipments from the NSP stockpile.

2.7 The St. Paul Gas Light Company and the Growth of Early Twentieth-Century St. Paul Neighborhoods

> Public utilities before they will increase their output and expend large sums of money to building plants must feel very certain that the future of the city will justify such action. Two splendid examples of confidence in the future of the city are the power plants of the St. Paul Gas Light Company and the Northern States Power Co. Both of these companies foresee a healthy future for St. Paul.
>
> “Evidences of Progress Seen in Every Section of City as Previous Records are Broken,” *St. Paul Daily News* 24 August 1924.

St. Paul was built on the foundation of what boosters termed the “Gateway to the Northwest.” Throughout the late nineteenth and early twentieth centuries, nine railroads operating twenty-three lines and the Mississippi River funneled agricultural and manufactured products from the hinterland into the city’s elevators, warehouses, and factories (*SPPP* 17 Dec 1922:3). Despite a weak economy in the early 1920s, growth as a banking, livestock, manufacturing and warehousing center continued: by December 1922, the *St. Paul Pioneer Press* reported that the freight business was surging and deposits in financial institutions climbed $15 million along with retail business growth (*SPPP* 17 Dec 1922:2). The percentage of construction for manufacturing purposes rose from 10 percent in 1920 to 57 percent in 1923 (*SPDN* 24 Aug 1924). The steep increase in population during the late nineteenth century (from 41,473 in 1880 to 133,156 in 1890, for example), had tempered between 1910 and 1920 following World War I. Population growth resumed during the 1920s, rising from 234,698 in 1920 to 271,606 in 1930.

The decision to expand the American Light and Traction Company's St. Paul Gas Light subsidiary with the new Island Station electric-steam plant was supported by what the *St. Paul Pioneer Press* called "the Dawning of General Prosperity" (*SPPP* 23 Dec 1922). Nearly 900 manufacturing plants produced $250 million in products for U. S. and international markets. Printing and publishing, boots and shoe manufacture, dairy and livestock products, furs, and foundries and machine shops accounted for much of the total. The *Pioneer Press* reported that at the end of 1922 "there was a renewed confidence in business on the part of manufacturers and jobbers" (*SPPP* 23 Dec 1922).

In 1923, amidst reports that a $5-billion dollar building boom was forecast for the United States, St. Paul newspapers outlined the need for more electricity, especially to fuel electric conveniences (*SPPP* 4 March 1923:7). "The public wants electricity," noted one writer, outlining the demand for improved illumination and labor-saving appliances such as electric ranges and ironing and washing machines (*SPPP* 4 March 1923:7). The builders of new homes, according to the *Pioneer Press*, were taking an interest in the homes "they are about to construct, and making intensive studies of the situation as regards wiring and electrical equipment; they are becoming electrically-wise" (*SPPP* 4 March 1923:7).

The installation of electric streetcar lines and public utilities traced the development of the city's neighborhoods. In 1920, 17 percent of the city's population lived within a mile of downtown; by 1930, this figure fell to 11 percent (Zellie and Peterson 2001:18). In October 1923 it was reported that about 200 building permits for dwellings had been issued per month over the past 20 months, with a corresponding surge in telephone and utility installations. Home ownership continued its gradual increase, with 46 percent of residents owning homes (*SPPP* 12 Oct 1923:8).

Neighborhood retail interests in the outlying sections of the city, housing "grocers, meat dealers, druggists and small dry goods merchants" were housed in new buildings, with "up-to-date lighting systems and window displays that add greatly to the attractiveness of the neighborhood" (*SPPP* 17 Dec 1922:5). Also in late 1923, newspaper reports of new construction in the western section of the city praised the "New District" around the Ford Motor Company's new plant for transportation and utility improvements that were transforming a "wilderness" into a "city-like section" (*SPPP* 21 Oct 1923:9). This area is now Highland Park. The company was granted a temporary permit for use of the high dam, the first step in the process of hydroelectric plant-building, on March 3, 1923 (McMahon 2007:11). With construction of the plant, 8,000 jobs were predicted to increase the city's population by 25,000 (*SPDN* 24 Aug 1924).

The plant spurred what was called the "greatest building campaign in the history of the Twin Cities" and several thousand building lots were platted around the automotive plant nucleus at Ford Parkway and Mississippi River Boulevard. Realtor Den E. Lane was the leader in marketing the area, putting more than 600 acres on the market in 1925. The prospect of such development and thousands of new customers was likely a leading factor encouraging the American Light and Traction Company and its St. Paul Gas Light Company subsidiary to invest in its new plant, although the investment would prove to be short-lived. In August 1924 Island Station advertised in the *St. Paul Daily News* with photographs of the new plant and captioned, "our city is growing, added demands are being made for service—we are prepared to meet these demands and in addition hereto assure our patrons of the best of service" (*SPDN* 24 Aug 1924).

2.8 Island Station, 1925-2012

NSP acquired Island Station in December 1925 and operated it on a standby basis. NSP's need for increased electrical power during and after World War II was met by their enlargement of the High Bridge and Riverside plants, and by addition of the Black Dog plant as well as additional substations and transmission lines (Meyer 1957:157; Bradley 2004:9).

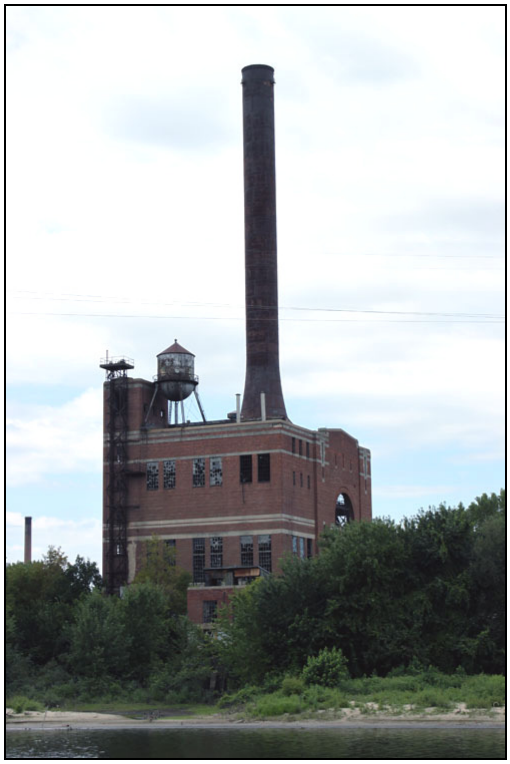


Figure 20. Island Station, looking northwest, 8/17/12. (Christine Boulware)

NSP decommissioned Island Station in 1973. In 1985 John Kerwin purchased the property and initially proposed a phased development including a 100-unit rental conversion, 20 townhouses, and some commercial use (Barge 1985:14). He also converted a portion of the plant into artist studio space. Island Station LLC purchased the property in 2003 and SpringPointe Development Inc. proposed a 235-unit condominium with a 20-slip marina. The project stalled and Breckner River Development LLC purchased the plant in 2003. Current plans are for redevelopment of the site. In October 2012, the St. Paul City Council adopted an interim ordinance prohibiting issuance of City permits pending the current study of the station's historic significance and the adoption of the Great River Passage Master Plan by the City Council. In the interim, the plant building and river setting have been the focus of significant public attention as the site is a component of the City of St. Paul's *Great River Passage: A Master Plan for Saint Paul's 17 Miles of Mississippi River Parklands* (City of St. Paul 2012).

In recent years, Island Station has been the subject of many University of Minnesota College of Design architecture and landscape architecture student design studios (Ross 2009; Traucht 2009). It is also the focus of blogs and online photographic essays by interested community members and the subject of frequent press updates.

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ST. PAUL GAS LIGHT COMPANY ISLAND STATION
ST. PAUL HERITAGE PRESERVATION SITE

Part 3

PRESERVATION PROGRAM AND DESIGN REVIEW GUIDELINES

Introduction

The City's Legislative Code, Chapter 73 creates the Saint Paul Heritage Preservation Commission and grants powers and duties that include the review of city permits for work at designated sites and districts. Specifically, §73.04(4) states the commission shall protect the architectural character of heritage preservation sites through review and approval or denial of applications for city permits. The following guidelines for design review will serve as the basis for the Heritage Preservation Commission's design review decisions for the St. Paul Gas Light Company Island Station. The guidelines and state the best means of preserving and enhancing important elements in rehabilitation or related new construction. Their purpose is to assure that design review will be based on clear standards rather than the tastes or personal opinions of individual commission members. When applying the guidelines, the Commission, in clearly defined cases of economic hardship, will also consider deprivation of the owner's reasonable use of property. Decisions of the Heritage Preservation Commission are subject to appeal to the City Council (§73.06(h)).

1. General Intent

The City of Saint Paul, a Certified Local Government in the National Historic Preservation Program, has agreed to conduct its design review of locally designated heritage preservation sites and districts according to the *Secretary of the Interior's Standards for Rehabilitation (1995)*. The Standards are applied to projects in a reasonable manner, taking into consideration economic and technical feasibility. The ten Standards are:

1. *A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*
2. *The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.*
3. *Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.*
4. *Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.*
5. *Distinctive features, finishes, and construction techniques or examples of*

craftsmanship that characterize a historic property shall be preserved.

6. *Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.*

7. *Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.*

8. *Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*

9. *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.*

10. *New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

2. Description

2.1 Boundaries and Site. The St. Paul Gas Light Company Island Station Plant at 380 Randolph Avenue (437 Shepard Road, formerly 1 Ross Road; RA-SPC-3323) is located in Section 12 of Township 28N R23W, about two miles upstream from downtown St. Paul. It is in Planning District 9 (known as the West 7th/Fort Federation Community Council). The electric-steam plant occupies the foot of a peninsula on the west side of the Mississippi River about 100 feet from the shoreline. This peninsula was originally the 6-acre Ross Island and was reached by a wood bridge (razed). The west half of the island is now infilled in part by ashes sluiced out of the plant furnaces.

3. General Character [description still needed to add]

4. Existing structures and buildings

4.1 Exterior Surfaces.

4.1.1 Masonry. Repair: Original masonry and mortar shall be retained whenever possible without the application of any surface treatment. Deteriorated or damaged masonry or mortar, when necessary, shall be repaired or replaced with the material used in original construction or a material that closely resembles the original in size, shape, color, texture and profile. New masonry added to a building, structure or site, such as new foundations or retaining walls, should be compatible with the size, shape, color, texture, profile and bonding of the original or existing masonry.

Cleaning: Masonry should be cleaned only when necessary to halt deterioration or to remove graffiti and stains and always with the gentlest method possible such as low pressure water (under 300 psi) and soft, natural bristle brushes. Brick and stone surfaces shall not be sandblasted with dry or wet grit or other abrasives. Abrasive cleaning methods can erode the hard surface of the material and accelerate deterioration. Chemical cleaning products which could have an adverse chemical reaction with the masonry material shall not be used. Chemical solvents should not be used except for removing iron and oil stains. It is preferable to use water with a non-ionic biodegradable detergent. Waterproof or water repellent coatings or surface consolidation treatments should not be applied unless required to solve a specific technical problem that has been studied and identified and determined to comply with applicable design guidelines. In general, coatings are frequently unnecessary, expensive, and can accelerate deterioration of the masonry.

Repointing: Repointing should be done on those mortar joints where there is evidence of moisture problems or where mortar is missing or damaged. The removal of mortar shall be done with methods and tools that will not damage the surrounding masonry or alter the joint size. Original mortar joint size and profile shall be retained, and replacement mortar shall match the original mortar in color, composition, strength and texture. Materials and ingredient proportions similar to the original mortar shall be used when repointing, with the replacement mortar softer than the masonry units and not harder than the historic mortar. A professional mortar analysis can determine the cement-lime-sand ratio. This will create a bond similar to the original and is necessary to prevent damage to the masonry units. Repointing with mortar of high Portland cement content can create a bond stronger than is appropriate for the original building materials, possibly resulting in cracking or other damage. Mortar joints should be carefully washed after set-up to retain the neatness of the joint lines and keep extraneous mortar off of masonry surfaces.

Painting: The original color and texture of masonry surfaces shall be retained, including early signage wherever possible. Unpainted masonry surfaces shall not be painted. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons early on and paint should not be indiscriminately removed from masonry surfaces as this may subject the building to damage and change its appearance. The removal of paint from masonry surfaces should only be attempted if unpainted surfaces are historically appropriate and if removal can be accomplished without damage to the masonry. An appropriate paint removal product, especially for the removal of graffiti, shall be applied in test areas to determine its effect on the masonry and its effectiveness in removing the paint. In rare cases where a consolidant or paint coating is determined to be historically and structurally appropriate, the color and finish is subject to review.

4.1.2 Siding. Repair: Original wood and metal siding should be retained whenever possible without the application of any surface treatment. A similar material should be used to repair or replace, where necessary. New siding added to the structure or site should be compatible with the material, color, texture, size, design, and arrangement of the original materials.

Painting: Paint should not be indiscriminately removed from wooden surfaces as this may subject the building to damage and change its appearance. Exterior wooden surfaces shall be maintained with appropriate paint or stain. Color is a significant design element and exterior paint colors should be appropriate to the period and style of the historic building. Building permits are not required for painting, and although the Heritage Preservation Commission may review and comment on paint color, paint color is not subject to Heritage Preservation Commission approval.

4.1.3 Stucco and Concrete. Resurfacing: Repairs to existing stucco and concrete surfaces should duplicate the original in color, pattern and texture, if evidence exists. Smooth or heavy dashed surfaces should be avoided unless they were used on the original surface. Re-dashing stucco shall not alter the set back or profile of trim and architectural details.

4.2 Roofs, Chimneys, Cornices and Parapets.

Roof Shape: The original roof type, slope, overhangs and architectural details shall be preserved. The size, shape and original roof features such as dormers, cupolas and parapets shall also be preserved. New roof features may be acceptable if compatible with the original design and not conspicuously located.

Materials: When the roof is visible from street level, the original material should be retained if possible, otherwise it should be replaced with new material that matches the old in composition, size, shape, color, and texture. When partially re-roofing, deteriorated roof coverings should be replaced with new materials that match the original in composition, profile, size, shape, color and texture. When entirely re-roofing, new materials which differ to such an extent from the original in composition, size, shape, color or texture that the appearance of the building is altered shall not be used. The predominant roof materials on the residential buildings in the Jacob Schmidt Brewery Historic District are asphalt shingles. When asphalt shingles began to be used in the 1890s and early twentieth century, the most common colors were solid, uniform, deep red and solid, uniform, dark green. Dark brown, dark gray and weathered-wood colors may also be acceptable for new asphalt shingles.

Alterations: The roof shape on principal elevations shall not be altered except to restore it to the original documented appearance. The additions of architecturally compatible elements like light monitors may be considered by the HPC on a case-by-case basis. Documentation includes pictorial or physical evidence of the former appearance of the building. Alterations to the roof shape at the sides or rear shall be compatible with the architectural character of the building.

Skylights: New skylights and vents should be behind and below parapet level for flat roofs. Skylights and vents shall not be installed on principal elevations for sloped roofs. Modern skylights are a simple way to alter a roof to admit light and air without disrupting its plane surface. Skylights should be flat and as close to the roof plane as possible. They should not be placed on the front or highly visible roof planes. "Bubble"-type skylights shall not be installed.

Chimneys, Stovepipes and Smokestacks: Chimneys and smokestacks should be preserved or restored to their original condition. In the absence of historical documentation on the original design, chimney design should be in keeping with the period and style of the building. New chimneys and stovepipes should not be installed on front roof planes.

Cornices, Parapets and Other Details: All architectural features that give the roof its essential character should be preserved or replaced in kind. Similar material should be used to repair/replace deteriorating or missing architectural elements such as cornices, brackets, railings and chimneys, whenever possible. The same massing, proportions, scale and design theme as the original should be retained.

4.3 Windows and Doors. Windows and doors are a character defining architectural feature and establish the visual rhythm, balance and general character of the facades. Any alteration, including removal of moldings or changes in window and door size or type, can have a significant and often detrimental effect on the appearance of the building as well as on the surrounding streetscape.

Openings: Existing window and door openings should be retained. New window and door openings should not be introduced into principal elevations. Infilling of window openings or installing new openings may be permissible on secondary facades if standard sizes approximate the size and proportions of the opening. The National Park Service Bulletin on *New Openings in Secondary Elevations or Introducing New Windows in Blank Walls (Sept. 2000)* should be referenced and used as a guide. Enlarging or reducing window or door openings to fit stock window sash or new stock door sizes shall not be done.

Solid to Void Ratio: New window and door openings should not be introduced into principal or highly visible elevations. New openings may be acceptable on secondary or minimally visible elevations so long as they do not destroy or alter any architectural features and the size and placement is in keeping with the solid-to-void (wall-to-openings) ratio of the elevation.

Panes, Sashes and Hardware: Historic windows should be preserved and if replacement is warranted, windows should be replaced in-kind. Window panes should be two-way glass. No reflective or spandrel glass is permitted. The stylistic period or periods a building represents should be respected. Missing or irreparable windows should be replaced with new windows that match the original in material, size, general muntin and mullion proportion and configuration and reflective qualities of the glass. Replacement sash should not alter the setback relationship between window and wall. Heating and air conditioning units should not be installed in the window frames when the sash and frames may be damaged. Window installations should be considered only when all other viable heating and cooling systems would result in significant damage to historic materials. Window installations may be acceptable in secondary facades.

Trim: Historic window casings should be retained wherever possible. If replacement is necessary, the original profile shall be replicated.

Lintels, Arches and Sills: Lintels, sills, architraves, pediments and hoods should be retained or repaired if possible. Historic colors, if determined, and textures should be matched when repairing these elements.

Storms and Screens: Storm windows and doors should be compatible with the character of the building and should not damage window and door frames, or require removal of original windows and doors. Exterior storms should be appropriate in size and color. Combination storm windows should have wood frames or be painted to match trim colors. If combination metal storms are installed, they shall have a baked-enamel finish. Storm windows should resemble the inner window and should not have vertical or horizontal divisions which conflict with the divisions of the inner sash. Storms and screens should not pan or wrap the opening or casing.

Security Measures: Historic trim or other architectural features shall not be removed for the installation of security bars or grills.

Awnings and Canopies: Awnings and canopies should not be used when they conceal richly detailed entries and windows. Plastic and fabric awnings shall not be used given the utilitarian character of the building. Surface design elements should not detract from or conflict with the related structure's age and design. Awnings should have a traditional shape such as a tent shape or be rounded when the opening is arched. Awnings should be used in a traditional application for shading window or door openings.

4.4 Entrances and Steps. Entrances and steps which are appropriate to the building and its development should be retained. Additions reflecting later styles of architecture are often important to the building's historical integrity and, whenever possible, should be retained. Entrances removed from the building should be reconstructed, using photographic documentation and historical research, to be compatible in design and detail with the period and style of the building.

Decorative Features: Decorative architectural features such as cornices, brackets, railings, and those around front doors and windows should be preserved. New material used to repair or replace, where necessary, deteriorated architectural features of wood, iron, cast iron, terra-cotta, tile and brick should match the original as closely as possible.

Decks and Fire stairs: Deck and fire stair additions and new balconies may be acceptable in some cases, but should be kept to the rear of buildings where they will be the most inconspicuous and detract the least from the historical context. The detailing of decks and exterior stairs should be compatible with the period and style of the building.

4.6 Fencing, Enclosures and Retaining Walls. Existing fencing and retaining walls that are contributing elements to the Site should be appropriately maintained and preserved.

4.8 Mechanical.

Location and Siting. Mechanical related equipment should be sited in such a way that they do not block or disrupt principal elevations and prominent views, especially on roof tops. Mechanical related equipment that is sited on grade should be inconspicuously sited. In some cases appropriate screening, may be necessary.

Grills, Exhaust Fans, etc. Grills,vents, exhaust outlets for air conditioners, bath and kitchen exhaust fans should be incorporated into filler panels, if possible. They may be painted the same color as the filler panel.

5. Signage, Awnings and Accessories.

5.1 General. Any existing historic signs that reflect the development of the Site should be preserved. These signs may be in the form of surface mounted or projecting signs. Signs should be compatible with the character of the Site and blend with the character of the structures on or near which they are placed. Signs should not conceal architectural detail, clutter the building's image, or distract from the unity of the facade but, rather, should complement the overall design. Signs, graphics and lighting should be designed as part of the facade. Signs on large structures that house several businesses should be planned and designed in a way that unifies the facade, while providing identity for individual businesses. A master plan for signage is encouraged.

5.2 Materials. Sign materials should complement the materials of the related building and/or the adjacent buildings. Surface design elements should not detract from or conflict with the related structure's age and design in terms of identification symbol (logo), lettering, and related patterns or pictures. Materials used should be the same as those used for signs during the period of the building's construction, such as wood, wrought iron, steel, and metal grill work. Newer materials such as extruded aluminum and plastics may not be appropriate.

5.3 Types. The sign type should enhance the building's design and materials. There are a number of types of signs which may be used: (1) single-faced; (2) projecting, double-faced; (3) three-dimensional; (4) painted wall signs; and (5) temporary signs.

5.4 Location and Method of Attachment. Signs should be appropriately sized and complement the building exterior; roof-top signs are inappropriate except in cases where physical or pictorial documentation shows they were present and reconstruction is considered appropriate. There should be no sign above the cornice line or uppermost portion of a facade wall.

Signs should not disfigure or conceal architectural details. Painted signs may be permissible on glass windows and doors. The facade should not be damaged in sign application, except for mere attachment. The method of attachment should respect the structure's architectural integrity and should become an extension of the architecture. Projecting signs should have a space separating them from the building. (Protection of architecture in method of attachment shall be regarded as a basis for granting variance of the normal zoning code prohibition against guy wire supports for projecting signs.)

5.5 Illumination. Signs should generally be lit from on the site. There should be no flashing, blinking, moving, or varying intensity lighting. Subdued lighting is preferred. Backlit fluorescent or exposed neon are generally inappropriate.

6. New Construction.

6.1 General. New construction refers to totally new structures, moved-in structures and new additions to existing structures. Any new construction should possess height, massing, setback, materials and rhythms compatible with surrounding structures. The reproduction of historic design and details is recommended only for limited cases of infill or small scale construction. Guidelines for new construction focus on general rather than specific design elements in order to encourage architectural innovation.

Site evaluation. Existing historic buildings and landscape features should be retained and rehabilitated in plans for redevelopment.

General character. New construction should reinforce the historic architectural and visual character of the area.

Views and Vistas: Exceptional views of the Site from the River and both directions along Shepard Road should not be obstructed by new buildings or structures.

Built Form. Design new buildings to frame all public spaces, including streets and/or any other open spaces. Design new buildings to respect the historic antecedents, where appropriate, while creating a living and working environment for the 21st century. Design new buildings to fit in well with the historic buildings and context of the area by reflecting the scale, massing, quality of materials, and window openings of the surrounding structures.

Pedestrian circulation and parking. New construction should be oriented toward streets which are inviting environments for pedestrians. Parking areas should be placed at the rear of buildings wherever possible or screened with landscaping, low walls or appropriately detailed fences. Walls or plantings should not block prominent views or impact the historic character in a way that the character is lost.

6.2 Setback. New setbacks should respect the siting and prominence of Island Station.

6.3 Massing, Volume, Height. New construction should be compatible with the massing, volume, and height, of the Site. Any new construction shall not diminish or obscure the main Island Station building.

6.4 Rhythm. The rhythm in the Island Station Site (or lack of) can be found both in the relation of additions onto buildings, and in the relation of elements on a single building facade. Rhythm between buildings is usually distinguished by slight variations in height, windows and doors, and details, including vertical and horizontal elements.

Rhythm may be accentuated by slight projections and recessions of the facade, causing the scale of the building to match that of its neighbors. The rhythm of new construction should be compatible with that of existing structures.

6.5 Roofs and Cornices. New roof, and cornice designs should be compatible with existing adjacent structures. Generally, roofs in the Site for commercial buildings are flat and roofs for residential buildings are sloped and varied. It is more important for roof edges to relate in size and proportion, than in detailing.

6.6 Materials and Details. Encourage the use of high-quality exterior materials. The materials and details of new construction should relate to the materials and details of existing adjacent buildings. New construction at the Site should possess more detailing than typical modern commercial buildings, to respond to the surrounding buildings.

6.7 Windows and Doors. Windows should relate to those of existing buildings in on the Site in the ratio of solid to void, distribution of window openings, and window setback. The proportion, size, style, function and detailing of windows and doors in new construction should relate to that of existing adjacent buildings. Window and door frames should be wood, steel or bronze-finished aluminum depending on the relationship of existing historic fabric.

7. Guidelines for Non-Contributing, Contemporary Buildings or Additions

7.1 Change to Contributing Status. A non-contributing building or structure built within the period of significance but substantially altered may be reclassified as a contributing building, but it must be brought into compliance with its original historic facade by means of restoration or reconstruction.

7.2 Non-Contributing and Contemporary Building Additions and Alterations. Additions and alterations to non-contributing and contemporary buildings must be sympathetic and subordinate to historic structures. These changes must not impair intact historic context. Guidelines for new construction shall apply to non-contributing and contemporary buildings.

8. Site Considerations.

8.1 General. The traditional pattern of streets, curbs, boulevards and sidewalks in the area should be maintained. Distinctive features of spaces in the area such as train tracks, retaining walls, outbuildings and steps that are important in defining the Site's context should be preserved. New street furniture and landscape improvements such as benches, bus shelters, kiosks, sign standards, trash containers, planters and fences should be compatible with the character of the Site.

8.2 Fences and Retaining Walls. Fences which allow some visual penetration of the space are preferable to complete enclosure. Cyclone fences, if used, should not be installed around or near principal elevations of the site and should visually unobtrusive.

Stone, brick and split face concrete block are preferable to landscape timber for the construction of retaining walls. Masonry retaining walls should be finished with caps or appropriate details.

8.3 Lighting. The location and style of exterior lights should be appropriate to the structure's age and original design intent.

8.4 Landscaping. New landscaping should respect the historical and architectural character of the Site. Trees should not block prominent views of the structures.

9. Demolition.

When reviewing proposals for demolition of structures, the Heritage Preservation Commission will consider the following:

9.1 The architectural and historical merit of the building. This includes consideration of the integrity of the structure and whether it was constructed during the Period of Significance.

9.2 The effect of the demolition on surrounding buildings and site, the effect of any proposed new construction on the remainder of the building (in case of partial demolition) and on surrounding buildings and the site.

9.3 The economic value or usefulness of the building as it now exists in comparison with the value or usefulness of rehabilitating the building or structure for a new use.

10. Glossary

Adaptive Reuse. Conversion of a building originally designed for a certain purpose to a different purpose.

Alteration. Any construction, addition, demolition, relocation or material change affecting the exterior of a building or site or affecting any interior surfaces which are designated by ordinance of the City Council.

Bay. A structural division of a building defined by projections, columns, pilasters or window groupings.

Belt Course. A horizontal decorative ban around a building, often of a projecting, contrasting material.

Bracket. A decorative support element under eaves or other overhangs.

Certificate of Appropriateness. A certificate issued by the Heritage Preservation Commission, the building official, or the official designated representative evidencing the review and authorization of plans for alteration of a heritage preservation site or property with a heritage preservation district.

Clapboard. Narrow, horizontal, overlapping wooden boards used as siding.

Clerestory. An upper fenestrated section of a building designed to provide natural light to a high-ceilinged room.

Coping. That capping member of a wall or parapet, usually sloped to shed water.

Corbel. A brick or stone support produced by extending successive courses out from the wall surface.

Cornice. Projecting ornamental molding which crowns a wall or an entablature.

Dentils. A row of small rectangular blocks forming a molding that resembles teeth, usually part of a cornice.

Eaves. The underpart of a roof that extends beyond the structure's wall.

Fenestration. The arrangement, proportions, and pattern of windows and door opening in a wall.

Flashing. A sheet, usually metal, used to make an intersection of materials watertight.

Frieze. An ornamental band immediately below the cornice.

Integrity. The authenticity of a historic building, site, or resource as evidenced by its location, design, setting, materials, workmanship or association.

Keystone. The central stone of an arch.

Light. An individual pane of glass between mullions and muntins on a window.

Lintel. A horizontal beam spanning an opening and supporting construction above.

Massing. The combination of height, volume, and scale of a building in relation to its surroundings.

Mortar. A workable paste used to bind brick and masonry blocks together and fill the gaps between them. The paste is usually made from a mixture of sand, a binder such as cement or lime, and water.

Mullion. A vertical member dividing (and often supporting) a series of windows or panels: mullions are wider than muntins.

Muntins. A narrow bar dividing a window onto individual lights.

Minor Alteration. An alteration that does not affect the integrity of a heritage preservation site or property within a heritage preservation district. Examples may include changes that are not significant; and changes that reproduce the existing design and that are executed with the same type of materials and methods as existing, if available, or with visually similar materials if the original materials are not available.

Parapet. A low projecting wall at the edge of a roof.

Pilaster. A shallow pier attached to a wall, sometimes having a capital and base to resemble a classical column.

Preservation. The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. It reflects a building's continuum over time, through successive occupancies, and the respectful changes and alterations that are made.

Principal Elevation. The exterior face of a building which is considered an architectural front.

Property. Any land, building, structure or object, surface or subsurface area, natural or landscape feature.

Quoins. Bricks or stones used to define the corners of masonry buildings.

Reconstruction. The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time in its historic location.

Rehabilitation. The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Repointing. The process of removing the old mortar and applying new mortar between brick and masonry joints.

Restoration. The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

Rhythm. The relationship of buildings to open space along the street and between structures, the relationship of solids to voids and the repetition or pattern of features on building facades and landscapes.

Sandblasting. The operation of forcibly propelling a stream of abrasive material, such as sand, against a surface under high pressure to smooth a rough surface, roughen a smooth surface, shape a surface, or remove surface contaminants.

Secondary Elevation. Generally, the exterior face of a building which are not considered the architectural front.

Setback. The distance of the primary façade from the street.

Storm Windows. Windows which are mounted on the outside of the main windows of a building.

Structure. Anything constructed or erected with a more or less fixed location on or in the ground or in or over a body of water. A structure shall include, but not be limited to, buildings, fences, walls, signs, canopies, decks, patios, antennas, piers, bridges, docks, and any objects or things permanently attached to the structure.

The Secretary of the Interior's Standards for Rehabilitation**.** The most recent standards for rehabilitating historic buildings established by the National Parks Service, United States Department of the Interior.

Transom window. A small operable or fixed window located above a door or other window.

Veneer. Exterior facing of brick, stone, etc. that provides a decorative, durable, non-load-bearing surface.

Water Table. A projecting ledge above the foundation sloped to direct water away from the structure.