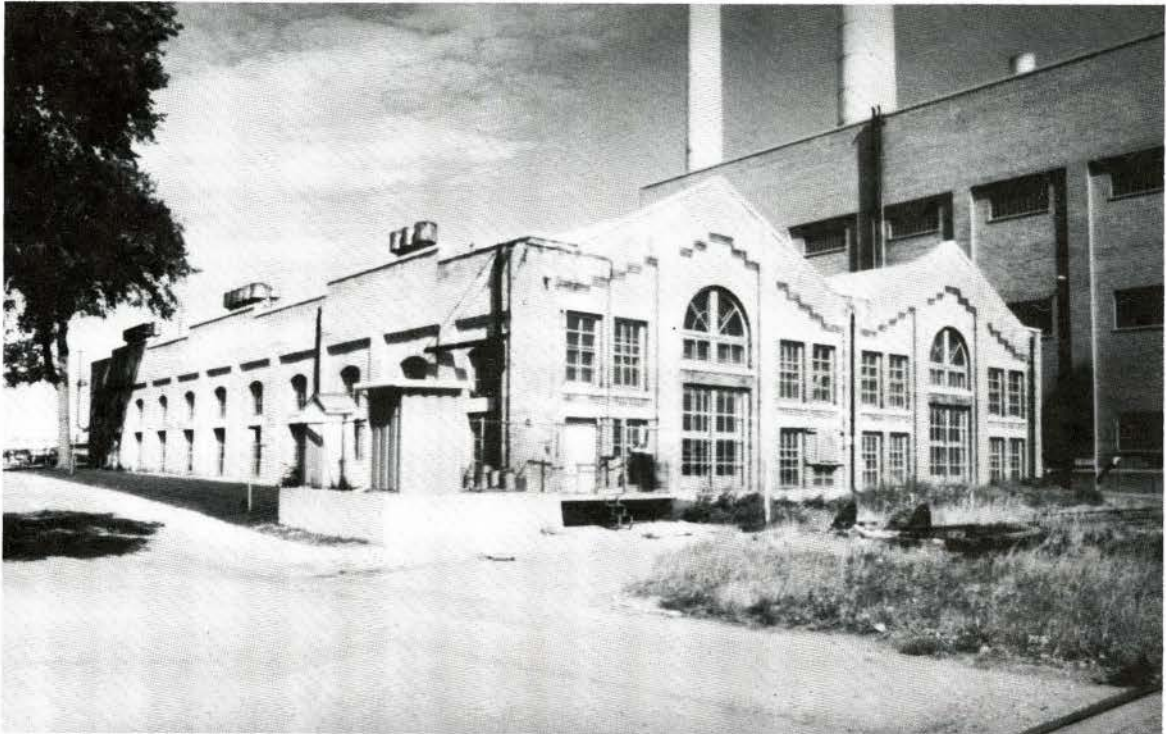


# THE PROCEEDINGS PART V



Authors

## James Avenue Pumping Station Winnipeg

by Thora Cartlidge and Sheila Grover

### JAMES AVENUE PUMPING STATION: HISTORY AND ARCHITECTURE

In recent years the Canadian heritage movement has discovered the importance of industrial technology in the evolution of Canada's built environment. Not only has this industrial technology influenced Canada's social and economic history, the adaptation of this technology has had a substantial impact on the physical development of our urban communities. A case in point is the James Avenue Pumping Station in Winnipeg, Manitoba. This historic station, which is still in daily operation, pumps water for the exclusive purpose of fighting fires. It utilizes its own grid of high pressure water lines and hydrants which are separate from the domestic water system.

The James Avenue Pumping Station opened in 1906, a masterpiece of mechanical technology. It employed huge flywheels, pumps and engines which are still in use today. The equipment is housed in the original building and routinely performs the same service of fire protection it has since the early years of this century.

Winnipeg in those years was in a period of remarkable growth, not the punch-drunk days of its 1882 boom, but the self-assured steady growth that derived from its prominence as the gateway to the northwest. From its frontier days of the 1880's, with a population of only 8,000, Winnipeg

could boast of 42,000 people in 1901. That population figure was to double again before this pumping station opened in 1906.<sup>1</sup> Faced with a never-ending demand for services, City Council attempted to run the city like a business, with an eye to cost efficiency and a blind spot to the social consequences.

A thriving warehouse district emerged around the railway spur lines, while the adjacent financial district and retail shops ran along Main Street and Portage Avenue. This commercial district was disproportionately large for the city as a whole, proof to westerners that Winnipeg was indeed destined to be the "Chicago of the North".

Because of its commercial dominance, architecture in the city reflected state of the art in building technology. Masonry buildings, which were generally warehouses or combined offices for the wholesale trade, had been pushed to their upper limit of six or seven storeys. Structural steel and concrete had provided the skeleton for skyscrapers to reach higher still and Winnipeg was proud of its tall new office towers. But both the scale and the concentration of the buildings was a source of concern for the fire department as well as for the fire insurance underwriters. Winnipeg's domestic water supply, pumped from artesian wells, could simply not guarantee the kind of pressure or volume that fire fighters needed to fight a major blaze. Horse-drawn steam engines, chemical pumps and hose reels could only afford as much protection as the deficient pressure permitted.

The original urban water system, which consisted of pumping up river water, was replaced by a city-owned artesian well system in 1899.<sup>2</sup> As pure as the artesian water may have been, the volume was still low and the pressure varied. During an emergency situation, such as the Ashdown Hardware fire in October 1904, the old river water pump system was re-activated to supplement pressure to fight the fire. Polluted river water poured uncontrolled into the domestic water supply and days later, nearly 1,300 adults and children came down with the dreaded typhoid fever.<sup>3</sup>

On top of the typhoid epidemic, City Council came under criticism from the Fire Underwriters' Association. There was not, they argued in a 1904 report, enough water to ensure proper protection of valuable downtown buildings and contents.<sup>4</sup> Fires were a constant threat in a climate that required buildings to be heated at least six months of the year. While modern buildings had gauged boilers, many structures were heated by stoves that could easily overheat or were left unattended through long winter nights.<sup>5</sup> Building and fire codes generally applied to newly constructed buildings.

Although the decision to provide Winnipeg with a steady source of drinking water was further delayed.<sup>6</sup> In 1905, City Council announced that a pumping station would be built on James Avenue, near the bank of Red River on the eastern boundary of the downtown district it was to serve. Under the direction of the City's engineering and fire protection staff, Williams Jacks and Company of Glasgow acted as the general contractors in construction of the station. Tenders were called for with a predictable result: British and Scottish firms supplied most of the machinery at a time when England was perhaps the most technologically advanced nation in the world. The cost of this high pressure fire protection system (which climbed to one million dollars), was paid for totally by a pro-rated tax levied on the businesses served by the special water-mains and hydrants.<sup>7</sup>

Because of the tremendous size and weight of the pumping equipment, the station was built around the machinery. Form and function have achieved a unique integration. Yet the form is most effective in its simple devotion to the function. The structure is utilitarian without being stark or brutal. What makes the pumphouse so distinctive is its straightforward design and clear expression of purpose, which has created an enduring impression of power harnessed.

Of the three buildings that formed the original complex, only the pumphouse survives. Formerly, there was also a gas producing plant where coal was burned to produce fuel which was piped as gas into the adjacent massive brick and steel storage plant. After the pumping station was converted to electricity, these two ancillary structures became redundant and were eventually demolished.

The pumping station is a single-storey brick structure with two gabled bays. Spanning each bay are two large cranes that move along an I-beam track of steel. The tracks rest on a steel frame, with each support continuing below grade in concrete piers. As well as supporting the walls and roof, this steel holds the cranes that initially lifted the massive machinery components into place. The equipment is therefore "house-built," part machinery, part structure, all resting at grade or in the trough below.

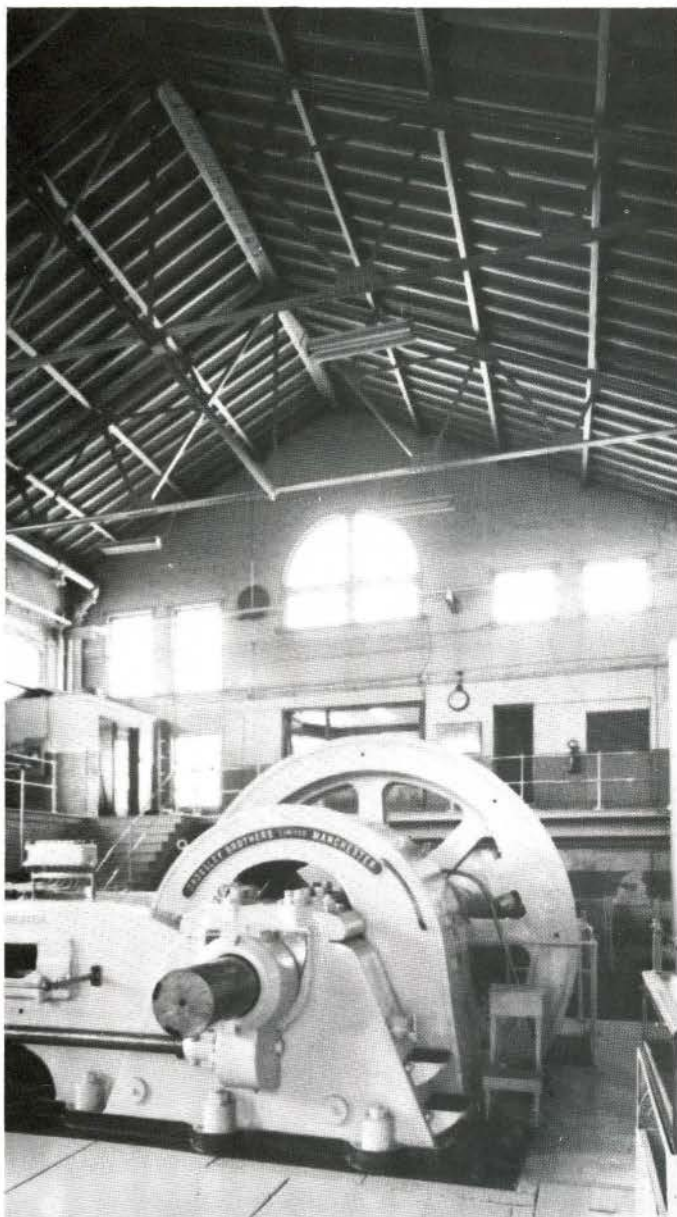
If brief, water was pumped through a large pipe cribbed in the middle of the river, sucked into the building and pushed through the high pressure water mains controlled by separate hydrants. The power for the pumps and plungers was originally produced in large engines that ran on the coke gas produced in the building attached. What is remarkable about these machines is their scale: the pistons are the diameter of a human's arms, each flywheel 36 tons in weight and the fan belts 20 feet long, controlled by a fascinating array of valves, gauges and gears. Much of the large equipment is made of polished steel, with the railings and gauges still glittering in solid brass. Beneath the equipment, in the murky depths, are the huge pipes and graded run-off troughs.

In order to give the operators maximum natural light, large windows run the height of the wall along three sides, with sweeping arched windows at both ends of each bay. Above these arched windows run brick corbelling, one of the building's few concessions to vanity.

Because the machinery was so sophisticated, the English mechanics who assembled it stayed on in Winnipeg to run the equipment for the years to come. When the city was finally connected by aqueduct to Shoal Lake in 1919, James Avenue Pumping Station was hooked into it. Never again would fire fighters save a burning building only to ruin its contents by pouring gallons of muddy river water onto the flames.

## JAMES AVENUE PUMPING STATION: PRESERVATION AND INTERPRETATION

More than a few early municipal pumphouses have been preserved in cities across Canada. A brief review of some better-known examples



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Building interior (1983)

from Ontario will help illustrate the possibilities for interpreting the James Avenue Pumping Station.

The Hamilton Pumping Station is operated as the Hamilton Museum of Steam and Technology.<sup>8</sup> Modern pumping and filtration plants have replaced the original water-pumping system, but the historic pump house built in 1857 has been preserved by the careful maintenance volunteered by City Waterworks employees over the years. The two original Cartshore steam engines are in near-perfect condition. The new museum stands proudly on the grounds of the modern facility, its preservation assured.

Kingston's Pump House, built in 1849, has also been preserved as a museum.<sup>9</sup> The main pump room, with the two original steam-driven pumps, is restored to 1895. While the pump house no longer supplies water to the city, the building and pump engines are intact and maintained by the Frontenac Society of Model Engineers together with the Kingston Department of Parks. Open to the public since 1973, the Pump House Steam Museum contains a collection of historical engines and steam artifacts, all in working order.

The main exhibits of these living museums are the pumping stations themselves. Through mostly volunteer efforts, the massive pumping equipment of each station has been maintained and is fully-functional. This is a tribute to the century-old technologies that would still be in use, except that the cities' demand for water gradually exceeded the pumping stations' capacity, rendering the stations obsolete.

By contrast, Ottawa's Fleet Street Pumping Station has been fully rehabilitated so it continues to operate, delivering about 50% of the water required for the Regional Municipality of Ottawa-Carleton.<sup>10</sup> It utilizes the water power of nearby Chaudiere Falls, as it has since its construction in 1874. The aging reciprocating pumps and water wheels of the original system were replaced by 1949 with modern centrifugal pumps and turbines, but the physical plant is housed in the original pumphouse, which is restored to its 1900 appearance.

Like the Fleet Street operation, the James Avenue Pumping Station in Winnipeg is still part of the city's water supply system. It pumps water under high pressure to fire-protection hydrants in the central business district. What sets it apart from other historical pump houses is that the City of Winnipeg continues to operate the system with the original generating and pumping equipment installed in 1906.<sup>11</sup>

The City is considering closing the James Avenue Station and possibly developing the site as a tourist attraction. Like the other facilities discussed, the focus of an interpretive program at the James Avenue Station would be the pump house itself, impressive for the image of power created by the brick and glass construction and magnificent in its display of historical technology.

The primary objective for interpretation of James Avenue Pumping Station is to increase public awareness and understanding of the historic powerhouse.<sup>12</sup> While the main theme for interpretation is the pump house operation, secondary themes include the history of Winnipeg's water supply, the social history of the area and industrial architecture.<sup>13</sup>

The powerhouse itself offers the best resource to interpret the main theme. The physical plant and the procedure for pumping water for fire-fighting can be well illustrated inside the powerhouse. The view from the foyer presents a panorama of the generating and pumping equipment on the engine-house floor below, adding a dimension of immediacy that is rarely realized in a museum setting. Even if the pump house operation is closed down, the original pumps and engines will remain as built-in exhibits that can be operated for display.

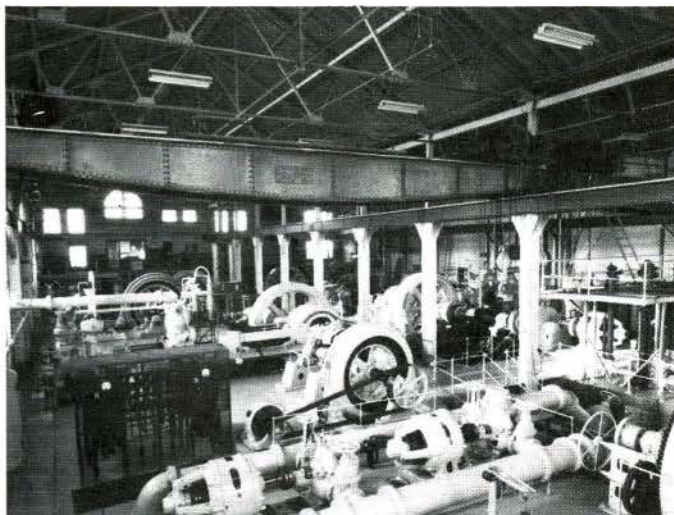
The secondary themes can be interpreted inside the powerhouse and also illustrated outside the building. In the riverside setting of Stephen Juba Park, there are physical resources that link to the Pumping Station:

- the Red River, which was the first source of water for the pumping plant, and a deciding factor in its location;
- the plant intake for the Shoal Lake Aqueduct, which delivered water to the plant since 1919;
- the rail tracks, which delivered the hoppers of coal to the gas-producer plant;
- the exterior design of the powerhouse, which represents early industrial architecture;
- the Winnipeg Hydro Steam Plant, which is another example of early industry and architecture in the city; and
- the site of Victoria Park (on the site of Winnipeg Hydro Steam Plant) where strike leaders addressed assemblies during the 1919 General Strike.

The Historic Winnipeg Restoration Area, which centres on Old Market Square west of Main Street, is also considered an interpretive resource. The pumping plant serviced fire-protection hydrants in this historic business district. Located within walking distance of the Pumping Station, the Restoration Area contains examples of early commercial and industrial architecture that may be compared with the Pumping Station as part of an extended walking tour of the area.

An interpretation program for the Pumping Station would incorporate indoor and outdoor interpretive panels, a publication and 3-dimensional exhibits, into a self-guided tour of the Station and its immediate area. Visitors will have first-hand experience exploring the power house and its operation. Through interpretation, the plant operation will be opened up to the public as a scientific exhibit, a tribute to Winnipeg's industrial heritage.<sup>14</sup>

What makes Winnipeg's high-pressure pumping station unique in Canada is its pristine condition and the integrity of both its structure and machinery to the turn of the century. The massive engines, flywheels and pumps of the original plant are always polished and primed, ready to start up the water pumping operation within minutes of notice from the Fire Hall. The Pumping Station is located within walking distance of Portage and Main, at the edge of the commercial centre it was designed to service, yet it remains undiscovered by most Winnipeggers and tourists. The opportunity exists to present to the visiting public a historical example of industrial architecture and to interpret the technological significance of this heritage resource. □



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Building interior (1983)

## NOTES

1. Alan F.J. Artibise **Winnipeg: A Social History of Urban Growth 1874-1914** McGill-Queen's University Press (Montreal and London) 1975, p. 130.
2. Diane Payment "The Winnipeg Aqueduct" report for the Canadian Engineering Heritage Record c.1976 p. 1. Used by permission of the author.
3. Artibise, *op. cit.*, p. 228.
4. "Report on Municipal Fire Prevention Appliances". Board of Control Papers No. 447, 25 October 1904 quoted in Artibise, *op. cit.*, p. 216.
5. As well, the hard water from the artesian wells rusted boilers at a remarkable rate.
6. The Winnipeg Aqueduct was constructed between 1912 and 1919. In the interim, six new artesian wells were equipped with pumps and introduced to the domestic waterworks. By 1906, the year that James Avenue Pumping Station was built, there were four artesian wells supplying drinking water. City government and administration was long divided over whether to continue and expand the artesian well system or to make the huge investment in the aqueduct system. "Winnipeg's Waterworks" **The Canadian Engineer**, 19 January 1911, p. 189.
7. Notice by City of Winnipeg, advertised in the three daily newspapers, High Pressure Pumping System, special documents box, dated c.18 June 1905. **The Telegram**.
8. Norman Ball and Ken Desson "The Pump-house Parthenon" **Canadian Heritage** December 1983/January 1984 p. 10.
9. "The Pump House Steam Museum." City of Kingston. brochure, n.d.
10. "The Fleet Street Pumping Station." Regional Municipality of Ottawa-Carleton (Ottawa) 1981, p. 10 brochure.
11. Sheila Grover "109 James Avenue: High Pressure Pumping Station." Unpublished report prepared for City of Winnipeg Historical Buildings Committee 28 May 1982 p. 2.
12. Sundog Heritage Planning "Interpretation Concept for James Avenue Pumping Station." Prepared for Heritage Winnipeg 1983, p. 3.
13. *Ibid.*, p. 4.
14. *Ibid.*, p. 6.



Plaque (1906)