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# Commemoration of Historic Civil Engineering Sites at the 2009 Conference

An outstanding effort by the History sub-committee of the 2009 St. John's Conference Local Organizing Committee has resulted in plans for three National Historic Sites to be commemorated at the Conference: a record!!

### "The Lighthouses of Newfoundland and Labrador"

During the second half of the 19th century and into the first decade of the 20th century the economy was almost totally dependent upon the sea and international shipping lanes were crucial to the development of the Canadian economy. With this marine activity the demand for safe navigable waters grew, which lead to an increased demand for lights and buoys in and around the coast lines of both the colony of Newfoundland and of Canada. The first lighthouse in Newfoundland was constructed in 1813 at Fort Amherst, at the entrance to the St. John's Harbour.

In 1832, a Board of Lighthouse Commissioners was created. After this, lighthouses were built in Cape Spear (1836), Harbour Grace Island (1837) and Cape Bonavista (1843). These lighthouses all had the same design, a house-like, hipped roof structure with the lantern mounted on the roof. Of these first stations, the Cape Spear and Cape Bonavista lighthouses still remain, and both are now historic museums.

At the CSCE/ASCE/ICE Triennial Conference following the Annual Conference a special International Historic Site Commemoration will take place where CSCE and ICE will jointly recognize the International significance of the Cape Bonavista Lighthouse which incorporated the lighting system originally installed on the famous Bell Rock Lighthouse in Scotland.

### "Petty Harbour Hydro Electric Power Station"

The Petty Harbour Power Station was the first hydroelectric power plant in the Province and began operation in 1900. The power plant was built primarily for the operation of a streetcar system in St. John's. This was rather unique since at that time power stations were being built mainly for industrial energy and domestic lighting needs. As would be expected, however, besides powering the street car system, electricity was provided for city lights, businesses and residences.

A chain of lakes/ponds formed the water supply for the plant and an 8 foot square flume carried the water along the hillside from the reservoir for a distance of 3,300 feet before it entered a 350 foot tunnel which had been blasted through Gull Hill. The water then flowed through a penstock, before dropping 180 feet to the power house.

The Petty Harbour power station is one of the oldest in Canada and it is one of the few that went in service at the beginning of the 20th century and are still in operation today. A number of upgrades and renovations have been undertaken at the power plant since the original construction. In 1908 a Voight turbine manufactured in Germany was installed and a similar unit manufactured in 1911 was installed in 1912. These turbines are still in operation. A major reconstruction was undertaken in 1926. The power house was extended 30 feet and a third turbine of 2,750 H.P. was installed with a new 2,250 kVA G.E. generator of 2,300 volts.

### "The Historic Water System of St. John's"

Of all the water systems already designated by CSCE as National Historic Sites (Hamilton Pumping Station, 1859; Brooks Aqueduct, 1914; Shoal Lake Aqueduct, 1914; Harris Filtration Plant, 1926) the St. John's Water System is by far the oldest (1846). It predates the original confederation of Canada by twenty years, and is the second oldest water system in what is now Atlantic Canada. In fact, only three water systems are known to have been in existence in British North America prior to 1850.

**CREDITS** From Moses Harvey, Newfoundland at the Beginning of the 20th Century. (New York: South Pub. Co., 1902) 176. [Newfoundland and Labrador Heritage]

Originally designed by British engineers, the system was plagued with problems that challenged the engineering know-how and technology of the time. Through successive alterations, modifications, redesigns and reconfigurations at the hands of a number of British, Canadian and American civil engineers, a workable and reliable system was finally achieved in the 1930s. The names of the engineers associated with the water system reads like a *Who's Who* of notable 19th century engineers in the field. Notable members of the original Canadian Society of Civil Engineers including founding member Alan Macdougall and Newfoundland Government Engineer H.C. Burchell had a hand in making the system work.

The Water System was responsible for the creation of a system of civic numbering of property, and paved the way for the incorporation of the City of St. John's. Even today, the water system is the catalyst for state-of-the-art civil engineering megaprojects in St. John's. Windsor Lake is home to a new leading edge $35M drinking water treatment plant constructed adjacent to the original location of the 1880s water intake lagoon. ■

*The dates, times and location of the Commemoration Ceremonies will be well publicized at the Conference and all are encouraged to attend these tributes to our Civil Engineering predecessors.*