



## International Historic Civil Engineering Site Commemoration

In 1992, the American Society of Civil Engineers approved the Bridges of Niagara as an International Historic Landmark Site. The CSCE Board of Directors also approved it at that time, however the preparation and the dedication of the plaque was delayed until this year. On Saturday, June 4th, a commemoration ceremony and plaque unveiling was held for the Bridges of Niagara at Niagara Falls, New York. The plaque was attached to a boulder in Niagara Falls State Park, a few metres from the edge of the gorge, just downstream from the Rainbow Bridge. It is a very picturesque location on a pedestrian walkway in the State Park, with a view of the Rainbow Bridge on the one hand and the Niagara River and the Whirlpool Rapids Bridges on the other.

The Niagara River provided a very significant barrier between the United States and Canada. Many people coming from the United States to settle in Canada in the 18th and early 19th centuries crossed the Niagara River between Lewiston and Queenston by boat. It was not until significant trade between the two countries developed in the middle of the 19th century that it was recognized that better transportation links across the Niagara River were urgently required. The Niagara Gorge provided a civil engineering challenge. Although a golfer today could drive a golf ball across the gorge (many try), in the middle of the 19th century building a bridge of this span across a raging river below presented a daunting task.

Engineers today are taught to be innovative. From Charles Ellet's first suspension bridge in 1848 to Leffert L. Buck's Queenston-Lewiston steel arch completed in 1962, the bridges across the Niagara River demonstrate engineering innovation. Since 1848 there have been 15 bridges built across the river. Of these, six still exist. The fact that no more bridges have been built in the past 43 years, despite demonstrated need, has more to do with politics than engineering. American and Canadian civil engineers shared the honours in the design and construction of these bridges. Charles Ellet, John A. Roebling, Leffert L. Buck and Edward Lupfer were American civil engi-

neers who contributed much to advances in bridge design in their own country. Samuel Keefer and Casimir Gzowski were well known civil engineers in Canada. Casimir Gzowski was one of the founding members of the Canadian Society of Civil Engineers. Thomas Keefer, a brother of Samuel and also a well known Canadian civil engineer, became the Society's first president. The Canadian Society of Civil Engineers was the forerunner of the present Canadian Society for Civil Engineering.

As trade and travel between Canada and the United States grew, the bridge structures changed to meet the transportation needs. Of the first eight bridges, all except two were suspension bridges. None of these has survived.

Roebbling's Railway Suspension Bridge, opened in 1855, could carry railway locomotives of 25 tons but as steam locomotive weights increased, trains could no longer be carried. However, it carried rail traffic across the gorge for over 30 years, the only suspension bridge ever to do so. The other suspension bridges were designed to carry horse-drawn carriages and pedestrians only. Of the last 7 bridges, all except one are steel arches. Two of these are railway bridges but the later bridges were designed to carry vehicles and pedestrians. All of the steel arches, with the exception of the Honeymoon Bridge which was destroyed by ice in 1938,

are still standing. The oldest surviving bridge is the International Railway Bridge between Buffalo and Fort Erie. It was a wrought iron truss bridge designed by Casimir Gzowski and opened in 1873. The iron trusses were replaced by steel in 1900. This was part of the Canada Southern Railway, running from Buffalo to Detroit.

The commemoration was held in perfect weather and attended by about 40 members of the ASCE and CSCE. Carl J. Lehman, FASCE, extended a welcome to all those present and introduced the speakers. Cathy Lynn Borbely, FCSCE and immediate Past President of CSCE, gave an excellent speech presenting the history of the 11 bridges commemorated on the plaque. This was followed by a speech given by Bill Henry, FASCE, and President of ASCE. Cathy Lynn Borbely and Bill Henry jointly unveiled the plaque. Unfortunately the CSCE logo had the red and green interchanged. The CSCE logo shows the Republican Red hue of Northern New York State. If you want to see what the CSCE logo might look like in red you can visit the plaque on the American side.

It was an historic event in itself that the Civil Engineering learned societies of our two countries should join together at this great spectacle of nature to celebrate the Bridges of Niagara, examples of our joint Civil Engineering History and Heritage. ■



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