OLD BRIDGES OPERATE SUCCESSFULLY - YOUNG ONES ARE CHALLENGED HISTORICAL MATERIAL, DESIGN, FABRICATION, SERVICE

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ABSTRACT

Bridges, marvels of engineering and materials research, connect one part of the world to the next.

Crossing the St. Lawrence River at Montreal since 1858, the Victoria Bridge, with 25 spans (totaling 2 km) still carries main-line rail traffic and side roads.

Built initially of wrought-iron, as a single-track tubular structure, the Victoria Bridge was replaced in 1898 by a double-tracked steel truss on same piers upon which it was initially built. In addition to this, lift spans across the St. Lawrence Seaway were inserted in 1954 and 1961.

The Jacques Cartier (K-bay cantilever), crossing the harbor, has been carrying road traffic since 1930, with the south approach truss spans jacked-up over the Seaway, which received a complete repaving about a decade ago.

In 1958, the six-lane expressway Champlain Bridge was built with a high strength steel cantilever crossing the Seaway and 25 low northern approach spans. Carrying a very high volume (160,000) of commuter and truck traffic daily, this bridge is in dire need of replacement (projected 2018).

These three bridges are prime examples which showcase the differences of past and modern bridge manufacturing techniques. Bridge sustainability will be discussed in terms of design, material selection, fabrication, erection, and deficiencies. Special topics include the Champlain approach in bridge building, which includes spans of pre-stressed reinforced concrete. The critical engineering features and science behind the development of weather resistances over the decades are explained for engineers, with clarification for non-engineers.

Please join ASME at UCSB and get to hear from one of the most well published Professors in high strength materials, bridge design and manufacturing sustainability.

Pizza and beverages will be served

University of California, Santa Barbara Campus, Engineering 2, Room 1519
February 13th, 2014, 6:00PM – 8:00PM

Hosted by: Nicholas Parker, Professor Odette and the Department of Mechanical Engineering at UCSB

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