

**4:30 pm | Wednesday, September 25, 2013 | ARMS 1010 | Purdue University
Dennis and Leslie Drag Distinguished Lecture Series**

Steel Railway Bridges – History, Design, Fabrication and Construction

***Speaker:* John F. Unsworth, P.Eng., Chief Engineer, Canadian Pacific Railway**

Structural Engineering practice in America evolved as a consequence of the need for longer and stronger railway bridges after the civil war. The lecture will begin with a brief history of steel railway bridge construction in the US and the development of steel railway bridge design specifications in the latter part of the 19th century.

Railroad companies in North America have modern bridge design specifications that are generally based on the recommended practices outlined in the Manual for Railway Engineering (MRE) of the American Railway Engineering and Maintenance-of-way Association (AREMA). Steel railway bridge superstructures are designed in accordance with Chapter 15 of the MRE. The lecture will present information regarding some specific requirements of steel railway bridge design, with a focus on railway loads. The cyclical and dynamic nature of railway loads requires that fabrication be performed to stringent protocols. The lecture will also briefly discuss the use of fracture control plans in the fabrication of steel railway superstructures.

Railway bridge construction must be performed in an accelerated manner that will minimize interruptions to railway traffic. The lecture will outline some planned steel railway bridge construction projects that have incorporated innovative means of minimizing traffic interruptions into the construction methodology. Railway bridges are susceptible to service outages from incidents. Some examples of recent steel railway bridge failures due to highway and railway vehicle contact, fracture and flooding will be examined. These emergent situations challenge the structural engineer to apply theory in a very practical manner.