Further Reading

I love projects, don’t you?
(Luther Billis, in South Pacific by Rogers and Hammerstein)

Many books and articles delve into the history of infrastructure projects and systems, highlighting the personalities of champions and opponents, the needs addressed by the project, the technologies used, the trials and tribulations that were faced, and the ultimate achievements. This bibliography lists books and articles that I have enjoyed, and I suspect that there are many more. Reading about past projects, including failures as well as successes, will provide a valuable context for anyone involved or interested in project evaluation and infrastructure systems. We can all learn from the successes and failures of those who have gone before us. The best options are not always chosen, the long-term impacts are not always considered, and the process is not always transparent, objective, or even rational. Nevertheless, many great projects have been built, many bad proposals have been rejected, and many innovations have helped to make infrastructure systems perform better.

Books about Infrastructure Projects and Programs

Al Naib, S.K., London Docklands Past, present and future: An illustrated guide to history, heritage and regeneration. Research Books, Romford, Esses RM6 5BY, Great Britain. (The docklands were originally constructed as port facilities in London for Great Britain’s extensive international trade. As ships became larger, different types of facilities were required, and the docklands slid into decay. In the 1980s, a massive urban renewal effort converted the docklands into a variety of commercial and residential uses. The book combines concise history with many interesting photographs and maps.)


Clausen, Meredith L. The Pan Am Building and the Shattering of the Modernist Dream. MIT Press, Cambridge, MA, 2005. (The story of the issues and controversy surrounding the first of many post-WW II skyscrapers in Manhattan. “A conspicuous landmark and a testament to what many in New York felt should never have been built and should never be allowed to happen again ... a social utopia based on the use of new industrial materials and new modes of production to generate new, efficient, clean-lined forms [was] displaced by the imperatives of a capitalist economy, and instead of the decent housing for growing urban populations modernists promised, flagship buildings for corporations were build.” pp. 386-87)

Conuel, Thomas. Quabbin – The Accidental Wilderness. The University of Massachusetts Press, Amherst, revised edition, 1990. (The story of the creation of Quabbin Reservoir, which required the flooding of four towns in western Massachusetts in order to provide water for populations in the eastern part of the state.)


Fredich, A.S. Sons of Martha - Civil Engineering Readings in Modern Literature. ASCE, 1989. (Pure fun!)
Gordon, John Steele, *A Thread Across the Ocean: the Heroic Story of the Transatlantic Cable*. Walker & Company, NY, NY, 2002. (Laying a cable across the Atlantic reduced the speed of news from weeks or months to seconds; after several failed attempts, the project was completed using the Great Eastern, the huge steam/sailing ship designed by I.K. Brunel.)


McDonald, Frank and Kathy Sheridan. *The Builders: How a Small Group of Property Developers Fueled the Building Boom and Transformed Ireland*. Penguin Ireland, Dublin, 2008. (A portrait of the types of individuals whose decisions fueled the real estate bubble that burst in Ireland and around the world in 2007.)

Newhouse, Elizabeth L. Editor. *The Builders: Marvels of Engineering*, National Geographic Society, Washington, DC, 1992. (Great pictures and good overviews of major projects in all areas of civil engineering; a relatively inexpensive reference that captures the excitement of big projects, although it has little detail concerning project evaluation.)


Oppitz, Leslie. *Lost Railways of East Anglia.*  Countryside Books, Newbury, Berkshire, UK, 2004. (Brief but detailed history of introduction first of the horse-drawn and later the electric tramway into the cities and towns of this region that is northeast of London. Many of the issues dealt with at that time remain central issues for modern transit operations.)


Pierce, Patricia.  *Old London Bridge: the Story of the Longest Inhabited Bridge in Europe.*  Headline Book Publishing, London, UK, 2001. (The 750-year history of a bridge that at one time was the retail center of London and the site of many trendy homes.)

Pole, Graeme.  *The Spiral Tunnels and the Big Hill: A Canadian Railway Adventure.*  Altitude Publishing Canada Ltd., Vancouver, Canada, 1995. (The construction of the spiral tunnels that, when completed in 1909, reduced the ruling grade on Canadian Pacific’s transcontinental line through the Rocky Mountains, enabling longer trains, faster speeds, and less expensive operations.)


Ridgeway, James.  *Powering Civilization: the Complete Energy Reader.*  Pantheon Books, NY, NY, 1982. (Ridgeway compiles readings about the various forms of energy, tracing the extraction, transportation, and use of coal, oil, natural gas, nuclear power, and alternative energy sources. The readings provide compelling insights into the powerful forces that have affected the exploitation of energy sources.)

Rose, Mark H.  *Interstate – Express Highway Politics, 1941-1956.*  The Regents Press of Kansas, Lawrence, KA, 1979. (The politics that influenced the design, location and financing of the Interstate Highway System.)


Schodek, Daniel L.  *Landmarks in American Civil Engineering.*  MIT Press, 1987 (Short articles on more than 100 projects that were selected by the ASCE as notable achievements.)

spectacular feat that opened southern Florida to development and transformed Miami from a tiny port into a major resort destination.)


Tsipis, Yanni K. *Images of America: Building the Mass Pike*. Arcadia Publishing, Charleston, SC, 2002. (One of the popular “Images of America” series, this is an annotated collection of photographs concerning the construction of the Mass Pike and its controversial extension into Boston; the author is a graduate of MIT and was both a student in and teaching assistant for Project Evaluation, the class that eventually led to this book.)


Wood, F.J. *The Turnpikes of New England*. Branch Line Press, Pepperell, MA, 1997. (Reissue of the 1919 classic, which provides a short description of every one of the 19th century turnpikes that were authorized by the states, constructed by chartered companies, and financed by tolls.)


**Articles about Projects:**


Ball, Steven C. “Unconventional Expansion.” *Civil Engineering*, (April 2008). (The design, construction, and notable environmental features in the largest building to achieve LEED certification; also an example of delivering a project on time and on budget using a design/build team.)

Boettner, Danita S., Don Koci, Darren L. Brown, and Bruce Allman. “Clean, Blend and Reuse.” *Civil Engineering*, (July 2009): 59-65, 86. (A $35 million remediation project aimed at cleaning up contaminated groundwater and to provide potable water to Hutchinson, KA.)


Curtis, Wayne, “Going with the Flow: Historic dams are being demolished or vastly altered to allow fish to return to their historic spawning grounds. Is there another way?” Preservation, (July/August 2003): 29-33. (Fish ladders are good for the fish, but look awful next to historic dams and mills.)


Dornhelm, Rachel. “Beach Master: Coney Island has been world famous for 150 years, but who remembers that its beach is the revolutionary achievement of one embattled engineer?” Invention & Technology, (Summer 2004): 43-48.

Drapeau, Raoul. “Pipe Dream: with creative engineering and heroic endurance, freezing, beleaguered workers pushed the Canol Pipeline through the brutal Arctic wilderness during World War II. But it was a project that should never have been started.” Invention & Technology, (Winter 2002): 25-35.


Griggs, Francis E. Jr., "Thomas W.H. Mosely and His Bridges." Civil Engineering Practice, 12 (2), (1997): 19-38. (One of the first to use iron for bridges, Mosely developed standard designs and worked with a prefab company to market railway and highway bridges at an advertised price per foot during the 19th century).

Griggs, Francis E. Jr. "The Panama Canal: Uniting the World for Seventy-Six Years", Civil Engineering Practice, 5 (2), Fall/Winter 1990, pp. 71-90. (A 20 page synopsis of the “Path Between the Seas” that focuses on the trials and tribulations of building the canal.)

Grimm, Mike. "Floodplain Management." Civil Engineering, (March 1998): 62-66. (This is a good, short example of a post audit. Because Fort Collins was a leader in the systems approach to flood control, they escaped their 500-year flood with little property loss and only 5 deaths versus what likely would have been $5 million damage with nearly 100 fatalities if they had not implemented their flood control projects. See Section 13.3.6.)

Grunwald, Michael. “Everglades: The nation’s storied wetland is the focus of the world’s largest environmental restoration project. But will that be enough?” Smithsonian, (March 2006): 46-57.


Heppenheimer, T.A. “Nuclear Power: Engineers Finally Made it Safe, but They Couldn’t Make it Cheap.” Invention & Technology, (Fall 2002): 46-56.

Holly, H. Hobart. "The Middlesex Canal." Civil Engineering Practice, 7 (2), (1992): 104-106. ("It was the Middlesex Canal that proved, through low freight rates and expanded traffic, that canal transportation in the US was practical and economical.")


Johnson, Christopher. “The Law that Saved the Appalachians.” Appalachia, (June 2005): 88-97. (The history of the Weeks Act, which led to the creation of the national forest system.)


Koeppel, Gerard. “A Struggle for Water.” Invention & Technology, (Winter 1994): 19-30. (The 70-year effort required to complete New York City’s first major water system, which was authorized in 1774.).


Mueller-Lust, Andrew. “Crystal Clear.” Civil Engineering, (December 2008): 38-71. (The design, construction, and notable environmental features of the Bank of America Tower at One Bryant Part, one of the first skyscrapers to achieve LEED platinum certification.)

Morrall, J.F. and T.M. McGuire. “Sustainable Highway Development in a National Park.” Transportation Research Record 1702, (2000): 3-10. (Examples of sustainable highway development in Canada’s Rocky Mountain National Parks, including fencing that directs animals to crossings constructed at intervals over the highway.)

O’Neill, Tom. “Curse of the Black Gold: Hope and Betrayal in the Niger Delta.” National Geographic, (February 2007): 88 to 117. (Profits from oil production in Nigeria have not reached the people living near the oil fields; extreme poverty, destruction of fishing grounds, pollution, and general disillusionment have fueled insurgents willing to use violence and disruption of the oil flows if their call for local control of resources isn’t met.)

Pennington, Robert A., Kristies A. Gersley, Anthonyh Gagliostro, Daniel T. Eagan, Alvin L. Zach, and John T. George. “Saving a City’s Sewers.” Civil Engineering, (December 2008): 61-68. (Description of a 20-year effort to inspect and rehabilitate Newark’s 68 miles of brick sewers that were originally constructed in the 19th century.)

Peters, Tom. "How Creative Engineers Think." Civil Engineering, (March 1998): 48-51. (Peters uses historical examples including Brunel's bridges, the Crystal Palace, the Palm House at Kew Gardens, and the Thames tunnel to illustrate what he calls "technological thinking", a combination of the linear, objective scientific method and the subjective matrix method. In every case, the project required new thinking and new technology to succeed.)

management, and technical innovation rescued this project from substantial delay and cost overruns following a major setback during construction.)

Reich, Leonard S. “The Dawn of the Truck: it caught on much more slowly than the automobile, partly because of the expense, partly because horses did a good job, and partly because people had to figure out just what it was and could do.” Invention & Technology, (Fall 2000): 18-24.

Reid, Robert L. “Under One Green Roof.” Civil Engineering, (March 2009). (The new California Academy of Sciences building in San Francisco houses a museum, an aquarium, a planetarium and scientific research operations in a vast structure designed for sustainability. Most notable perhaps is its 2.5 acre undulating roof, which is covered with vegetation and its stunning use of windows and interior open space.)


Schipper, Lee. “Sustainable Urban Transport in the 21st Century.” Transportation Research Record 1792, (2002): 12-19. (Schipper confronts the issues related to the long-term problems with the automobile and what must be done to achieve sustainable transportation for the future, especially in very large urban areas in developing countries. This paper provides a clear perspective on what might be called “hard sustainability”, i.e. the basic environmental problems related to global warming, air quality, and dependence upon fossil fuel.)


Shumay, Laurence W. “Making the Most of Transportation Infrastructure: MBTA’s South Station Intermodal Transportation Center.” Civil Engineering Practice, 16 (1), (2001): 67-74.


Vic, Thomas E. and Mark Surwillo. “Small Footprint, Big Promise.” Civil Engineering, (February 2008): 66-85. (The use of new technologies to reduce the space needed for a more effective sewerage treatment plant. See Example 15.8)

World Bank. “Integrated Coastal Zone Management Strategy for Ghana.” World Bank Findings 113, June 1998. (This example of the many studies carried out by the World Bank shows how a qualitative process led to the identification and prioritization of environmental concerns and recommendations for management strategies to deal with these concerns.)

Zoellner, Tom. “Oil and Water: the adventures of getting one from deep beneath the other.” Invention & Technology, (Fall 2000): 44-52.