



John Reilly - PE, CPEng, BE, MS

Education

M.S. Structural,
University of California,
Berkeley 1964

B.E. Hons. Civil,
Sydney University 1963

Professional Registrations

Massachusetts (PE),
Australia (CPEng.),
BC Canada (PEng)
(inactive)

Professional

President, American
Underground
Construction Association
1999- 2001,
2020 Lifetime
Achievement Award

Chair, ITA Working Group
13, "Direct and Indirect
Advantages of
Underground Facilities"

Chair, Working Group 20,
"Urban Problems,
Underground Solutions".

Chair, North American
Tunneling Conference,
Boston, June 2000

Chair, "Management,
Policy and Contracting for
underground
construction" UCA/ITA
Conference. April 1996,
Washington DC

Chair, "Policy and Finance"
for Underground
construction, North
American Tunneling
Conferences Denver 1994
and Boston 1992

Member, American Society
of Civil Engineers (ASCE)

Member, International
Tunneling Association

Member, Australasian
Tunnelling Association

Member, British Tunnelling
Society (BTS)

Member, Institution of
Engineers Australia

Management, strategy, organization, CEVP® cost and risk processes, contracting & delivery, partnering/team-alignment and leadership of expert panels for complex infrastructure and megaprojects. www.JohnReilly.us John@JohnReilly.us

Professional Experience

John Reilly has 57 years' experience in management, strategy, organization, technical reviews, management oversight, expert and strategic advisory panels, team alignment, partnering, advanced contacting & delivery methods, risk management, and probabilistic cost/schedule (CEVP®) analysis for large, complex infrastructure projects including metros and light rail systems, underground structures, tunnels, highways, bridges and airports.

High-level Expert Panels / Strategic Advisory Teams:

John has worked on the initiation of, input to, participation in, and management of Expert Review Panels and Strategic/Technical Advisory Teams, advising owners on management, strategies and technical areas associated with the delivery of complex infrastructure programs.

Washington State: Executive review and report to the Secretary of Transportation, internal decisions which led to problems on the SR520 Floating Bridge Program, 2013; Chair, SR520 Expert Review Panel, recommendations to fix pontoon construction, 2012-2013; Chair, Strategic Technical Advisory Team SR99 Alaskan Way Project 2010-2013; SR520 Expert Review Panel, Tunnel alternatives, Westside/Montlake Cut, 2008.

Major/Mega Projects (partial list)

Washington DC Metro: project engineer for Sections A4, D1, D2 & D4 including rock & earth tunnels, cut and cover tunnels and stations. Secretary, Board of Experts 1969-72.

Boston—MBTA, Southwest Corridor Transit program: Program Director for program management, final design, and construction management assistance to MBTA for Boston's \$1 billion (1980) Southwest Corridor transit, high-speed and commuter rail, highway and urban design project. Delivered under budget and close to schedule. Winner of the President's Design Award and ASCE Outstanding Civil Engineering Achievement of 1987 (1978–1987).

Los Angeles Metro—Heavy and Light Rail projects: Report and recommendations for contracting and delivery methods, LACMTA Westside Extension Program, 2012.

Readiness review LACMTA Crenshaw/LAX light Rail Program, 2011.

Project management oversight and technical assistance for tunnels, underground stations, at-grade sections and bridges as part of PMO oversight for cost-to-complete, design reviews, technical reports, agency and consultant costs, risk workshops, 1991–1997.

Washington State DOT (WSDOT), 2001- 2013. Assistance to the WSDOT Executive and Project Directors for necessary changes, related to agency policies and procedures for design-build contracting of multiple mega-projects in the Seattle area, including the Alaskan Way Viaduct Replacement Tunnel (57' dia.) and the SR520 Floating Bridge (longest in the world).

London Underground: Partnering for the signal replacement program and manufacture of new transit vehicles—design-build structure within an alliance contract, 2003.

Toronto—Rapid Transit Expansion Program: Management, organization, contracting & delivery and implementation of full team alignment for the integrated TTC/consultant team on the CN\$3 billion Rapid Transit Expansion Program plus assistance with value engineering, configuration management, design, and construction interfacing (1994–1996).

Lima Peru. New Airport Terminal + Runway, 2017 –2019: Risk management and CEVP® cost-risk implementation services for a new terminal and runway, advanced risk identification, response, mitigation and implementation. Owner/Design Team Alignment, recommendations for contracting, procurement and delivery.



CEVP® Probabilistic Risk-Based Cost Estimating

Papers and presentations by from 1998 to the present, in the United States and 12 other countries, have focused on over-budget cost concerns, need to control costs, to understand "cost-drivers" and to make better use of risk mitigation and improved management practices.

In 2002, the Secretary of the Washington State Department of Transportation asked John and a colleague to develop a better cost estimating process. With WSDOT they created the Cost Estimate Validation Process (CEVP®), an approach to cost estimating which combines base cost + defined risk and opportunity events to estimate a "range of probable cost and schedule". The defined risks are then included in explicit risk management plans.

CEVP® has been implemented as a normal business process by WSDOT. It and risk based cost estimating is being used by FHWA and other US and Canadian transportation and infrastructure agencies. It is now international in scope. John was referred to as the "Father of CEVP" (by the WSDOT Commission) and the former WSDOT Secretary noted that "CEVP might just end up to be one of the greatest achievements of the entire (Alaskan Way) project." (MacDonald email to the Seattle Times, April 2 2017).

The CEVP® process has been applied in the US, Canada, Europe and S. America for infrastructure projects including highways, bridges, tunnels, Metro systems, high-speed rail and airports. A similar process is being used for projects of the Federal Transit Administration and the Federal Highway Administration is now developing a training module for States.

Since 2002 John has worked on the advancement of the process with WSDOT and other agencies, in cooperation with international consultants who have developed more sophisticated systems to integrate cost and schedule and provide cost and risk support (see <https://www.riaatsoftware.com/>). He has written policies and guidelines for programmatic CEVP® application, risk management and risk response – see Publications section.

These processes are a direct outcome of a critical need to ensure that we carefully and responsibly define, understand and manage cost and risk for complex, urban, infrastructure transportation projects. For details of these processes, articles and presentations see John's website www.JohnReilly.us or go to WSDOT's Cost-Risk website at <https://wsdot.wa.gov/construction-planning/project-management/risk-assessment/home>

CEVP Workshops

John has managed, organized, reported and evaluated CEVP® cost-risk workshops including:

- Alaskan Way SR99 project Seattle multiple workshops 2002-2010
- SR520 Floating Bridge Seattle multiple workshops 2002-2012
- I-405 improvement project, 2002-2008
- Seattle Monorail (proposed plan), 2002
- Hood Canal restoration/rehabilitation, 2003
- Pittsburgh Light Rail 2003
- High Speed Maglev project 2003
- RTID Projects, including simplified Cost-Risk-Assessment, 2005
- Alaskan Railroad Fairbanks extension, 2005
- UTAH highway projects 2006
- Lima Peru, Airport Expansion, 2017-2019

Currently John is participating in the Cost Risk Estimating Management (CREM) group which advances probabilistic cost-risk estimating in the US and Canada, managed out of WSDOT. He recently presented and led a discussion on "Politics in Budgeting and Risk Management" for the group and will address the CEVP process in April 2021.



Risk and Risk Workshops – management, facilitation and reports

John has worked on risk identification and response for over 25 years – Major risk workshops and applications include:

- Los Angeles Metro Green Line risk re readiness for operations, (1994);
- Sir Adam Beck Niagara hydro tunnel (1998);
- Brightwater program, King County WA risk process and workshops (2003);
- Pittsburgh PA, Light Rail tunnels, cost-risk workshop (2003);
- Pennsylvania Maglev program, cost-risk workshop (2003);
- Dallas Airport people mover operational risk/readiness workshop (2004);
- Alaska Railroad extension risk workshop followed by cost-risk workshop (2005);
- Alaska Railroad Fairbanks alignment risk workshop(2005);
- Utah DOT, risk / CEVP® workshop, Salt Lake City (2006);
- Omaha CSO program risk workshop (2007);
- Lake Mead Water Intake #3 tunnel and shaft - risk oversight and guidance, risk compliance reports and facilitation of risk workshops (2008-2015);
- Development of a process to assess the very low probability of collapse, after dewatering, of the 1940 Delaware Tunnel, a major water supply to New York city (2015-16).

Risk Publications (partial list):

- “Chapter 4, Risk Management” in “Recommended Contract Practices for Underground Construction” SME Denver (2008).
- “Management and Control of Cost and Risk for Tunneling and Infrastructure Projects” Proc. World Tunneling Conference Singapore (2004).
- “Policy, Innovation, Management and Risk Mitigation for Complex, Urban Underground Infrastructure Projects” ASCE New York (1999).
- Foreword and co-author of the Chapters on Risk, Cost and Schedule management in “Managing Gigaprojects”, ASCE press (2013).

Contracting & Delivery Methods for Infrastructure Programs

Overview—Design-bid-build is the traditional procurement method for underground construction in the U.S. and has remained virtually unchanged for 50 years. It is a basic approach, suitable where there is clarity of deliverable and low probability of major risk and changed conditions. Design-build is gaining momentum and there is significant data regarding its advantages. Other promising methods such as General Contractor-Construction Manager (aka GCCM or Contractor at risk), incentive options (A+B bidding) and, more recently, Alliancing (Australia, UK) and Early Contractor Involvement (UK).

John has authored several reports on contracting and delivery processes, including design-build, GCCM and Alliancing for Agencies including the Washington State Department of Transportation and the Los Angeles Metropolitan Transit Authority. He has presented papers on this topic at US and International conferences from 2007 thru the present.

Project Examples, Contracting & Delivery - USA

Los Angeles Metro, Purple Line Extension, Contracting & Delivery Report, 2012. John reported on contracting and delivery options for the Los Angeles Metro, Purple Line Extension in his report, “LACMTA Westside Subway Extension Project Review of Contracting and Delivery Methods” August 6th, 2012. The report included descriptions of viable contracting and delivery methods including: pros and cons; recommended decision methodology; precedents; goals and objectives; plus a summary of the contracting practices of US and Canadian agencies. The work was coordinated with FTA and the FTA PMOC and included workshops on contracting and delivery selection.



Washington State DOT, Contracting & Delivery, 2001-2009. John worked with the WSDOT Executive and Project Directors to assist with necessary changes, related to agency policies and procedures, for design-build contracting for multiple mega-projects. Design-build was a relatively new process for the Agency so its application required a clear understanding of key policies, processes, benefits and issues. See also papers on contracting and delivery.

Contracting & Delivery Report, Washington State Legislature, 2008. John authored a report on contracting and delivery processes, including design-build, GCCM, CM@Risk and Alliancing, for the Washington State Department of Transportation's report to the WA Legislature.

This report presented a summary of current, and emerging, innovative project delivery methods which the Washington State Department of Transportation (WSDOT) should consider in order to more effectively deliver WSDOT transportation projects. The report outlined promising "new and innovative delivery methods" that had been evaluated and implemented in the U.S. and internationally and compared them to traditional WSDOT procurement methods. Some of these new methods held promise to add value for the public through more innovative and collaborative management which has been reported to reduce overall cost and schedule, reduce cost and schedule growth during construction, and reduce disputes, claims and litigation. The report also discussed industry concerns related to current procedures for the delivery of large, complex, transportation projects.

Project Examples, Contracting & Delivery - International

Jumeirah Gardens, New City, Dubai 2008 — John provided recommendations and guidance regarding delivery options for the design and construction of a \$95 billion new city in Dubai. Within 5 months he provided contracting and delivery recommendations to the program executive and implemented the initial program team alignment / chartering process in an international multi-cultural environment.

London Underground, UK, New Signals & Transit Vehicles, 2003-2004 — John provided team partnering implementation for the replacement of the signal system on the lines below, working with a design-build contracting method under an allied PPP prime program manager. The companies comprising the Team were London Underground, Metronet (now absorbed by London Underground) with contractors Bombardier (UK) Ltd. and Westinghouse Rail Signals Ltd. The London Underground lines to be upgraded were:

- BCV - Bakerloo, Central, Victoria and Waterloo & City (all deep Tube lines)
- SSL - Metropolitan, District, Circle, Hammersmith & City and East London routes.

Rapid Transit Expansion Program, Toronto Canada, 1994-1996 — John advised the Agency (TTC) and program manager on organization, internal alignment, value engineering, configuration management and contracting/delivery options for the fully integrated TTC/consultant team of the \$3 billion RTEP. He also managed work-out sessions for TTC Engineering and Construction's new organizational approach, based on the experience of the fully integrated RTEP program.

Mississauga Bus Rapid Transit Project, Ontario, Canada 2008 — John authored a report, with analysis and recommendations for contracting and delivery of the Mississauga Bus Rapid Transit Project. The report provided a framework to select the most appropriate contracting and delivery method for the given consideration of the following key factors:

- Experience of the City with the alternative project delivery methodologies;
- Specific characteristics of the project;
- Schedule for implementation; and
- Experience of agencies in undertaking recent / similar major transportation projects.



Tunnelling, International

John was US representative and Chair of the International Tunneling Association (ITA) Working Group (WG) “Direct and indirect benefits of underground projects”. Subsequently he initiated a new WG 20 “Urban Problems, Underground Solutions”.

In 2000, John sponsored a world-wide review of underground projects, in order to better understand what makes one project successful while another can have major problems. This led to management and strategic recommendations which have benefited key clients and are documented in many papers and presentations

Types of tunnels in John’s projects

Tunnel Boring Machines (TBMs) including open digger shields, slurry shields, earth-pressure balanced machines, convertible machines (mix-shields), hard rock machines; Cut-and-cover line and station structures for transit systems; Soft earth tunnels using steel or concrete liners; Single and double track rock tunnels using NATM or ribs and concrete; Mined rock station construction using rock-bolts, shotcrete and steel sets; Large scale jacked-pipe, medium diameter, tunnel systems; Underpinning construction including slurry wall earth retaining and underpinning systems.

Representative underground / tunnel Projects

Washington DC Metro, tunnel sections D1, D4 and A4 including Dupont Circle mined station; LA Metro, Segments 2 and 3, LA Metro contracting and delivery alternatives, Westside Extension Project; Toronto Rapid Transit Expansion Program, Sheppard tunnels; Sir Adam Beck Hydro project Niagara Falls initial risk management workshop.

Tunnelling, High-level Report, China, Tunnel Boring Machines (TBMs):

In 2001 John, with colleagues from Geodata Torino, co-authored a paper “High Level Report, TBM Development for China, Joint Cooperation – Technology Development, Chinese Tunnel & Hydro Projects” which covered implementation of TBM technologies for the planned 3,500 km of long-drive water and transportation tunnels. In 2002, with Chinese colleagues, he organized and facilitated an international workshop on joint cooperation for the development of TBMs.

Publications

John has authored over 100 papers / presentations covering planning, management, oversight, partnering, team alignment, contracting and delivery, bridge design, risk management, probabilistic cost and risk and life-cycle costs, presented in over 20 countries. Selected papers re program management, CEVP®, risk, contracting/delivery methods and CEVP® include:

- Reilly, J.J. 2020 “TBM Procurement, Risk and Technology Advancement” TunnelTalk November 5.
- Reilly, J.J. 2019, “Megaprojects, 50 years, What Have We Learned”, address to the Connecticut Road Builders Association, October.
- Spiegl M, Sander P, Reilly J. & Whyte D., 2019 “Alternative Risk Based Project Delivery”, ITA Conference Naples May.
- Spiegl M, Sander P, Reilly J, 2019 “Alternative Project Management, Fixed-fee/Incentive Based Contracting” Felsbau Austria, February.
- Reilly, J.J. 2018, “Update, A History of Risk Management”, Risk Management Conference, Los Angeles CA November.
- Reilly, J.J., Essex, R. & Hatem, D., 2018 “Alternative Delivery Drives Alternative Risk Allocation Methods”, North American Tunnel Conference, Washington DC, June
- Reilly, J., “Megaprojects and Risk”, 2018 BSCE Lawler Memorial Lecture, Boston, May
- Reilly, J.J. 2017, “A Short History of Risk Management”, Risk Conference, Alexandria VA November.
- Reilly, J.J., Salvucci, F. & Hatem, D., 2017 “Boston’s Central Artery / Tunnel Project – Lessons Learned” Proc. RETC June.



- Sander, P., Entacher, M., Reilly, J., & Brady, J., 2017 “Risk-based Integrated Cost and Schedule Analysis for Infrastructure Projects”, TBM Business Magazine April.
- Reilly, J.J. , Moergli, A, & Sander, P. 2015 “Risk-Based, Probabilistic Cost Estimating Methods” International Tunneling Association, World Tunnel Congress, Dubrovnik May
- Reilly, J.J. 2014 “Megaprojects Management and Delivery”, Paper and presentation to the Italian Tunneling Society conference, Bologna, October.
- Reilly, J.J. 2013c "Alternative Contracting and Procurement for Megaprojects", UCA/Tunneling Journal Cutting Edge Megaprojects Conference, Seattle, November.
- Reilly, J.J., 2013 Author of the Foreword and co-author of Chapters on Risk and Cost + Schedule management in “Managing Gigaprojects”, ASCE press, Ed Galloway, Nielsen and Dignum.
- Reilly, J. J. 2012 “Review of Contracting & Delivery Methods” LACMTA Westside Extension.
- Reilly, J.J., Laird, L., Sangrey, D. & Gabel, M. 2011a "Use of Probabilistic Cost Estimating CEVP® in the Management of Complex Projects to Defined Budgets" Proc. ITA Conference, Helsinki, May.
- Reilly, J.J. 2011c “Alternative Contracting and Delivery Methods,” TunnelTalk September.
- Reilly, J.J., Sangrey, D. and Warhoe, S. 2010a “Management of Cost and Risk to meet Budget and Schedule,” International Tunneling Association, World Tunneling Conference, Vancouver, May.
- Reilly, J.J. 2010c, “Cost and Schedule Control,” Chapter 5 “Megaprojects: Challenges and Recommended Practices” Spring.
- Reilly, J.J. 2009b, ‘Alternative Contracting and Delivery methods – Update’, Proc. International Tunneling Association, World Tunnel Conference, Budapest May
- Reilly, J.J. and Smith, R., 2008c, “Alternative Contracting and Innovative Project Management” Report to the Washington State Legislature, WSDOT, July.
- Reilly, J.J 2008d, "Alternative Contracting Methods – Part II", Proc. North American Tunneling Conference 08, San Francisco, June
- Reilly, J.J. 2008e, “Chapter 4, Risk Management” in “Recommended Contract Practices for Underground Construction,” Society for Mining, Metallurgy, and Exploration, Inc. Denver.
- Reilly, J.J. 2004c w. McBride, M, Sangrey, D, MacDonald, D and Brown, J. “The development OF CEVP® WSDOT’s Cost-Risk Estimating Process” Proc. Boston Society of Civil Engineers, Fall/Winter

More Information is available on John’s website www.JohnReilly.us

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Management Engineering for Complex Infrastructure Projects

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Management
- Alliance
Contracting
- Underground
Construction
- Partnering
Team Building
- Management
Systems
- Contractual
Systems
- Risk
Reduction
- Disputes
Resolution
- Expert
Panels


HOME

For over 50 years, John Reilly has worked on the design and construction of a multitude of projects including large, complex infrastructure programs, highways, transit systems, airports, cities, vehicle manufacturing, buildings and underground facilities.

Services include design and design criteria, design reviews, organizational planning, contracting methods, partnering, team-building and team-alignment, disputes resolution boards, expert and peer review panels, strategic advisory panels, risk workshops, risk identification and risk response and probabilistic cost estimating (WSDOT CEVP® process).

John was President of the American Underground Construction Association (1999-2001) and Chair of two International Tunneling Association Working Groups – No. 20 “Urban Problems – Underground Solutions” and No. 13 “Direct and Indirect Benefits of Underground Structures.” He is a Charter Member of the Disputes Resolution Board Foundation.

John was awarded a [2020 Lifetime Achievement Award](#) from the Underground Construction Association “for outstanding achievements in the underground design and construction industry... with significant contributions to the education, planning, design and construction of ...facilities... including advances in new methods and materials and advancing the public understanding and concurrence with the beneficial uses of underground space.”



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