



Globalization and the Procurement of Engineering Services



The Dilemma

- **Engineering principles are universal.** In other words: water flows downhill everywhere.
- Furthermore **there are good engineers, techs, geoscientists and architects in countries around the world.** In other words many teams can design excellent water treatment and distribution systems.

The Dilemma

On the other hand **engineering principles cannot always be applied the same way everywhere:**

- How is the water to be sourced (wells, surface, recycled)?
- How is the water to be treated (simple, complicated)?
- how deep do you bury the water pipes (frost, bedrock, vandalism, cost of construction)?
- What material should be used for the pipes (costs, durability, availability, hygiene)?

The Dilemma

- Consider the degree of death and devastation from the earthquake in Japan in comparison to that in Haiti. **The earthquake in Japan was hundreds of times more powerful.**
- The Japanese had designed and built their facilities according to seismic codes.
- **Appropriate application of engineering principles saved lives.**



The Challenge

- Legitimate differences in the application of engineering principles are not trade barriers.
- Forbidding consideration of differences in the pursuit of free trade can compromise public health and safety.



The Danger

- Furthermore these actions could jeopardize the very goals of economic efficiency, sustainability and innovation which lead to the free trade negotiations in the first place.



The Ultimate Result

- Eliminating legitimate differences **removes the key means of distinguishing** among engineering consultants (that is: their qualifications).
- In its most extreme form this levelling approach treats the qualifications of all engineering consultants as equivalent (horror stories).



The Ultimate Result

- The ultimate result of this policy is that **consulting engineering services are treated as a commodity** with the procurement selection based on **price**.



The Perils of Price-Based Selection

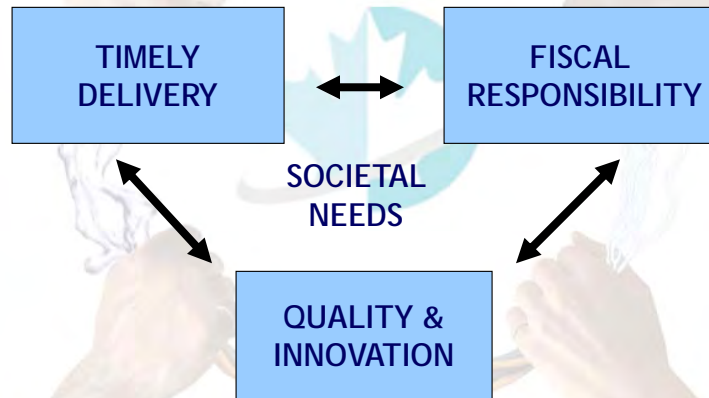
- Rewards firms for using fewer resources on behalf of the client (e.g. less qualified and less experienced staff).
- Penalizes firms with greater appreciation of the client's needs.
- Penalizes firms that accurately anticipate complications or that propose innovation.
- Increased cost to client (more staff time and resources).



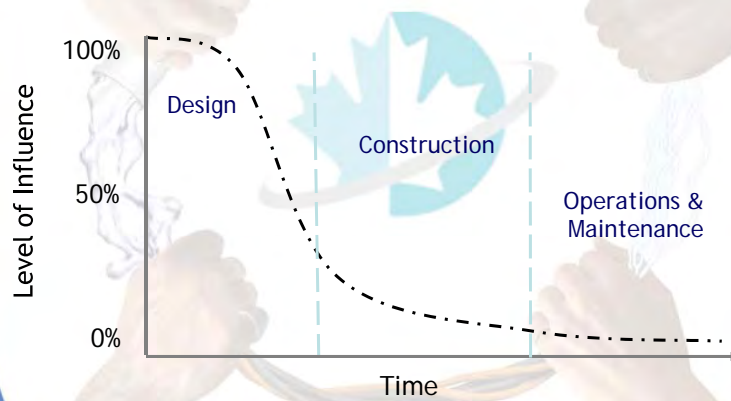
There is a Better Way

- Due to widespread dissatisfaction with the results of Price-Included-Procurement Practices (PIPS) many governments and institutions are investigating alternatives.
- First consider the role of engineering consultants.

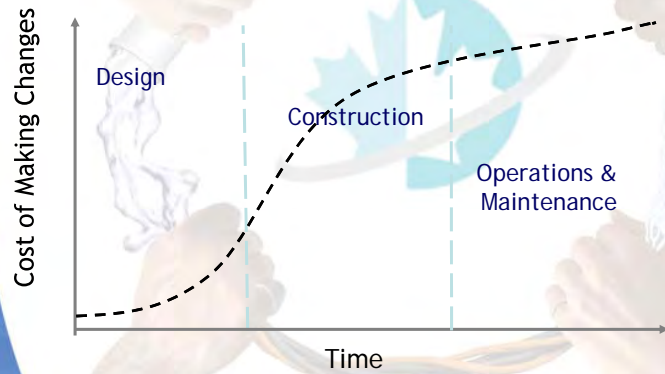
The Challenge of Delivering Projects



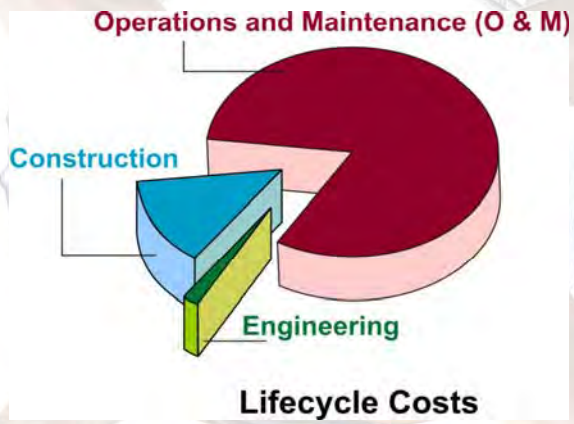
Opportunities To Improve Outcome



Opportunities To Improve Outcome



Engineering: A Good Investment



Procurement Is The Key

- Establishing common objectives and agreeing on desired outcome
- Understanding cost-benefit-risk relationships
- Clarifying roles and responsibilities (trusted advisor)
- Selecting the right team for the job (qualifications)
- Determining needed resources (fees and schedule)

Selecting a Professional Consultant

- An *InfraGuide* “Best Practice” (June 2006)
- **Developed by the public sector – for the public sector**
- Supported by extensive interviews and research
- “The recommended consultant selection process is a competitive qualifications-based process”





How Does The Best Practice Work?

- Professionals compete based on qualifications and on understanding of client needs
- The client ranks the proposals based on providing the best service and achieving project objectives
- A detailed scope, including deliverables, that achieves the client's objectives is established with preferred proponent
- Appropriate fees and schedule that achieve the client objectives are negotiated



Best Practice Is Good Policy

- Competitive and transparent process focusing on merit, quality and long-term value.
- Long-term savings realized over decades.
- Encourages in-house expertise to represent the client's (and taxpayer's) interests.
- Permits innovation and sustainable infrastructure.
- Allows for creative risk management.



QBS Works (APWA Study 2009)

- Georgia Institute of Technology and University of Colorado reviewed over 200 projects across United States.
- 93% of clients expressed high or very high satisfaction with consultants selected using QBS.
- QBS reduced construction cost growth by 70 %.
- QBS reduced construction schedule growth by 20%.
- QBS provided better ability to address societal issues or stakeholder concerns.



Questions?



Association of Consulting Engineering Companies - Canada

- Represents close to 500 consulting engineering companies employing over 100,000 Canadians
- Advocates sustainable infrastructure investment
- Members offer professional engineering services world wide to private sector and government clients
- Part of the International Federation of Consulting Engineers (FIDIC)



“The path to destruction is paved with
good
intentions.”

- Engineering proverb



The Horror Stories

- “Made in Canada”. Provincial Ministry responsible for Forestry.
- Proposal call for roadwork. Several sites, dispersed locations.
- Eight firms responded with proposals (scope of work, teams, schedules, estimates).
- Most reputable firms estimated fees: \$60k to \$80k.



The Horror Stories

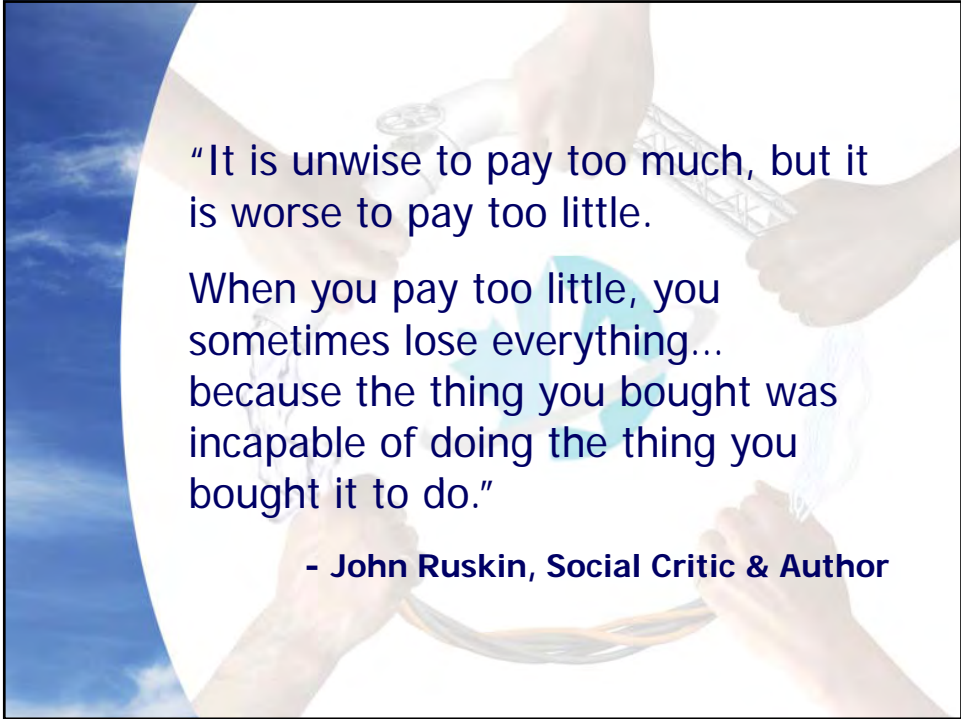
- Work awarded to firm for \$5k – the lowest price
- Winning firm has gone out of business.
- Ministry unable to rectify problems , cannot access liability insurance.
- Average proposal cost estimated at \$3k so industry spent \$24k for competition.
- Profit margins in industry are 10% so winner was offering 1/10th the effort of peers.

The Horror Stories

- Round 2: same Ministry
- Bridge work. Consultant was hired to do only design, based upon site plan provided by Ministry. Cost:\$5k.
- Contractor built bridge without onsite observation by the designer.
- The site plan was incomplete, the contractor laid out the bridge incorrectly.
- Fixes cost \$100k. Full engineering services would have cost \$15k.

The Horror Stories

- Round 3: same Ministry
- Following its usual procurement practices the Ministry awarded a contract for a series of terrain stability and soil erosion reports to a sole proprietor.
- The final work was so poor that the Professional Association of that Province investigated the work and found it “generally not in accordance with contract requirements” and issued a Stipulated Order.



“It is unwise to pay too much, but it is worse to pay too little.

When you pay too little, you sometimes lose everything... because the thing you bought was incapable of doing the thing you bought it to do.”

- John Ruskin, Social Critic & Author



How To Achieve...

- Long-term savings through reduced life-cycle costs?
- Timely delivery?
- Quality and sustainability?
- Innovation and added value?
- Improved economic, social and environmental quality of life?
- Strong consulting engineering sector?
- Taxpayer confidence?

Association of Consulting Engineering Companies - Canada

130 Albert St. Suite 616
Ottawa, Ontario K1P 5G4
Tel: 613-236-0569
info@acec.ca
www.acec.ca



InfraGuide

Federation of Canadian Municipalities
Sustainable Communities Website
www.sustainablecommunities.fcm.ca

About *InfraGuide*

- *National Guide to Sustainable Municipal Infrastructure:*
 - Federation of Canadian Municipalities
 - National Research Council
 - Infrastructure Canada
 - Canadian Public Works Association
- Recognized national network of experts in public and municipal infrastructure
- Publisher of over 50 “Best Practice” documents supporting sustainable infrastructure decisions



Benefits For The Client

- The client gets the right team for the right job
- More realistic schedules and budgets
- Fewer change orders and disputes
- Better business relationship between the client/consultants/contractors/external agencies
- Better service, better quality & better value for taxpayers



Who uses this approach?

- This approach is legislated by the US federal government and 44 state governments
- It is used by municipalities across the US and Canada – including the City of Calgary and the City of London
- The Government of Quebec recently passed legislation requiring its ministries and agencies to use QBS for architectural and engineering services

