Ensuring Excellence in Engineering: The Case for Qualifications-Based Selection (QBS)

Ensuring Excellence in Engineering: The Case for Qualifications-Based Selection (QBS)

by Carl Bodimeade P.Eng., Veronica Bergs P.Eng., and the Sustainable Cities Task Force

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Introduction

The **Ontario Society of Professional Engineers (OSPE)** is the voice of the engineering profession in Ontario, advocating for policies, standards, and best practices that promote innovation, sustainability, and public safety. OSPE represents engineers across all disciplines and industries, ensuring that their expertise is recognized and valued in decision-making processes that impact society.

As part of its commitment to advancing professional engineering practices, OSPE supports **Qualifications-Based Selection (QBS)** as the preferred procurement method for engineering services. QBS prioritizes selecting firms based on their qualifications, technical expertise, and experience rather than cost alone. This approach ensures that engineering projects, especially those with complex, high-impact, or innovative elements, are led by the most capable professionals, resulting in better long-term outcomes, cost efficiency, and public safety.

This document outlines the principles and benefits of QBS, emphasizing its role in fostering trust between clients and consultants, optimizing project performance, and ensuring high-quality engineering solutions that deliver lasting value.

Qualifications-Based Selection for Engineering Services

QBS is a procurement method that emphasizes selecting the most qualified firm based on their expertise, experience, and technical capabilities, rather than their cost (FCM & NRC, 2006). QBS has been proven effective for engineering assignments, programs, and projects with complex aspects, significant impacts, multiple alternative approaches, and those requiring innovation or specialized expertise. The primary objective is to provide high-quality engineering services that reduce project life cycle costs, ensure public health and safety, encourage innovative and holistic solutions, and achieve a high level of project satisfaction while ensuring that a fair and reasonable price is agreed upon. Selecting a qualifications-based procurement method can develop confidence and trust between a client and consultant, yielding even better project results.

QBS Procurement Process

The QBS procurement process involves three key steps (APWA, 2022).

1. **Planning:** The owner confirms project objectives, scope, budget, schedule, and procurement process.
2. **Selection:** A Request for Statement of Qualifications is issued, and respondents are ranked based on past performance, technical competence, capacity, and related factors.
3. **Negotiation:** The top-ranked respondents engage in negotiations with the client to reach a mutual understanding of the scope and a fair and reasonable fee structure.

Legislation in Canada and the United States

In Canada, only a few provinces and municipalities, such as Calgary, AB, London, ON, Kingston, ON, and Coquitlam, BC have experience with QBS. There is no federal law in Canada requiring QBS for engineering services.

In the USA, the **Brooks Act** has mandated QBS for federally funded architecture and engineering projects since 1972. Most US states have embedded QBS in state laws and many of them have extended the mandate to local entities and state agencies (ACEC, 2022).

Benefits of QBS Procurement

QBS offers numerous benefits to owners, industry participants, and the public (Chinowsky, P.S. 2022). These can include:

- **Lower procurement and project costs.**

  QBS outperforms the national average in both minimizing cost and schedule delays. Analysis of the data highlighted in a report by the ACEC Research Institute indicates a correlation between the experience of a design team and the quality of construction documents they produce. Higher-quality construction documents lead to reductions in construction costs and project schedule delays, (ACEC, 2022). Another study, focusing on US airport public works contracts, yielded similar findings (Gransberg et al. 2019).

  With a QBS procurement model, clients can ensure that they are choosing the most experienced teams available and benefitting from those cost reductions.

  Further, in a review of 76 design-build projects in the US, QBS was found to have the lowest cost growth[1] and the fastest construction speed when compared to sole source, best value, and lowest bid procurement methods (Wardani et al. 2006).

  The use of QBS can also facilitate adequate investment in pre-construction planning and design (CDAO, 2021). Even though the initial consulting could be more costly, the long-term savings will be much higher with better, more predictable outcomes (OSPE, 2021).

- **Improved quality, and enhanced safety.**

  In an international conference paper, researchers found that QBS awards have been used successfully across procurement methods. Clients expect an increase in a project's quality, longevity, and safety by decreasing the chances that a marginally qualified contractor wins the project (Gransberg et al. 2019).

- **Enhanced understanding and relationships between clients and consultants.**

  A 2019 study found that clients perceive significant benefits associated with using a QBS model, including fewer disputes during project execution (Gransberg et al. 2019).

[1] "Cost growth" refers to the increase in the total cost of a project, product, or service over time, essentially the difference between its initial budgeted cost and its final realized cost, often caused by factors like inflation, unexpected changes, or additional work added during the project lifecycle.

Procurement Procedure

QBS involves a multi-stage process that includes competitive contract procurement during the planning, selection, and negotiation phases of the procurement process.

Initially, a thorough evaluation of potential firms is conducted based on criteria, such as professional competence, which ensures that firms have the necessary technical expertise and specialized knowledge to execute a project. Managerial ability is also a critical factor, as it reflects the firm's capacity to effectively lead and manage teams, resources, and project timelines. The availability of resources, including personnel, equipment, and technology is also assessed to ensure the firm can handle the scope of the project efficiently. Additionally, the firm provides a track record of similar projects they've delivered successfully, particularly those of comparable scope and complexity. This provides confidence that the firm has the experience and capability to achieve the desired project outcomes. This comprehensive evaluation process helps ensure the selection of a highly qualified firm that can deliver innovative, high-quality results.

Implementation in the United States and Canada

The United States widely implements QBS with the Brooks Act guiding federal, state, and municipal projects. At the same time, in Canada, Quebec has taken a significant step by mandating the use of QBS for public procurement, setting a strong precedent for other provinces to follow. While other provinces and municipalities in Canada have not fully adopted QBS, many have piloted it for specific, high-stakes projects that demand expertise and innovation, demonstrating its growing acceptance and effectiveness across the country.

QBS Effectiveness Studies

A joint Canada-US research study conducted in 2022 provides a detailed examination of the advantages of QBS over other procurement methods. Data from the ACEC Research Institute, (ACEC, 2022) reveals that QBS projects experience notably lower cost growth, with only 3% cost growth attributed to change orders[2] compared to the industry average of 6%. Moreover, construction schedule growth for QBS projects averages 7%, outperforming the industry average of approximately 10%. These statistics underscore the strong association between the use of QBS, the quality of construction documents developed by the design team, and the final cost and schedule.

In addition, the Canadian QBS study (Chinowsky, P.S. 2022) finds that QBS procurement especially benefits complex projects, whether that complexity is driven by technical challenges in design, construction, community engagement, political or social sensitivities, management, or collaboration of project participants.

Project owners from both countries expressed "very high" or "high" levels of satisfaction with the quality of completed QBS projects, emphasizing the high standard of outcomes achieved through this procurement approach. Another key benefit of increased innovation on QBS projects is that

[2] A "change order" is a formal amendment to a contract that changes the scope of work, timeline, or budget.

it allows for more creative and effective solutions to complex challenges. Since firms are selected based on their qualifications and expertise rather than cost, they are motivated to propose innovative approaches that can deliver better long-term value, improve efficiency, and address unique project needs.

These statistics highlight the effectiveness of QBS in ensuring project success by prioritizing engineering expertise and qualifications over low prices, ultimately resulting in project cost savings, improved timelines, and enhanced overall quality.

Best Practices

While QBS offers numerous advantages, it also presents challenges such as limited experience in some regions of Canada and concerns about the lack of emphasis on cost competitiveness. However, best practices can significantly mitigate these risks, ensuring that QBS remains a fair and effective procurement method.

One key best practice is the involvement of a QBS facilitator, an impartial third party who can help guide the selection process, ensure transparency, and maintain fairness. The facilitator helps manage communication, sets clear expectations, and keeps the process on track, reducing potential biases or misunderstandings.

Another important practice is to thoroughly document the entire QBS selection process. Proper documentation not only helps ensure compliance with legal and procedural requirements but also provides a transparent record that can be referenced if any questions or disputes arise. This documentation should detail the criteria used for evaluation, the reasoning behind decisions, and the steps taken to ensure fairness and objectivity throughout the process.

Forming a multidisciplinary selection committee is another best practice that can enhance the effectiveness of QBS. By including individuals from various backgrounds such as engineering, project management, law, and finance the committee ensures that multiple perspectives are considered when evaluating candidates.

These best practices help reduce the risks associated with QBS, ensuring a more balanced, transparent, and effective procurement process that leads to the selection of the most qualified and capable firms for complex projects and, in turn, reduces costs.

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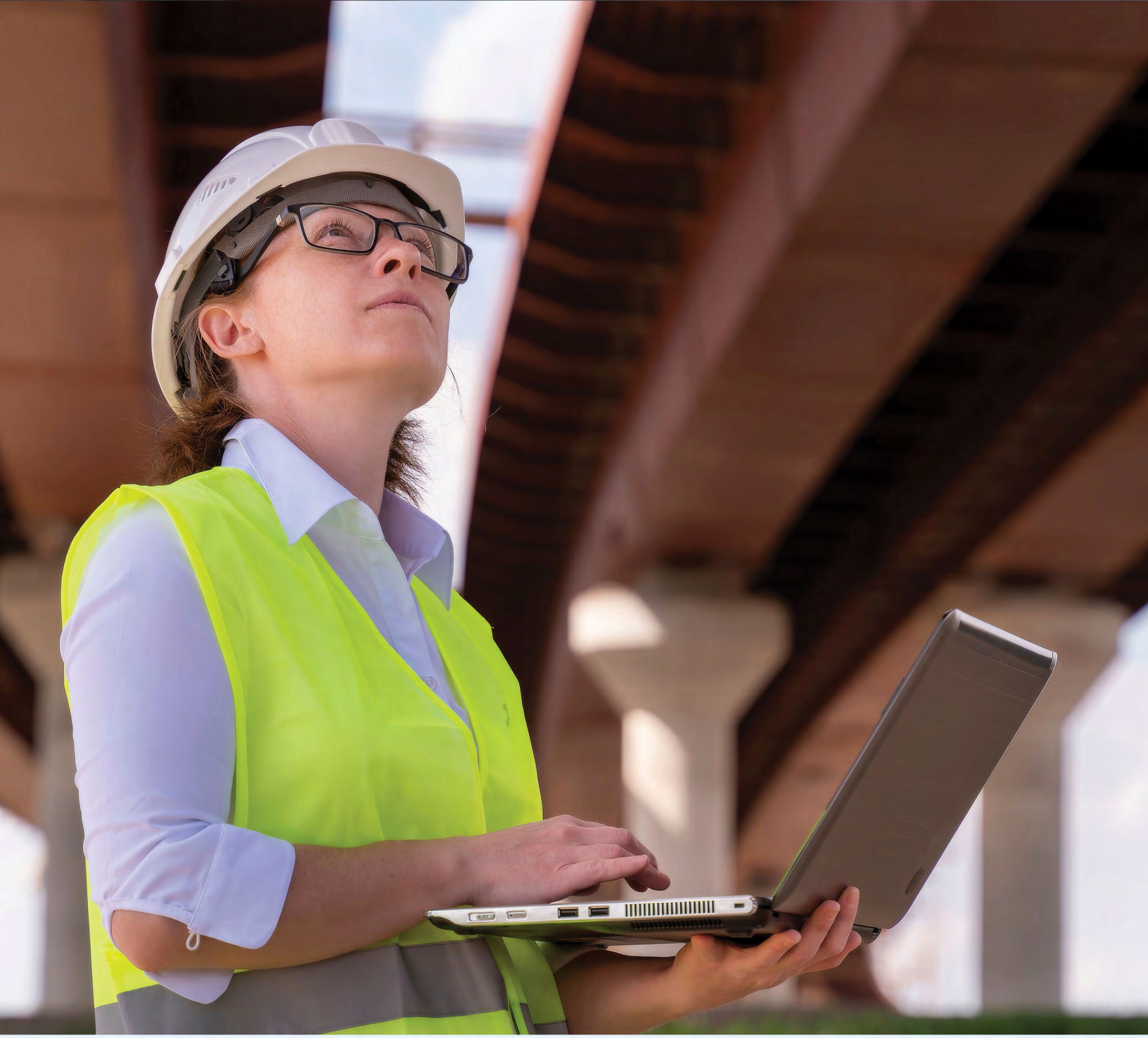

CONTACT US

Ontario Society of Professional Engineers
5000 Yonge St Suite 701
Toronto, Ontario M2N 7E9
1-866-763-1654

www.ospe.on.ca

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