

Value Through Engagement



Sun Life Building
Suite 2160
10123 99 Street NW
Edmonton, AB
T5J 3H1

www.cea.ca



The Value of Consulting Engineers

Consulting engineers are professionals and essential partners, who support clients in achieving successful project outcomes that achieve goals and meet expectations. They do this by bringing specialized technical knowledge, experience, strategic advice, and innovation to the table.

Project proponents and owners across the country, including all levels of government, invest billions of dollars in building and maintaining their infrastructure. Appropriate planning, optimization and maintenance of these projects are important aspects in making the best use of limited capital and maintenance budgets.

Most organizations do not have sufficient in-house resources to fully support their needs and as a result, external resources are often required. This is where consulting engineers become invaluable partners. They provide relevant technical expertise and services throughout all phases of project delivery. Whether it is early project scoping, feasibility, detailed design, construction management, quality assurance during construction, or extending the life of aging infrastructure, there are consulting engineers in Alberta with the expertise and experience to help.

Consulting engineers add value by combining their technical expertise with a focus on the client's overall goals, delivering innovative and optimized solutions with available resources that enhance project success and long-term value. Their role goes far beyond simply executing a technical scope of work.

Consulting engineers bring specialized technical knowledge and experience to projects to:

- Provide innovative solutions to complex problems
- Give strategic advice on technical issues and risk management
- Find creative ways to enhance a project's value beyond just meeting minimum standards, improve project outcomes and reduce lifecycle costs
- Optimize designs to achieve cost savings in construction and operations and maintenance, alongside enhanced quality and performance
- Collaborate on opportunities and challenges early in the project development process
- Provide independent, professional advice to clients

Having access to a strong, capable and experienced consulting engineering industry is beneficial to all, and a necessity to address our infrastructure needs.

Accessing and Maximizing Value from Your Consulting Engineer(s)

There are several approaches that clients can use to benefit from the value of consulting engineering services and the firms providing those services. Key considerations are outlined below.



Engage Consulting Engineers Early and Often: **Build Relationships**

Recognize that consulting engineers are valuable resources with expertise that can benefit your broader goals and projects. Invest time in building a positive relationship with the consulting engineer; listening, understanding, and fostering a collaborative environment can lead to successful project outcomes. Take the time to bring the consultant up to speed and provide necessary background information, and engage them early to maximize the value provided.



Understand Success Factors: **Know What's Important to You**

Have a clear understanding of what you are ultimately trying to achieve – strategically, technically and objectively. Engage others across your organization to collectively define desired outcomes and engage consulting resources accordingly.



Establish a Clear Scope and Appropriate Budget: **Set Clear Expectations**

Define and communicate clear project scope and expectations from the beginning, or engage professionals early to support thinking through the scope. This helps in avoiding misunderstandings and ensures that both parties are aligned on project goals. Understand your available resources and allocate budget in alignment with your desired outcomes; adjust as required and lean on your consulting engineer to support you in thinking through revised approaches when necessary.



Practice **Effective Communication**

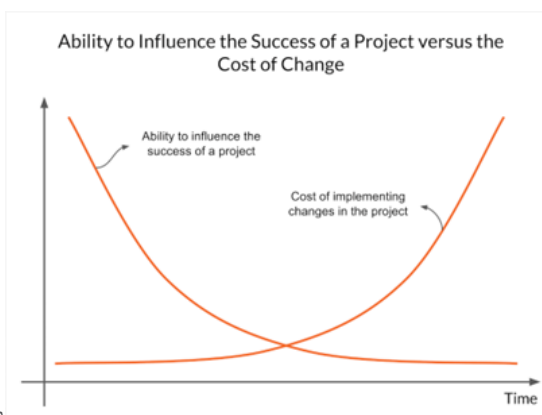
Effective communication is crucial for successful client-consultant relationships. Clear and open communication ensures that both parties are on the same page, leading to better project outcomes.



Engage Consulting Engineers Early and Often: Build Relationships

Supporting Canada's infrastructure represents a significant investment of tax dollars. Upfront decisions have a significant impact on not only the cost and quality of the design and construction phases, but on operations and maintenance of infrastructure assets over their entire life span.

This concept can be visualized in the cost-influence curve, which illustrates a crucial principle in project management: decisions made early in a project have a much higher influence on the final outcome and total cost, even though the actual costs incurred during these early stages are relatively low.



Public sector entities increasingly outsource most engineering functions for planning studies and design services. This is best accomplished by engaging experienced engineers early in the project and involving them in scope and project development to maximize their value.

Position your consultant as a trusted advisor. Use procurement methods that promote alignment and avoid creating situations that create transactional relationships, as this can hinder collaboration and impact project success.



Defining Project Success Factors: Know What's Important to You

Every project is different, and understanding what success looks like takes time and intentional effort. Project context such as complexity, anticipated value and magnitude of impact, will all be important considerations in defining success, alongside your community priorities.

Defining success factors in a granular and specific way for your project will likely involve input from others across your organization. Prioritizing what is most important will also support you in engaging the best consulting engineer to achieve these desired outcomes, and to select the appropriate method for engaging your consulting engineer. A list of considerations to articulate "Project Success" is available in CEA's one-pager resource: **"What's Success to You?"**.

Once you have defined key success factors, communicate with your consulting engineer on what is most important to you; this will enable firms to tailor their work and professional services to support project success. Having a shared understanding of these success factors will also support you and your consulting engineer in making timely decisions and adjustments to manage changes as the project unfolds.

For example, if reducing overall cost for a large project at the feasibility stage is a priority, consider engaging knowledgeable partners to develop strong scope that supports evaluating cost reductions.



Getting The Scope, Schedule & Budget Right: Set Clear Expectations

Developing an appropriate scope for engineering is very important and is best done in collaboration between the client and the consulting engineer. This will ensure the consultant understands the project constraints, and an experienced consultant can/will help you develop the most appropriate scope and schedule with overall project outcomes in mind. It is important to work together and thoroughly review the scope of work, work plan, scheduling and other project related issues.

Often innovative ideas, alternative approaches, and new technologies can be discussed and explored which may reduce construction cost or long-term maintenance and a reduction in potential scope changes. Once both the client and the consulting engineer fully understand and agree on the defined scope of work and schedule, an appropriate fee can be established.

Ensure your consultant understands the budget constraints and realities, but also be open to modifying the engineering budget when there are benefits to the overall project. Note that minimizing the engineering scope/budget can adversely affect the overall project, and the engineering fees need to be commensurate with the level of effort required. Consulting fees are typically 2% of the overall 25 year cost of construction and operations, so investments on the front end have a very high return with significant benefit and impact over the long term.

The consultant will often submit a fee proposal for the scope of work. The client may request the information be provided in a specific format. Some considerations may be:

- Scheduling and duration -- how the work will be scheduled throughout the project including who will be involved in each phase of the work
- Progress billing -- how and when the work will be invoiced
- Budgeting controls related to the project -- how the budget will be tracked
- Risk management -- how are the uncertainties in the cost estimate are being handled

When the appropriate discussions have occurred, the engineering fee should be consistent with expectations. However, the client always has the opportunity to consider the fee, and may choose to accept it or discuss adjustments that could involve changes in scope, schedule, risk approach, etc. This approach allows for an agreement that reflects both parties' needs and expectations.



Proactive and Effective Communication

Regular updates and transparent expectation management further strengthen the relationship between the client and the consultant, allowing alignment on project goals, progress and, ultimately, successful outcomes. Depending on the project scale, a communication plan could be developed to set out the reporting and communication measures for the consultant's scope and schedule. This plan should establish the meeting and reporting frequency with the client and relevant stakeholders and could include elements such as client meetings, stakeholder meetings, informal progress updates, and formal progress reports.

The monitoring and contract administration phase involves overseeing project work, managing changes, tracking deliverables, and managing schedule, cost, quality, communication, risks, procurement, and stakeholder engagement. As the project progresses, deviations from the original scope or schedule may emerge. Work beyond the agreed scope should be flagged for consultant review and client notification/approval. If scope changes are necessary, the consultant generally requests client approval, detailing budget, schedule, and other potential impacts.

PROCUREMENT OF CONSULTING ENGINEERS

Consulting services are not commodities, and their procurement cannot effectively be obtained by selecting the lowest price. For this reason, it is common to use a request for proposals (RFP) process to evaluate candidate credentials to identify the best-suited consultant. Best value is achieved when the focus is on finding the most effective, long-term solution to a problem, not the minimum design effort. Using price as a sole or heavily weighted differentiator encourages consultants to reduce their scope and involvement, reducing their ability to add value to the overall project.

Value

Expertise varies, based on training and often more importantly, experience. To meet the goal of identifying the most effective overall solution, a selection process must result in the selection of the consultant best qualified to undertake the assignment and consequently bring the most value to the project.

Best value is achieved when design alternatives are evaluated based on their life cycle costs. It is during this design phase that both construction and operations/maintenance cost savings are most easily achieved. Professional consultant services account for a small percentage (8-15%) of total project cost but their impact on both construction costs and operations/maintenance costs is significant. The potential for long-term savings achieved by placing an emphasis on selecting the consultant with the qualifications, skill, and experience to analyze all design alternatives far outweighs potential savings from a low-bid selection.

Risk Allocation

In consulting agreements, risk allocation is a critical element that delineates the responsibilities and liabilities of both the consultant and the client. Proper risk allocation ensures that potential risks are identified, managed, and mitigated effectively. It typically involves specifying the scope of the consultant's work, setting clear terms around confidentiality, indemnity clauses, and liability limitations in alignment with insurance requirements and capacities. By clarifying these aspects, both parties can better understand their obligations and the extent of their exposure to various risks. This can prevent disputes and foster a more cooperative working relationship. It is important to utilize procurement methods that maximize consultant engagement to maximize the value received.

Procurement Methods

Many procurement models are available; however the best procurement models for engaging professional services such as engineering prioritize collaboration and expertise as the keys to success. CEA fully supports project engagement and delivery methods that foster collaboration among consulting engineers, owners, and contractors, ensuring alignment on project expectations. A more detailed summary of procurement considerations is available in CEA's one-pager resource: **"Putting it into Practice: Procurement Models to Support Best Value"**.

SUPPLEMENTARY ONE-PAGERS

What Does Success Mean to You?

Defining success factors in a granular and specific way for your project will likely involve input from others across your organization. Prioritizing what is most important will also support you in engaging the best consulting engineering team to achieve these desired outcomes, and to select the appropriate method for engaging your consulting engineer.

Consider the example project success factors, and use this list as a guide to determine which are most important for your project, based on your specific context:

- **Alignment:** with strategic plans or broader community or business objectives/goals
- **Financial:** minimizing construction cost, value for money, completing within a certain budget (adherence)
- **Environmental Impact and Sustainability:** minimizing GHG emissions, reducing construction waste, preservation of natural assets, Sustainable Certification Programs (i.e. LEED, BOMA Best, NetZero, etc.), incorporating sustainable practices and materials, etc.
- **Schedule:** On-time delivery, key milestones accommodated, consideration of client context and events, flexibility
- **Impacts:** Minimizing disruptions during construction, maintaining public access to amenities, ability to accommodate key stakeholders, etc.
- **Quality of Work:** Meeting or exceeding industry standards and client specifications, ensuring high-quality deliverables Technical Innovation: Providing innovative solutions that enhance project value and efficiency
- **Risk Management:** Identifying, assessing, and mitigating risks throughout the project lifecycle to avoid issues
- **Regulatory Compliance:** Ensuring all project aspects comply with relevant laws and regulations
- **Stakeholder Engagement:** Keeping all stakeholders informed and engaged throughout the project to build trust and transparency
- **Post-Project Support:** Ability to offer ongoing support and maintenance services, ensuring the project continues to meet its objectives after completion
- **Documentation:** Providing thorough documentation and reporting for future reference and accountability.
- **Knowledge Transfer:** Ensuring your team is equipped with the knowledge and skills needed to maintain or operate the project outcomes.

Putting it into Practice: Procurement Models to Support Best Value

The best procurement models prioritize collaboration and expertise as the keys to success rather than price-based selection. In particular, the emergence of newer procurement methods (such as early contractor involvement, design assist, progressive design build, integrated project delivery, and the alliance approach) all include early involvement from the right people, working in a collaborative partnership. Procurement models evolve over time, with altered approaches introduced in the market on a regular basis. CEA fully supports project delivery methods that foster collaboration among consulting engineers, owners, and contractors, ensuring alignment on project expectations.

Some key aspects and characteristics of these procurement models include:

- A well-defined scope, schedule and preliminary project budget.
- Adequate time for proposal preparation, including time for the consultant to ask questions.
- Page limits on submissions to encourage concise proposals for faster client review.
- Exclusion, or at minimum a separate evaluation, of fees from the proposal evaluation process. Fees should account for no more than 10% of the total proposal score.
- Use of open order assignments / standing offer agreements.

Some examples of collaborative, qualifications-based consultant procurement methods include:

- Qualifications Based Selection (QBS)
- Integrated Project Delivery (IPD)
- Progressive Design Build (PDB)
- Alliance Contracting
- Open Order Assignments / Standing Offer Agreement (OOA/SOA)
- Prequalification of Short-Listed Consultants (PQUAL)
- Direct Hire / Sole Source Assignments (SS)
- Two-Envelope Method (ENV)

The table below outlines procurement models that align relative to the complexity and cost of the project.

Project Budget	Project Complexity		
	Low (Repeatable & Low Risk)	Medium	High (Unique & High Risk)
>\$25M	QBS, IPD, PDB, PQUAL, ENV	QBS, IPD, PDB, ENV	QBS, IPD, PDB
\$5M to \$25M	OOA/SOA, PQUAL, ENV	QBS, OOA/SOA, PQUAL, ENV	QBS, IPD, PDB, ENV
<\$5M	OOA/SOA, PQUAL, SS	OOA/SOA, PQUAL, SS	QBS, OOA/SOA, PQUAL, ENV

The delivery timeframe for a project should be considered when selecting a procurement model. If the timeframe is short, more collaborative models such as QBS and PDB should be considered due to the increased risk added by the shorter delivery time.

As noted above, engineering design typically accounts for less than 2% of a project's lifecycle cost. However, project proposal writing requires significant staff resources and time, diverting the consulting engineers from project work and client engagement. As a result, selecting the most qualified consultant for the project will likely result in a better design and a higher chance of project success.