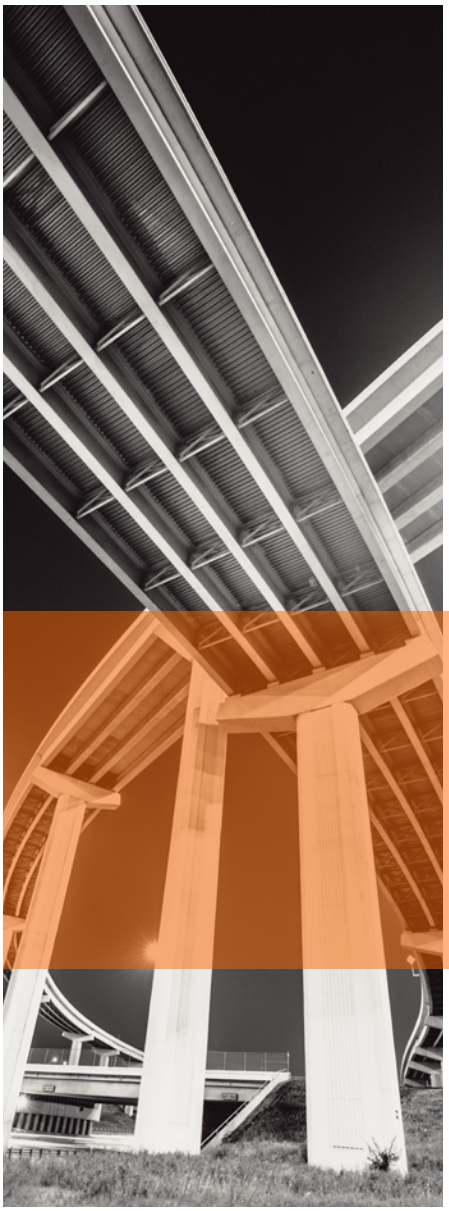
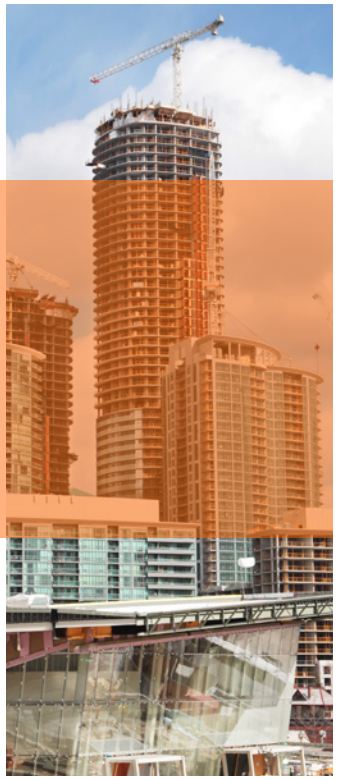
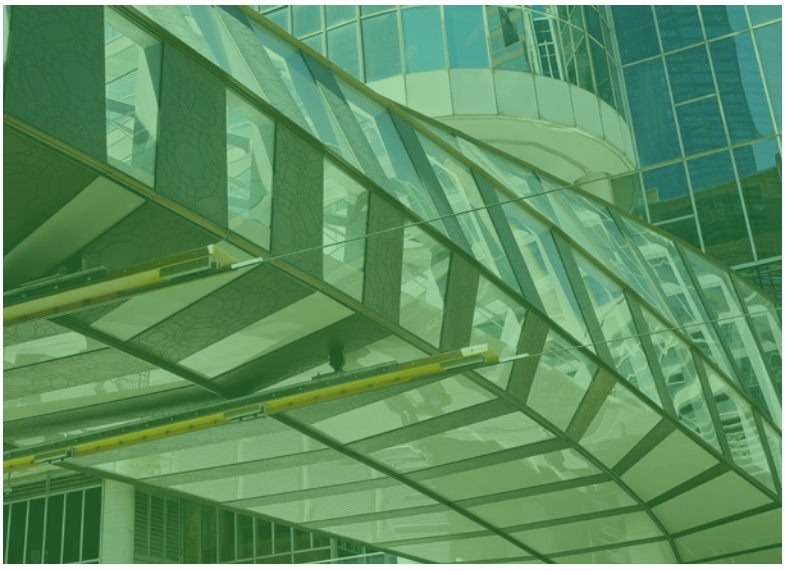
GUIDE TO DESIGN AND CONSTRUCTION PROCUREMENT BEST PRACTICES

CDAO

Construction & Design Alliance of Ontario







Contents

Executive Summary

In the early 2010s, the Construction & Design Alliance of Ontario established the "Procurement Project" to improve lines of communication amongst government, project owners, designers, general contractors, subcontractors, and buyers. It was viewed as an opportunity for those groups to understand each other's issues, and to work together on solutions. The Project ultimately identified a need for a "best practices guide" to public sector infrastructure procurement.

This Guide includes assessments of the many issues impacting present day procurement. It addresses the procurement process from initial planning through to the awarding of a contract but does not address project delivery or construction. With respect to procurement models, the scope of this Guide is limited to: Design-Bid-Build, Design-Build, Construction Management at Risk, and Integrated Project Delivery. The Public-Private Partnerships model is noted and briefly described, but it is acknowledged that the Canadian Council for Public-Private Partnerships is the definitive source of information about its selection and use.

The Financial Accountability Office of Ontario has estimated that there was a $68.9 billion "infrastructure backlog" in Ontario (provincial and municipal infrastructure combined). This is the cost to bring existing infrastructure assets into a state of good repair. This does not account for the cost of new infrastructure to support growth. Given the demands on government resources, extracting full value from infrastructure investment requires approaches to procurement that are forward-thinking, based on pre-planning and good evidence. Application of the best practices in this Guide can serve to support that goal.

Procurement Project events over the years have identified a litany of factors that adversely impact public sector infrastructure projects. Many of the factors relate to the initial procurement process and contracting. Section 3 of this Guide describes those issues and details the consequences of them, including delays, inefficiencies, and cost escalation. While risk management is a common theme, the failure to use available standard forms of contract (without excessive supplementary conditions) and standard specifications is a significant source of inefficiency and delay in the procurement process. The critical importance of pre-planning work is also a common theme.

Selecting the best procurement method is critical to a project's success. The Design-Bid-Build model is currently used for most public sector infrastructure projects. The other procurement models, however, offer distinct advantages that can make them appropriate. These advantages include the potential to accelerate project timelines, improve cost certainty, address unique project risks, and deliver higher value by leveraging collaboration and innovation throughout the project lifecycle. Any approach to procurement should begin with an assessment as to the best procurement method for the given project. Section 4 of the Guide examines the question of procurement method selection and details the elements of a procurement model selection framework to ensure that best value will be obtained for the project.

PHOTOS: PPAMPICTURE

The core of this Guide is the detailed best practices within each procurement model found in Section 5. These are supported by appendices that provide fulsome descriptions of each model, including its key features, advantages, challenges, and "when to use" criteria. The best practices highlight critical aspects for success within each procurement model. Not surprisingly, common themes arise around the importance of pre-planning and understanding the project objectives, selection of vendors, using standard forms of contract, avoiding cut/paste from prior projects, risk assessment and allocation, and consideration of post-project and life-cycle issues.

Understanding the issues, developing and using a procurement model selection framework, and applying the best practices described in this Guide are important tactics in obtaining full value from the infrastructure procurement process. However, to ensure the successful implementation of the best practices, Section 6 of this Guide provides three strategic-level approaches that public sector buyers need to embrace. These are:

> **Adopt a change culture** – Current practices come from deeply embedded processes and highly risk-averse mindsets. Implementing change in the public sector is a challenge. A successful change culture creates an environment where change is expected, embraced, and embedded. The objective is to foster a more agile and innovative approach while maintaining transparency and accountability.

> **Focus on outcomes** – Current practices are too focused on process. Shifting to a focus on outcomes requires both a cultural and an operational transformation. Project owners need to prioritize results and impact over rigid adherence to procedures.

> **Enhance communications and liaison** – At the project level and between the design/construction industry and public sector buyers in general, establishment of a liaison committee, with early and continuous engagement, will be critical for delivering successful, cost-effective, and sustainable infrastructure. Strong relationship management and a philosophy of continuous improvement must be pillars of such liaison.

PHOTOS: SZAKALIKUS

Introduction

1.1 Background

One of the goals of Construction & Design Alliance of Ontario (CDAO) is to develop consensus opinions and recommendations, supported by research and data, to present to provincial, regional, and municipal governments. To that end, CDAO established the "Procurement Project" in the early 2010s.

The intent of the Project was to improve lines of communication amongst government, project owners, general contractors, designers, subcontractors, and buyers. It was viewed as an opportunity for those groups to understand each other's issues, and to work together to find solutions.

To date, the Procurement Project has held four "Procurement Day" events. These collaborative meetings have served to identify the priority issues, highlight challenges, and achieve a better mutual understanding of procurement methodologies, risks, and outcomes.

The collective outcomes of the Procurement Day events highlighted the need for a comprehensive "best practices guide" to public sector infrastructure procurement.

This document is that Guide. This Guide is envisioned as an evergreen document that can serve as a road map for the buying sector and service providers alike. It is anticipated that this Guide will impact current and future infrastructure projects in terms of procurement model selection, practices within the procurement process, and contractual details.

This Guide has been developed through a structured process of information gathering and analysis. The information gathering phase included a literature review and online research, plus stakeholder perspectives gathered during panel sessions and one-on-one discussions. Stakeholders included staff representatives from provincial ministries and agencies, municipalities and regions, associations representing vendors in the infrastructure design and construction space, and a construction law expert, all within Ontario. The analysis phase included an assessment of the various approaches to procurement model selection, and a comparative analysis of the procurement models across a variety of characteristics and criteria.

1.2 Scope of this Guide

The primary audience for this Guide is the buying sector, so that they may assess their current methodologies against recommended practices contained herein.

It is recognized that there is no "one size fits all" solution to the question of public sector infrastructure procurement. With extremely broad ranges of cost, complexity, timelines, and risks associated with the full spectrum of infrastructure projects, and with the differing levels of experience among public sector entities, it is not possible to detail a single approach or process that will lead to the best procurement model selection and best procurement execution for all projects. Instead, this Guide highlights the issues and concerns associated with public sector procurement, and offers detailed information about procurement model selection, and the key attributes, advantages, challenges, and best practices within each model.

The choice of a procurement model is a crucial strategic decision. This Guide can serve as a road map for public sector buyers that will impact current and future infrastructure projects in terms of procurement models and contractual details. Further, the Guide will also serve as a platform for CDAO member associations to communicate a consistent message regarding the importance of fair and reasonable procurement models and contract terms.

PHOTOS: EVGENY GROMOV

The Guide includes detailed assessments of the key issues impacting project planners, buyers, designers, and constructors. CDAO views this Guide as a living document – fully valid at the time of publication and to be maintained as issues and case law evolve over the years ahead.

This Guide is applicable to the procurement process from project planning through to procurement model selection through to the awarding of a contract. The Guide does not address any aspect of project delivery or execution timeframe, other than to highlight issues that could arise during delivery/execution that might be mitigated through choices made during the contracting process.

The procurement models listed below fall within the scope of this Guide. Detailed descriptions of each, including their key features, advantages, and challenges can be found in the "A"-level appendices.

Design-Bid-Build (DBB)

DBB is the most traditional and widely used procurement method for infrastructure projects. It follows a sequential process where the project owner first contracts with a designer (engineer or architect) to carry out the design work first. Once the design and construction documents are completed, the owner solicits bids, selects a contractor, and the project is finally built by the selected contractor. This method separates design and construction responsibilities, giving the owner greater control over the design but often leading to longer project timelines.

Design-Build (DB)

DB is a procurement method in which a single entity, the design-builder, takes responsibility for both design and construction services under a single contract. There are a number of variants of this procurement method, but in the most common version the design-builder assumes the risk for both design and construction. A project owner's statement of requirements, including performance specifications, is required to provide a basis for planning, design, pricing, and executing the project. DB projects are typically carried out under a stipulated price form of contract.

Construction Management at Risk (CM@R)

CM@R is a procurement method in which a Construction Manager (CM) is engaged early in the project to provide pre-construction services. The project owner separately contracts with a designer (engineer or architect) to complete the design. The CM then takes on the role of the general contractor during construction. Typically, the CM commits to delivering the project within a Guaranteed Maximum Price (GMP), transferring significant risk from the owner to the CM.

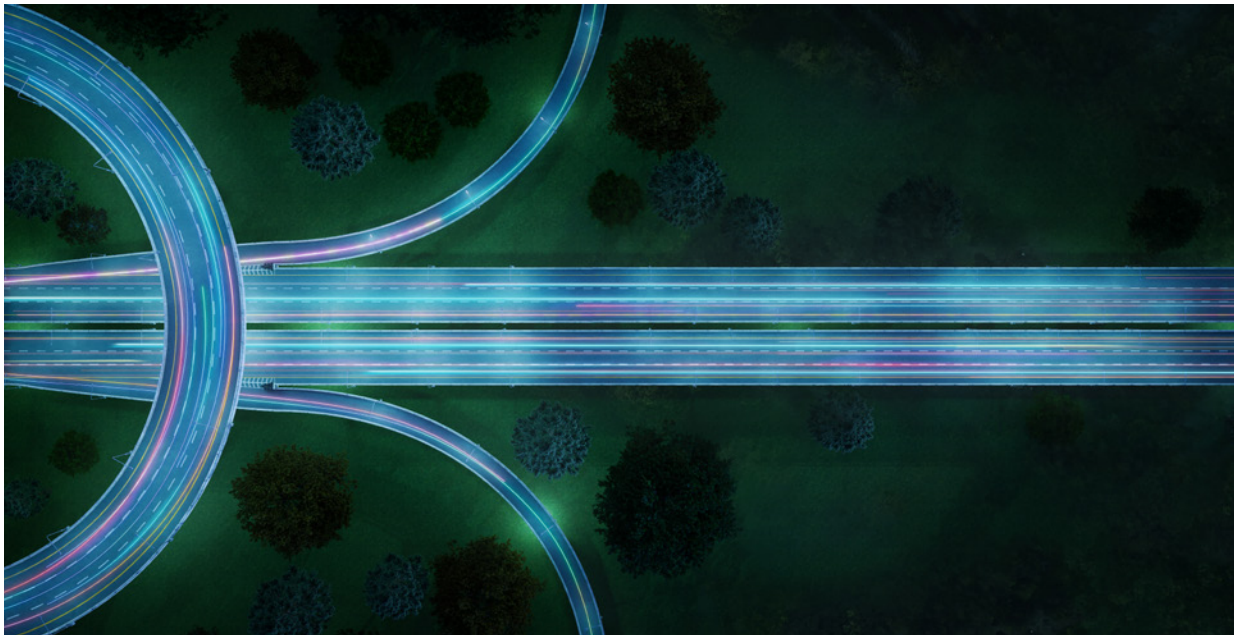
Integrated Project Delivery (IPD)

IPD (also referred to as the Alliance model) is a collaborative procurement model that brings together key project stakeholders (i.e., owners, architects, engineers, contractors, and sometimes suppliers) early in the process to optimize project results, increase value, and reduce waste. The fundamental difference between IPD and traditional contracts is the underlying non-adversarial relationship between the project owner and the firms executing the design and construction work. This is achieved through good faith commitments and adoption of "no-dispute" provisions in the multiparty contract. The IPD contract and supporting structures promote a positive culture based on "no-fault, no-blame" and require all parties to find the best solutions for the project. The collaboration requires a greater time commitment on the project owner's part, but efficiencies are maximized. Compensation under the IPD model is directly tied to cost, schedule and profitability milestones of the overall project.

The Public-Private Partnership model (P3) falls outside the scope of this Guide. This is due to its complexity and the inclusion of financing and potentially other life-cycle elements such as operation and maintenance as part of the project. The Canadian Council for Public-Private Partnerships (C2P3) is an association committed to the advancement of P3 models through advocacy, research, and conferences. C2P3 members include a broad cross-section of firms, governments, and associations involved in the design, construction, financing, operations, and maintenance of public sector infrastructure assets.

The C2P3 website (pppcouncil.ca) contains extensive information and reference material regarding how the decision to use the P3 model should be made, and the best practices in P3 procurement. As a starting point, the C2P3 document "A Process Guide for Public Sponsors" is an excellent guidance document and reference tool for those contemplating a P3 project. C2P3 also has a range of guidance and analysis documents written specifically for the municipal audience. Introductory information about the P3 model is included in Appendix B.

Public Infrastructure Procurement in Ontario



2.1 Overview

The Financial Accountability Office of Ontario's (FAO) 2020 Review of the Province's Infrastructure, and its 2021 Review of Ontario's Municipal Infrastructure, suggest that there is approximately $800 billion of public infrastructure in the province. Around 10 percent of this is owned by the federal government, 38 percent is owned by the province, and 52 percent is owned by municipalities. For the province, the infrastructure includes transit, highways and bridges, hospitals, schools, colleges, courthouses, correctional facilities, and office buildings. For the municipalities, it includes transit, roads, bridges and culverts, potable water, storm water and wastewater systems, parks and recreational facilities, social housing, solid waste disposal facilities, police stations, fire stations, public transit and other municipal buildings.

2.2 Provincial

At the provincial level, public sector infrastructure is developed through specific ministries (e.g., Ministry of Transportation) and/or provincial agencies (e.g., Infrastructure Ontario and Metrolinx). These entities generally provide periodic information to the market regarding procurement plans and the procurement status of specific projects. This is a very useful action that allows designers and contractors to make strategic decisions regarding future resource needs and development.

The 2020 FAO report estimates that the current replacement value (CRV) of provincially owned infrastructure was $265.6 billion (as of March 31, 2020). CRV is the current cost of rebuilding an asset with the equivalent capacity, functionality and performance as the original asset. Almost 80 percent of that CRV is represented through a combination of highways and bridges ($84.7 billion), schools ($68.1 billion), and hospitals ($58.5 billion).

PHOTOS: JAMES STEOHART

The FAO review also reported that 65.3 per cent of Provincial infrastructure assets (valued at $173.4 billion) are currently in a state of good repair. The remaining 34.7 per cent (valued at $92.1 billion) are considered not to be in a state of good repair. The FAO estimates that the current infrastructure "backlog" totals $16.8 billion. This is the cost to bring that 34.7 per cent of Provincial assets that require capital spending into a state of good repair.

The 2025 Ontario budget reiterated the province's capital plan of more than $200 billion over the next 10 years, including over $33 billion in 2025-26.

2.3 Regional / Municipal

Ontario is made up of 444 municipalities organized within a single-tier or two-tier government structure. Two-tier structures are formed by an upper-tier municipality (such as the Regional Municipality of York or the County of Huron), which would have two or more lower-tier municipalities (such as the City of Richmond Hill or the Town of Goderich). A single-tier municipality (such as the City of Toronto or the City of Brantford) is not part of an upper-tier municipality.

Generally speaking, each municipality establishes and operates its own infrastructure procurement process. Funding may be supported through the provincial or federal levels of government, but the procurement process is managed by the municipality. There is significant variability in procurement processes across the municipalities, including the approach to the selection of a procurement model, applicable design standards and specifications, forms of contract, and supplementary terms and conditions. This variability is a significant inefficiency that erodes the value that taxpayers receive from municipal infrastructure.

The 2021 FAO review stated that Ontario's municipalities own, operate and maintain over $400 billion of infrastructure. Condition data was available for 90% of this infrastructure and it was estimated that $197.8 billion worth of municipal assets are not in a state of good repair. The FAO estimates that the municipal infrastructure backlog in Ontario could range from $44.8 billion to $58.7 billion, with an average value of $52.1 billion. The infrastructure backlog estimate does not include any assets where the condition is unknown. Since some of these assets would likely require rehabilitation or renewal, the FAO's estimated backlog represents the lower bound of the municipal infrastructure backlog in Ontario.

Infrastructure is an investment to be leveraged, not an expense to be minimized. It is an investment in the economic, social, and environmental prosperity of the municipalities.

2.4 The Opportunity and The Challenges

According to the Association of Municipalities of Ontario (AMO), municipalities invested almost $65 billion in revenues in 2022 on local services and infrastructure.

AMO further estimates that Ontario municipalities are planning for between $250 billion and $290 billion in capital investments over the next ten years, with $100 billion of that related to growth. Adapting to future needs, like designing for the effects of climate change, is altering the infrastructure procurement landscape. However, failing to address the infrastructure backlog and failing to proactively invest in the future would ultimately result in higher costs – both in terms of lost opportunity and in needing to repair or replace failed infrastructure.

The Association of Consulting Engineering Companies – Canada notes that infrastructure is an investment to be leveraged, not an expense to be minimized. It is an investment in the economic, social, and environmental prosperity of the municipalities where it is located and the province as a whole.

Extracting full value from that investment requires approaches to procurement that are forward-thinking, based on pre-planning and supported by good evidence. In 2021, CDAO published a research report entitled, "Impacts of Pre-Project Investment & Quality of Documents on Project Delivery Efficiencies". That study identified the important role of the project owner's commitment to upfront investment during the pre-project planning and design stages. It identified a direct and positive correlation between the amount of time and investment that owners spent in pre-planning and the success of the project.

According to the study's literature review, devoting optimal time and resources in the pre-planning and design stages of a project is in the owner's best interest, and there is a cascading order-of-magnitude impact of failing to identify or address issues. An error that costs $100 to address during pre-planning could cost $1,000 to address during the design phase and $10,000 during construction. Therefore, early discovery of the errors or preventing the errors are essential to deliver full value.

Among the key findings of the CDAO study was that owners and stakeholders need to spend more time and effort to ensure they adequately scope the project before going to market. The clarity, completeness, and accuracy of the initial information provided in a Request for Proposal was found to have a strong positive correlation with the frequency of client-initiated scope change and the extent of budget change in the design stage, which will further influence the success of bidding and the extent of schedule delay and cost overruns in the construction stage.

Further, it found that there is a need for commitment on the part of owners to allow the time and budget for design reviews, checks, and verifications to be undertaken throughout each phase of the design process. Design documents that are incomplete, unclear, or conflicting from one page to the next impact the efficient delivery of construction projects.

Given the extent of the infrastructure backlog and volume of planned spending identified above, it is incumbent upon public sector procurers to maximize the value from that investment. The CDAO Procurement Project events have raised a variety of issues in current procurement that result in inefficiency and waste. Application of the best practices in this Guide can serve to address those issues.

Issues in Infrastructure Procurement

CDAO's Procurement Project initiative was established in response to a broad variety of issues that were seen as adversely impacting the procurement and delivery of public sector infrastructure projects. The following subsections detail the key issues and concerns identified by procurement officials and those offering design and construction services during the CDAO Procurement Day events over the years.

3.1 Risk Management

Every infrastructure project has risks. Failure to identify, manage, and/or mitigate those risks will adversely affect the project schedule, costs, and possibly the efficacy of the infrastructure asset itself. A significant amount of discussion has taken place at CDAO Procurement Day events on the topic of risk allocation. The overarching concepts discussed relate to the "Abrahamson Principles".

Max Abrahamson was an Irish lawyer and internationally recognized construction law expert. In 1973, he published what became known as the "Abrahamson Principles". The Abrahamson Principles state that to achieve a fair and equitable allocation of risk in a construction project, a risk should be allocated to a party if:

- the risk is within the party's control,
- the party can transfer the risk (for example, through insurance) and it is economical to deal with the risk in this way,
- the main economic benefit of controlling the risk accrues to the party,
- it is in the interests of efficiency to place the risk on the party, and/or
- when the risk occurs, the loss falls on the party in the first instance and, applying the preceding principles, there is no basis to transfer the loss to the other party (or it is impractical to do so).

PHOTOS: NOKO LTD

It is from these principles that the familiar statement "risk should be allocated to the party best positioned to manage it" is derived. This statement remains a barometer of fair risk allocation in a construction contract. Many standard form design and construction contracts reflect some semblance of the Abrahamson Principles, but the principles are just a theoretical framework which may not be suited to every project or every party to a project.

Challenges to a pure adoption of the Abrahamson Principles come from a variety of factors, including:

- The ability of parties to accurately price risk.
- Questions regarding best value for money and how to achieve the best project outcomes.
- Corporate policies regarding acceptable risk allocation.
- Risk around setting market precedents.
- Marketplace factors (e.g., shortage of work) creating pressure to accept certain risks.
- The alignment between the scope or likelihood of the risks being taken and the pricing structure for a contract.
- Expertise and capacity within participating organizations to manage certain risks.

This Guide cannot serve as a treatise on the fundamentals of risk management. However, the need for a structured approach to risk identification, risk assessment, and risk treatment cannot be overstated. This approach must be initiated early in project planning because the outcomes may impact both procurement model selection and the procurement process itself.

The International Standards Organization has published ISO 31000 – Risk Management – Guidelines. This document provides guidelines on managing risk faced by organizations and the application of these guidelines can be customized to any organization and its context. ISO 31000 provides a common approach to managing any type of risk and is not industry or sector specific. It can be used throughout the life of the organization and can be applied to any activity, including decision-making at all levels.

One risk treatment approach is risk sharing or risk transfer. A specific example relevant to infrastructure procurement and worth noting here is surety bonding. Surety bonds – specifically bid bonds, performance bonds, and labour and material payment bonds – are critical instruments for managing financial and performance risks in public construction projects. These bonds not only provide compensation in the event of contractor default but also ensure a rigorous third-party prequalification process through the surety's underwriting.

To clarify:

- A **bid bond** ensures that a contractor will honor their bid and enter into a contract if selected.
- A **performance bond** guarantees that the project will be completed as per contract terms if the contractor defaults.
- **A labour and material payment bond** ensures payment to subcontractors and suppliers, reducing lien risks and project disruptions.

The benefits of surety bonds include:

- Enhanced financial protection for owners, subcontractors, suppliers and workers.
- Increased contractor accountability through external vetting by the surety. A recently completed study by the Canadian Centre for Economic Analysis demonstrated that an unbonded contractor is ten times more likely to fail than its bonded counterpart.
- Continuity of project delivery, as sureties are incentivized to ensure project completion.
- Protection against liens, payment disputes, and default-related delays.
- Benefits to the province's economy including GDP, job creation and protection and an ability to recover some or all of the premiums paid to a surety.

In Ontario, the Construction Act requires public projects, such as those managed by Infrastructure Ontario, municipalities, or other public agencies, to be protected by 50 percent performance bonds and 50 percent labour and material payment bonds when the contract amount exceeds $500,000. Further, regulations under the Act contain prescribed bond wordings and include requirements that payments must be promptly made, and claims must be promptly resolved. Procuring entities should verify bond requirements based on project size, complexity, and procurement model.

3.2 Unclear Scope

Having an unclear scope during the procurement process causes cost, time, legal, and accountability problems – both during procurement and, if not addressed then, during project delivery. Project success requires the effective and transparent use of public resources, which in turn requires a well-defined scope for project success. The following is a breakdown of the impacts of unclear scope during procurement:

- **Budget Issues and Cost Overruns** – When the scope of work is not clearly defined, suppliers may underestimate the resources required. This can lead to frequent change orders and cost escalations, which strain budgets and may result in the need for additional funding approvals.
- **Delays in Project Delivery** – Vague or shifting scope leads to misunderstandings between the owner and suppliers. Designers and/or contractors may have to pause or redo work to align with newly clarified expectations, causing project delays.
- **Legal and Contractual Disputes** – Unclear scope increases the likelihood of contractual disagreements over what was originally intended or agreed generally, and disagreements specific to bid accuracy, bid evaluation, unfair competition, and general uncertainty in the bidding process. This may lead to disputes which may, in turn, lead to litigation. This ties up public resources and damages relationships with vendors.
- **Poor Value for Money** – Public procurement is meant to deliver best value for taxpayers. Without a clear scope, it's hard to define evaluation criteria or compare supplier bids on a like-for-like basis, which undermines the competitive process.
- **Supplier Risk and Market Aversion** – Ambiguity in scope will transfer undue risk to suppliers, who may either decline to bid, thereby reducing competition, or add risk premiums to their bids, increasing costs. Further, some suppliers may underestimate costs to appear more competitive, with the expectation of claiming for additional costs after the project begins. An ambiguous scope also discourages smaller or newer suppliers from participating, reducing innovation and market diversity.
- **Accountability and Oversight Challenges** – Public sector projects must be auditable and transparent. An unclear scope makes it difficult to track performance, monitor outcomes, or hold suppliers accountable for results.
- **Public and Political Scrutiny** – High-profile procurement failures due to poor scoping often attract media attention and public criticism. This can damage the credibility of the agency or government and affect public trust.

3.3 RFP / Tender Document Quality, Completeness, and Approach

Poor quality and incomplete RFP or tender documents compromise fairness, value for money, legal compliance, and project success. Utilizing such documents is contrary to high standards of transparency and accountability. The 2021 CDAO study clearly identified the positive correlation between tender document quality and project success.

Quality issues may arise when RFP or tender documents are copied and pasted from prior projects. Despite extensive similarities on the surface, every project is different. Different locations, different interfaces, and even the difference in time from the prior project to the current one, can create circumstances where a simple copy and paste from a prior project will give rise to errors, confusion, delays, and added costs. The time saved in doing a copy and paste is lost in proofing the copied material in the context of the current project.

Poor-quality or incomplete tender documents create a wide range of practical, legal, and financial risks during procurement and project delivery as follows:

- **Unfair or Non-Competitive Process** – Incomplete or poorly written tender documents may confuse or mislead suppliers, making it difficult for them to submit accurate bids. This can result in fewer bidders, reducing competition and potentially increasing prices or lowering quality.
- **Misinterpretation and Ambiguity** – If the requirements, evaluation criteria, or contractual terms in the tender documents are vague or inconsistent, suppliers may interpret them differently. This leads to non-comparable bids, delays in evaluation, and potential challenges or complaints from unsuccessful bidders.
- **Increased Risk of Legal Challenge** – In public procurement, the process must be fair, transparent, and non-discriminatory. Incomplete or ambiguous tender documents can be grounds for legal appeals, audits, or investigations, leading to project delays and reputational damage.

- **Poor Contract Outcomes** – Tender documents form the foundation of the eventual contract. If expectations, deliverables, timelines, and performance standards aren't clearly set out, the resulting contract may allow for loopholes, disputes, or poor supplier performance.
- **Delays in Procurement Timelines** – Ambiguities in tender documents often lead to multiple clarification questions from bidders, revisions or re-issues of the tender, and/or extended submission deadlines. These delay project start times and public service delivery.
- **Higher Project Costs** – Suppliers may inflate prices to cover the uncertainty caused by unclear requirements or missing information. Errors or omissions in technical specifications or quantities can lead to costly variations and change orders during implementation.
- **Damage to Public Trust and Reputation** – The public sector is held to a high standard of accountability. Poorly managed tenders erode public confidence in the government's ability to spend taxpayer money wisely and deliver effective services.

A recent trend in procurement is the use of non-traditional bid/tendering models. Specifically, there has been a movement away from the binding Contract A / Contract B model, towards ambiguous, conflicting terms and conditions. This makes it exceptionally difficult for contractors to determine whether the tendering solicitation gives rise to a binding Contract A. The implications are both significant and concerning.

The traditional two-contract system establishes specific obligations on both parties to the contract. For vendors, the principal obligation is that they are required to keep their bids open for acceptance for the time prescribed. For procurers, the principal obligations are to enter into a Contract B and to treat all bidders fairly and equally. The movement away from this model and towards tender calls that include mixed messaging – such as irrevocability language alongside provisions allowing owners to accept non-compliant bids or negotiate with any bidder – confuse both the legal intent and procedural application. This forces vendors to take on unnecessary legal and financial risk.

The result is a tendering environment that lacks transparency, limits competition, and exposes both owners and bidders to elevated risks of dispute, misalignment, and compromised value for money. When bidders are unsure as to whether these obligations and assurances exist due to ambiguous language, undefined terms, and inconsistent requirements, bidders will likely interpret the tender differently, increasing the risk of incomparable submissions and ultimately claims and litigation.

3.4 Bid Evaluation Process

Issues in the bid evaluation process can lead to unfair outcomes, legal disputes, wasted public funds, and reputational harm. Accountability, transparency, and value for money are paramount considerations in public sector procurement. Therefore, the bid evaluation process must be vigorous, impartial, and compliant with established rules. There are several ways that a bid evaluation process can be problematic:

- **Risk of Bias or Lack of Fairness** – Public procurement must be objective, transparent, and non-discriminatory. If the evaluation criteria are applied inconsistently or if evaluators show favoritism (intentionally or unintentionally), it compromises the integrity of the process and exposes the organization to legal challenge.
- **Poorly Defined Evaluation Criteria** – Vague, subjective, overly broad, or missing criteria lead to subjective evaluations. Without clear weighting or guidance, evaluators may interpret the importance of price, quality, or technical capability differently, resulting in unjust or inconsistent outcomes.
- **Non-Compliance with Procurement Rule**s – Public sector entities are bound by procurement laws and policies. Failure to follow a structured and rule-compliant evaluation process can lead to audit failures, investigations, or annulment of awards.
- **Delays in Decision-Making** – Inadequate planning, lack of evaluator training, or poorly organized evaluation teams can cause lengthy evaluation timelines. This delays contract award and project initiation, especially in high-value or time-sensitive procurements.
- **Challenges and Appeals from Bidders** – If unsuccessful bidders believe an evaluation was unfair, unclear, or inconsistent with the published criteria, they may file formal protests or appeals. This can lead to legal proceedings, delays, and reputational damage.

- **Awarding Contracts to the Wrong Supplier** – If the process is flawed, there's a risk of selecting a supplier who is not the best fit in terms of quality, capability, or value for money. This can result in poor contract performance, increased costs, or failure to deliver essential services.
- **Lack of Documentation and Transparency** – Evaluations must be well-documented to demonstrate that the process was fair and defensible. Poor recordkeeping makes it difficult to respond to audits, justify decisions, or learn from past evaluations.
- **Insufficient Training of Evaluation Teams** – Evaluators who lack procurement or technical expertise may misinterpret bid content, fail to apply scoring criteria properly, and/or overlook critical compliance issues. This will reduce the quality and reliability of the evaluation process.

3.5 Non-standard Contracts and Supplementary Conditions

In Ontario, there is a broad range of standards forms of contract available for use for public sector infrastructure projects. Most well known would be the Canadian Construction Documents Committee (CCDC) library of contract forms. The CCDC is a national joint committee, formed in 1974, that includes representatives from project owners in both the public and private sectors, in addition to representatives from four national organizations from the design and construction sectors.

The CCDC library includes forms of contract that apply to all of the procurement methods within the scope of this Guide. Whether a public sector entity is procuring design services (other than architectural services), construction services, construction management, or a combination, there is a CCDC standard form of contract applicable to the situation.

Beyond the CCDC, the engineering and architectural communities in Ontario have produced standard forms of contract applicable to the procurement of design services. The Association of Consulting Engineering Companies – Ontario (ACEC-Ontario) and the Municipal Engineers Association (MEA) first joined forces over 30 years ago to produce a Client/Engineer Agreement for Professional Consulting Services". That agreement has been updated over the years and subject to legal review, and the most recent version was published in 2024. The Ontario Association of Architects (OAA) has produced OAA 600 – Standard Form of Contract for Architect's Services, most recently updated in 2023. The OAA also produces OAA 800 – a "short form" contract to be used on less complex projects.

All of these standard forms of contract have been developed with input from project owners along with designers and/or contractors (as applicable). They have all been subject to legal review to ensure fairness and reasonableness, and to ensure a balanced protection of the interests of the parties to the agreements.

Using one of these standard forms of contract allows the parties to concentrate on project-specific issues rather than boilerplate sections applicable on all projects. They provide clarity and certainty. All parties involved in a construction project will have a clear understanding of their obligations, which reduces the risk of disputes and misunderstandings.

Standard contracts provide consistency by ensuring all parties have the same information, which reduces miscommunication and misunderstandings. They make everyone aware of the project's standards and requirements, lowering the risk of errors and improving quality.

Standard contracts protect all parties by clarifying rights and obligations, thus reducing disputes and legal action. They also include dispute resolution mechanisms like mediation or arbitration for quick, efficient conflict resolution.

Finally, standard contracts streamline the construction process by reducing the need for repeated negotiations and discussions. This saves time and reduces costs, enhancing project efficiency.

By contrast, using non-standard contracts in public sector procurement can create legal uncertainty, delay projects, reduce fairness, and increase costs. Public buyers are generally better served by using standardized, industry-approved contracts that support consistency, compliance, and value for money. The use of non-standard contracts introduces risk, complexity, and inconsistency.

PHOTOS: ALEXSL

While sometimes necessary, the use of supplementary conditions with standardized contracts is risky when those conditions are poorly justified, drafted, or applied. It can lead to legal, operational, and financial problems, and should be minimized, reviewed carefully, and clearly justified. Excessive or poorly written supplementary conditions can render a standard contract unrecognizable.

In Ontario, supplementary conditions regarding indemnification, liquidated damages, and no limitation of liability have been the most contentious and problematic. Insurability of designers and construction contractors in the face of one-sided supplementary conditions has been a particular sticking point.

Additional issues associated with non-standard contracts and supplementary conditions include:

- **Increased Legal, Commercial, and Compliance Risk** – Standard contracts are typically vetted by legal and procurement experts and are designed to be balanced and compliant with applicable laws. Non-standard contracts may contain ambiguous, unclear, or biased clauses that are legally unenforceable, shift risk unfairly between parties, and/or expose the public entity to litigation or liability. Further, supplementary conditions can conflict with procurement laws, regulations, or the core terms of standard contracts. Supplementary conditions can also shift risk inappropriately onto parties that are not able to manage them. This may result in unfair or unworkable contracts, leading to disputes, poor performance, or project failure. If these additions are poorly drafted or incompatible with overarching procurement rules, they may render parts of the contract unenforceable or illegal, exposing the agency to legal disputes or audit findings. Non-standard contracts and unreasonable supplementary conditions can also negate the professional liability insurance carried by design professionals. This would remove an important public protection.
- **Lack of Consistency and Comparability** – Standard contracts help maintain uniformity across projects and suppliers. Using non-standard terms makes it harder to compare bids fairly, apply lessons learned from past projects, and/or manage contracts consistently across departments or projects. Public procurement often relies on standard contract templates to ensure fairness, legal compliance, and administrative efficiency. Supplementary conditions create variations between contracts, making it harder to manage them consistently or compare outcomes across projects.
- **Potential for Unfair or Unbalanced Terms** – Non-standard contracts may inadvertently favour one party (often the project owner) due to negotiation imbalances, lack of procurement/legal expertise, and/or use of owner-drafted contracts. This can lead to poor value for money and reduced protections for the public sector. Public procurement often relies on standard contract templates to ensure fairness, legal compliance, and administrative efficiency. Supplementary conditions create variations between contracts, making it harder to manage them consistently or compare outcomes across projects.
- **Delays and Increased Transaction Costs** – Custom contracts typically require more time for negotiation, legal review, and approval. This slows down procurement timelines and adds legal and administrative costs, reducing efficiency. Supplementary conditions usually require additional review by legal, procurement, and technical teams. This increases administrative burden and slows down the tendering and approval process, especially for high-value or time-sensitive projects.
- **Complexity in Contract Management** – Contract managers may struggle to administer or enforce non-standard terms, especially if they differ significantly from familiar clauses. This can result in performance monitoring gaps, payment errors, or disputes during implementation.
- **Reduced Transparency and Accountability** – Standard contracts promote transparency because they are public, widely understood, and easier to audit. Non-standard contracts may obscure key responsibilities or performance obligations, undermining oversight and public trust. Deviations from standard terms via supplementary conditions may not always be transparent to stakeholders or auditors. This can make oversight, performance tracking, and public accountability more difficult.
- **Barrier to Supplier Participation** – Smaller or less experienced suppliers may be discouraged from bidding if faced with unfamiliar or complex contractual terms. This reduces competition, innovation, and market access. Suppliers are familiar with standard terms; changes introduced through supplementary conditions may be unclear or hard to interpret, create unfamiliar risks or obligations, and/or result in inflated prices to cover uncertainty or discourage participation entirely, especially among smaller suppliers.

3.6 Failure to Use OPS Specifications and Drawings

The Ontario Provincial Standards for Roads and Public Works (OPS) organization is owned jointly by the Ontario Ministry of Transportation (MTO) and the Municipal Engineers Association (MEA). The organization includes the support of, and involvement from, many other organizations representing contractors, consulting engineers, manufacturers, and their associations. OPS develops and publishes a comprehensive set of standard specifications and drawings for use in the construction of roads and public works in Ontario. Specifications are divided into municipal (MUNI) and provincial (PROV) based on the context of the work.

OPS specifications and drawings have been in use since 1984. Alliances between the noted organizations and the OPS Advisory Board have allowed OPS to evolve into an excellent model of construction standards development, now characterized by consistently well built, cost-effective, safe, and dependable highways and roads in the province.

The Ontario Provincial Standards Unit at MTO provides administrative support for the OPS organization which includes:

- Implementing OPS policies and coordinating the efforts of the OPS Advisory Board, OPS Standards Management Committee, and the OPS specialty committees.
- Coordinating the development, administration, review, and publishing of OPS Specifications (OPSS) and Drawings (OPSD), and other associated documents.
- Providing expertise and interpretation of OPS standards and ensuring the consistency of OPS.

At present, use of MUNI or PROV standards is not mandatory therefore each public infrastructure owner determines which standards they will use (if any), and when they will implement them for use. Unfortunately, OPS specifications and drawings have not been widely adopted among municipalities in Ontario.

Using OPS specifications and drawings for road and public works promotes uniformity, reduces costs, and improves quality. The OPS standardized designs, specifications, and construction methods ensure consistency and reduce miscommunication among municipalities, contractors, and consultants.

Here's a more detailed look at the benefits of OPS:

- **Cost Savings** – By using a standardized set of specifications and drawings, municipalities avoid the expense of developing and maintaining their own unique specifications.
- **Reduced Miscommunication and Errors** – Standardized OPS specifications reduce the chance of misinterpretations and misunderstandings, leading to fewer mistakes and rework.
- **Improved Consistency** – OPS ensures that all construction projects in Ontario adhere to the same high standards, leading to consistent quality and longevity of infrastructure.
- **Better Quality and Lifespan** – Following OPS standards leads to better quality construction, which in turn results in longer-lasting infrastructure, reducing maintenance costs in the long run.
- **Best Practices** – OPS is based on best practices and proven methods, ensuring that municipalities are using the most effective and efficient approaches to construction.
- **Training and Expertise** – OPS provides a framework for training and development, ensuring that both municipal staff and contractors have the necessary skills and knowledge to implement the standards effectively.
- **Harmonized Standards** – OPS facilitates harmony and standardization in the design, tendering, and construction of roads and public works across Ontario.

3.7 Communications

Communication is a persistent issue in public sector procurement because it directly affects fairness, efficiency, legal compliance, and outcomes. Poor communication leads to confusion, disputes, reduced competition, and procurement failure. Communications issues result in the following:

- **Risk of Perceived or Actual Bias** – Public procurement must be conducted impartially. Poor communication—especially if it's inconsistent or informal—can lead to perceptions of favoritism, damaging trust in the process and inviting legal challenges from suppliers.
- **Inconsistent or Unclear Messaging** – If requirements, deadlines, or evaluation criteria are not clearly communicated, suppliers may misunderstand what is being asked, submit non-compliant or suboptimal bids, or withdraw from the process altogether.
- **Poor Supplier Engagement** – Lack of clear and timely communication discourages participation, particularly from small and medium-sized enterprises who may rely more on guidance and support. This reduces competition, innovation, and value for money.

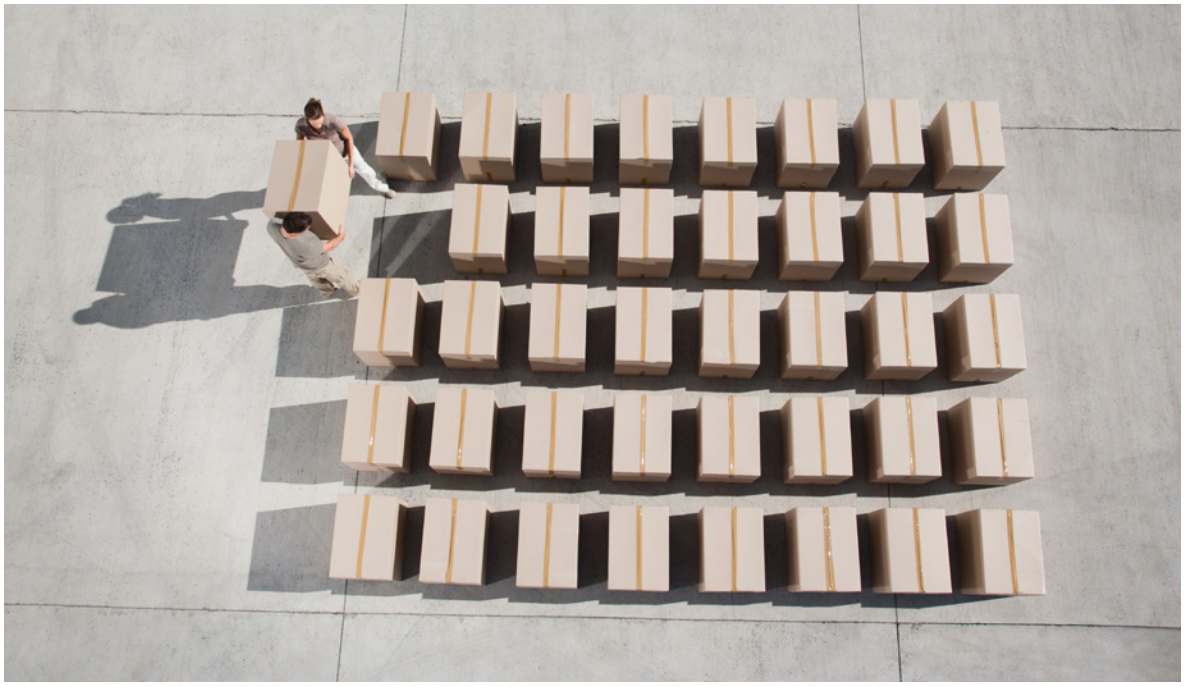
- **Delays Due to Clarification Issues** – When procurement documents are unclear or ambiguous, suppliers submit many clarification questions. If responses are delayed, vague, or inconsistent, it slows down the process and increases frustration and risk for bidders.
- **Non-Compliance with Procurement Regulations** – Public procurement requires that all suppliers receive the same information at the same time (e.g., through official tender portals). Failing to maintain proper communication channels and protocols can breach procurement rules and lead to audits, complaints, or annulments.
- **Ineffective Internal Communication** – Miscommunication within the procurement team or between departments (e.g., legal, finance, technical) can lead to misaligned expectations, errors in tender documents, and/or confusion during evaluation or contract award.
- **Disputes and Challenges** – If communication is not well documented or appears inconsistent, it becomes difficult to defend decisions if a bidder complains or files a protest. This increases the risk of legal action or reputational damage.
- **Lack of Transparency** – Transparency is a core principle of public procurement. Poor communication undermines this, especially if key updates, decisions, or clarifications are not shared publicly or documented properly.
- **Difficulty in Contract Management** – Weak communication doesn't end with tendering; it affects contract implementation as well. Without clear communication of deliverables, timelines, and reporting expectations, contract performance suffers

3.8 Time Pressures

Time pressures in public sector procurement undermine due process, increase risks, reduce competition, and often result in costlier, lower-quality, or non-compliant outcomes. In limited circumstances, urgency is sometimes unavoidable. However, it should be managed through early planning, framework agreements, and contingency measures and not ad hoc shortcuts. Tight deadlines increase the risk of errors, inefficiencies, and non-compliance. There are several impacts of time pressure:

- **Compromised Planning and Scoping** – Adequate procurement planning is essential to define needs, budgets, and timelines. Under time pressure, teams may skip or rush planning steps, resulting in unclear specifications, incomplete documentation, and/or missed legal or regulatory requirements.
- **Reduced Competition** – Compressed timelines may not give suppliers sufficient time to prepare quality bids. This discourages participation—especially from SMEs or new entrants—leading to fewer bids and reduced value for money.
- **Increased Risk of Non-Compliance** – Public procurement is governed by strict rules and policies (e.g., advertising periods, evaluation procedures). Time pressure can lead to shortcuts or skipped steps, resulting in breaches of procurement law, potential legal challenges, and audit findings.
- **Inadequate Bid Evaluation** – Rushed evaluations increase the risk of mistakes in scoring, overlooking key compliance issues, and/or inconsistent application of evaluation criteria. These can lead to incorrect contract awards, disputes, or poor contractor performance.
- **Poor Documentation and Justification** – Time constraints can result in incomplete records of decisions, which are critical for transparency and accountability, defending against challenges or audits, and ensuring institutional learning for future procurements.
- **Higher Costs and Lower Quality** – Urgency often leads to emergency procurement or sole-source contracts that bypass competitive tendering. This reduces leverage and results in inflated prices, lower quality, and limited scrutiny of supplier capabilities.
- **Increased Supplier Risk** – Suppliers under pressure to meet unrealistic deadlines may submit incomplete or risky bids, underperform due to inadequate preparation, and/or face delivery failures that reflect poorly on the public buyer.
- **Impact on Staff and Decision Quality** – Procurement and project teams may experience stress and fatigue under deadline pressure. This leads to poor decision-making, reduced morale, and greater potential for oversight or error.
- **Damaged Public Trust** – When rushed procurements go wrong, the consequences are often public (e.g., failed IT systems, infrastructure delays). This undermines public confidence in the government's ability to manage taxpayer money effectively.

Selecting a Procurement Method



4.1 Overview

Most public sector infrastructure projects are currently delivered using the DBB model. Considering issues of project complexity, risk, cost, and schedule, it should be no surprise that DBB is an appropriate approach for many projects, especially at the municipal level. However, the other delivery models offer distinct advantages that make them appropriate for some project types. Any approach to procurement should begin with an assessment as to the best procurement method for the given project.

Alternative delivery models have the potential to accelerate project timelines, improve cost certainty, address unique project risks, and deliver higher value by leveraging collaboration and innovation throughout the project lifecycle. Selecting the best procurement method is critical to a project's success. There is no single best selection framework that would satisfy all the players in the public sector buying community in Ontario. However, the failure to implement a procurement model selection framework puts a procurement organization at a disadvantage and can almost ensure that best value will not be obtained for the project.

At Infrastructure Ontario, this framework is called the "Procurement Options Analysis". A 2025 KPMG report to the City of Toronto refers to it as a "Delivery Model Assessment Framework". The Ministry of Transportation refers to it as a "Screening Process". Regardless of the title, the elements and considerations remain the same and are outlined in the next subsection.

PHOTOS: MARTIN BARRAUD

4.2 Elements of a Procurement Model Selection Framework

High-Level Project Definition – Objectives & Priorities

Before getting into the weeds of considering the attributes of the various procurement models, it is necessary for the procuring entity to have a detailed understanding of foundational aspects of the project, including:

- **Policy Context** – Who are the stakeholders? Where is the funding coming from? Legislative restrictions?
- **Procurement Objectives** – Does the project need to be completed within a certain timeframe? Is this to be a learning opportunity regarding the process?
- **Project Objectives** – What are the desired outcomes from the project? What are the obstacles?
- **Cost Control** – Is staying within budget the top priority?
- **Quality & Innovation** – Is a high level of design flexibility required?
- **Risk Analysis** – Can the risks be reasonably identified and quantified in advance? What mitigation strategies are available to address the risks?

With a high-level definition completed, the following assessments and determinations should be made – to the extent possible – to establish a shortlist of applicable procurement models. The shortlisted models can then be evaluated based on the criteria described in section 4.3 to identify the most appropriate procurement method.

Assess Project Complexity & Size

Different methods work better for different levels of complexity:

Project Type	Favoured Procurement Method
Simple, well-defined projects	DBB
Large or complex projects	CM@R or IPD
Fast-track projects	DB
Innovative, high-collaboration projects	IPD

Determine Risk Tolerance & Allocation

Risk should be assigned to the party best equipped to manage it.

- **DBB:** Owner bears most risk; contractor follows design exactly.
- **DB:** Risk shared between designer-builder and owner.
- **CM@R:** CM assumes cost risk through a GMP.
- **IPD:** Risk is shared by all parties through incentives.

If the owner wants to transfer more risk, a fixed-price contract under DB or CM@R might be a better fit.

Consider Budgeting & Cost Certainty Needs

Different procurement models provide different levels of cost predictability:

Procurement Method	Cost Certainty	Flexibility
DBB	High (but subject to change orders)	Low
DB	Medium-High	Moderate
CM@R	High (GMP provides cost cap)	Moderate
IPD	Variable (shared financial incentives)	High

If cost certainty is the top priority, a fixed-price DBB or CM@R with a GMP is best. If flexibility is needed, IPD or DB allows for iterative design improvements.

Evaluate Schedule & Delivery Constraints

For fast-track projects, where time is crucial, overlapping design and construction phases can save months.

Method	Speed of Delivery
DBB	Slow (sequential process)
DB	Fast (parallel design & construction)
CM@R	Moderate (some overlap)
IPD	Fastest (high collaboration & early involvement)

If early contractor involvement is needed to optimize construction sequencing, DB or CM@R can help accelerate project delivery.

Consider Owner Experience & Management Capacity

Different procurement methods require varying levels of owner involvement:

- **DBB:** Owner must manage separate contracts for design and construction.
- **DB:** Owner has a single point of responsibility (less administrative burden).
- **CM@R:** Owner works closely with the CM but still manages multiple contracts.
- **IPD:** Requires high collaboration and an owner willing to take an active role in decision-making.

If the owner lacks experience in managing construction, DB or CM@R can reduce administrative burden.

Account for Regulatory & Contractual Constraints

- Public projects often require DBB due to transparent bidding laws.
- Design-build models may be restricted by certain government agencies.
- Public-Private Partnerships (P3s) can be used when public funds are limited but require long-term commitments.

Check local laws and contractual obligations before choosing a method.

Engage Key Stakeholders Early

Consult with designers, contractors, and project managers to get input on the best procurement method. Market conditions (e.g., contractor availability, labor costs, supply chain issues) should also influence the decision.

4.3 Evaluation Criteria

The following list of criteria should be considered in the context of the assessments and evaluations described above. Not all of these criteria will be relevant or applicable to every project, but the full list should be reviewed as part of the evaluation of any procurement method against any project. Users of this Guide should review the fulsome descriptions of each procurement method in Appendix A in conjunction with considering these criteria.

a **Risk Transfer / Sharing / Reduction** – Who owns the risks? Are the risks held by those in the best position to manage them? In DBB, the owner retains the majority of the project risks. DB has less design and construction risk for the owner. IPD has risk shared among the parties, but without limits.

b **Extent of Market Experience / Owner Capability** – Is it a commonly used and well understood approach within the public sector? DBB is the most commonly used approach and will be familiar to owners and designers/constructors alike. CM@R and IPD have been used much less and hence there may be a learning curve on both sides.

c **Control** – To what degree does the Owner retain control of the project? DBB provides the owner with a significant degree of control. In CM@R, owner control is reduced during construction as the CM has broad authority.

d **Flexibility** – Will there be a need to respond to changing conditions, risks, opportunities, and external concerns? DBB provides good flexibility to respond to changing conditions. The IPD approach provides flexibility to deal with scope changes, changing risks, and new opportunities.

e **Upfront Time and Resources** – Need to spend upfront time and resources projecting future operational requirements and risks? DBB typically includes less upfront time and resources on lifecycle considerations. IPD requires significant upfront time and effort to reach a durable agreement.

f **Integration** – Is there opportunity for integration between design and construction to create efficiencies and cost savings? DBB generally requires a completed design before awarding the construction contract. IPD provides for pooling of resources and expertise across participants to optimize integration and minimize duplication.

g **Constructability** – How easily can constructability considerations be included in the design? DBB typically doesn't provide for construction contractor input during the design phase. DB is somewhat better in this regard. CM@R ensures that the design is reviewed from a constructability perspective. IPD maximizes consideration of constructability during design.

h **Cost Certainty** – How important is overall cost certainty? Is it acceptable to not know the construction budget until the design is complete? In DBB, the construction budget cannot be determined until the design is complete. DB has more certainty in this regard. CM@R typically features a guaranteed maximum price. In IPD, there can be significant uncertainty about final cost, heightening the importance of risk management.

i **Schedule Certainty** – How important is overall schedule certainty? To what extent can delays be tolerated? As with costs, the schedule in DBB can't be finalized until the design is complete. DB provides more certainty in this regard. CM@R does not transfer schedule risk to the CM.

j **Lifecycle Considerations** – How important are lifecycle cost considerations and long-term operational and maintenance quality and performance considerations? None of the procurement methods addressed in this Guide cover this well. If lifecycle operational and maintenance considerations are a significant issue, consider a P3 approach (See Appendix B).

k **Performance Guarantee** – Is a guarantee of asset operational performance and quality required? DBB, DB, and CM@R generally do not provide any form of long-term performance guarantee for the infrastructure asset. It is possible to incorporate this element into IPD, but if this is a significant issue then a P3 approach should be considered.

l **Innovation** – Is innovation in design, construction, or operations important? DBB, DB, and CM@R provide little opportunity for private sector innovation. IPD's collaborative process can facilitate a greater degree of innovation. The P3 model also provides for innovation opportunities.

m **Common Goals** – To what extent do the owner, designer, and constructor share common goals? Are there incentives to achieve these common goals? DBB, DB, and CM@R reinforce the "owner versus supplier" construct. In IPD, the parties are incentivized to work towards a common goal.

n **Visibility of Project Requirements** – Is it desirable for the designer and constructor to be involved earlier to provide greater visibility into project requirements? DBB does not facilitate this. DB can do so, to a limited extent. CM@R and IPD provide for early involvement of construction resources during design.

o **Collaboration** – How important is it to minimize the risk of disputes that could lead to litigation? DBB, DB, and CM@R represent an "owner versus supplier" construct, though collaboration is sometimes possible. IPD is collaborative by design and eliminates the possibility of litigation between the parties.

p **Competitiveness** – How important is the need for a fully open and competitive process? DBB traditionally includes a bid process for the selection of the designer and the constructor. The designer-builder in DB is also typically selected through a competitive process. In CM@R, construction is generally sole sourced to the selected CM contractor without a tender process. In IPD, projects are not competitively bid and market participants may be reluctant to enter any risk-sharing arrangement without the cost of the project being defined.

q **Change Orders** – To what extent can change orders be tolerated? While good pre-planning can mitigate this, change orders are a reality for DBB projects. It's generally less of an issue for DB and CM@R projects. The collaborative IPD model provides the greatest flexibility and responsiveness to change in scope and risk.

Best Practices within each Procurement Model

5.1 Design-Bid-Build

Design-Bid-Build (DBB) is the most traditional construction procurement method, following a linear process where the project is fully designed before bidding and construction begins. While it provides cost control and design certainty, it can lead to delays and cost overruns if not managed properly. See Appendix A-1 for a fulsome description of DBB including its key features, advantages, challenges, and summary "when to use" criteria.

The following best practices will help ensure a successful DBB project:

Select the Right Designer (Architect/Engineer)

- Choose a designer based on qualifications, experience, and past project performance. Use detailed evaluation criteria to be able to differentiate between firms.
- Avoid selecting designers based solely on the lowest fee. If weighting qualifications and price, avoid weighing price at more than 20%. Focus on value and experience brought by the qualifications of the best firm. Shortlist the best qualified firms before considering price.
- Ensure the designer understands cost-effective design principles to avoid over-designing.
- Require the designer to provide detailed construction drawings and specifications.
- Use a standard form of contract for the designer such as CCDC-31, the ACEC-Ontario/MEA agreement, or the OAA 600 contract.

Develop a Clear & Comprehensive Design

- Require the use of OPS specifications and standards, where applicable.
- Ensure the design is 100% complete and well-documented before issuing the construction bid package.
- Ensure the design is accurate and fully developed to reduce scope changes. Consider engaging an experienced third-party reviewer to help identify design gaps before bidding.
- Conduct thorough site assessments to identify potential challenges early.
- Use design reviews to minimize design errors and omissions.
- Use constructability reviews to minimize issues during construction.
- Ensure the design meets all applicable codes, zoning laws, and regulatory requirements.

Create a Well-Defined Bid Package

- Use standard forms of contract like the CCDC library to reduce ambiguity.
- Include detailed specifications, plans, schedules, and contract terms.
- Avoid cutting and pasting elements from prior similar projects – and carefully proofread where cutting and pasting has been done.
- Clearly define scope, deliverables, payment terms, and change order processes.
- Establish prequalification criteria to ensure only capable contractors bid.

Conduct a Competitive & Transparent Bidding Process

- Advertise the bid widely to encourage competition and fair pricing.
- Ensure bid evaluation criteria are clear and objective (including qualification and price components).
- Hold a pre-bid meeting to clarify scope, expectations, evaluation process, site conditions, etc.
- Use screening criteria or a prequalification process to shortlist qualified contractors.
- Consider allowing alternative bids for value engineering proposals that reduce costs.
- Consider a shorter bid validity period to ensure the best possible pricing, mindful of the steps required before a contract is signed.
- Minimize the overall bid award timeline to promote competition and demonstrate a more predictable and efficient procurement environment.
- Public disclosure of the bid results at the close of the bid period ensures transparency.

Select the Right Contractor

- After the screening criteria or prequalification process has been applied, evaluate the remaining contractors based on experience on similar projects, financial stability, quality of past performance, and then price.
- Verify contractor licenses (as applicable), bonding capacity, and insurance coverage.
- Check references and past projects to assess reliability and workmanship quality.
- If using a purely low-bid selection process, ensure the bid price is realistic and not artificially low to avoid future change orders.

Establish Clear Contract Terms & Risk Allocation

- Where appropriate, use a fixed-price contract to maintain cost control.
- Define roles, responsibilities, and deliverables to avoid disputes.
- Include clear change order procedures to manage scope changes efficiently.
- Assign risk to the appropriate party (e.g., contractor for construction risks, owner for design risks).
- Consider including incentives for early completion and penalties for delays.

Ensure the Contract Establishes Strong Project Management & Oversight

- Have a qualified owner's representative or project manager to oversee the project.
- Require regular progress meetings between the owner, contractor, and designer.
- Require quality control inspections to ensure work meets design specifications.
- Require the use of construction management software for document control and scheduling.
- Require or define a communication protocol to ensure timely responses to issues and concerns.

Include Commissioning, Closeout & Post-Construction Responsibilities in the Contract

- Require the contractor to provide a commissioning plan and report (where relevant to the project).
- Require the contractor to provide as-built drawings, warranties, and O&M manuals.
- Require a final walkthrough and inspection before final payment.
- Require a warranty and maintenance plan for long-term asset management.
- Require a post-project review to capture lessons learned for future DBB projects.

Conclusion: Key Takeaways for a Successful DBB Project

Best Practice	Why It Matters
Fully develop the design before bidding	Reduces change orders & cost overruns
Prequalify bidders	Ensures competent contractors
Select based on value, not just price	Prevents poor workmanship & delays
Use clear contracts & risk allocation	Minimizes disputes

By following these best practices, owners can maximize the benefits of DBB, ensuring cost control, design integrity, and a structured procurement process.

5.2 Design-Build

Design-Build (DB) is a procurement method that integrates design and construction under a single contract, improving collaboration and reducing project timelines. Joint ventures, consortia, and/or subcontracting arrangements can be established between two or more companies to pool the resources and expertise necessary to deliver the project. To maximize the benefits, it's essential to follow best practices that enhance risk management, communication, and project efficiency. See Appendix A-2 for a fulsome description of DB including its key features, advantages, challenges, and summary "when to use" criteria.

Progressive Design-Build (Progressive DB) emerged as a project delivery model starting around 2020, when owners, consultants and contractors sought to mitigate cost and schedule risks arising from the COVID-19 pandemic. Progressive DB has quickly gained traction, particularly in complex and high-risk transit projects. Progressive DB involves selecting a design-build team based on qualifications rather than fixed price and developing the design progressively with the builder's input throughout. This approach offers greater flexibility, innovation, and refinement of the project scope as it evolves. It is not a P3 approach, but it applies a similar collaboration between the owner and its contracting partners during the early work of projects such as project requirements and design work. The structure may also include a "share the gain / share the pain" mechanism.

Clearly Define Project Goals & Requirements

- Establish project scope, budget, and timeline upfront.
- Identify key performance metrics (e.g., cost savings, sustainability goals, schedule milestones).
- Ensure owner expectations are well-documented to avoid design misalignment.
- Use a performance-based scope rather than rigid specifications, allowing the design-builder to optimize solutions.

Select the Right Design-Build Team

- Choose a team with experience in DB projects and a proven track record in similar project types.
- Use a qualifications-based selection process instead of low-bid selection to prioritize expertise and capability.
- Assess team chemistry, as collaboration is essential in DB projects.
- Evaluate firms based on design innovation, risk management approach, and project delivery efficiency.

Use a Well-Defined Contract Structure

- Clearly outline roles, responsibilities, and deliverables in the contract.
- Include risk allocation terms that fairly distribute responsibilities between the owner and design-builder.
- Define payment structures (lump sum, cost-plus with a guaranteed maximum price, etc.).
- Use standard CCDC contracts to ensure industry best practices and minimize supplemental terms and conditions.
- Avoid cutting and pasting from prior similar projects. Where such cutting and pasting is done, carefully proofread the result.

Foster Collaboration & Communication

- Establish Key Performance Indicators (KPIs) for cost, schedule, and quality tracking.
- Allow flexibility for design improvements that enhance efficiency without compromising project goals.
- Require regular coordination meetings with the owner, designers, and builders to track progress.
- Require the use of collaborative digital tools such as Building Information Modeling (BIM) or commercially available project management platforms.
- Define a dispute resolution process within the contract to handle potential conflicts efficiently.

- Require a partnering session at the start of the project to align goals and expectations among all stakeholders.
- Require a post-project review to capture lessons learned for future DB projects.

Optimize Design-Build for Cost & Schedule Savings

- Arrange early contractor involvement for cost-effective material selection and value engineering.
- Implement fast-tracking, where construction can begin on design elements that are complete without the overall design being fully complete.
- Consider the use of Progressive DB for more complex projects, where the contractor is selected before design is finalized.

Manage Risks Proactively

- Clearly define change order procedures to avoid costly delays.
- Set contingency plans for unforeseen conditions (e.g., site constraints, material shortages). Incorporate contingency funding as a percentage of the overall project cost).
- Conduct early feasibility studies to assess regulatory, environmental, and technical risks.
- Require regular risk assessments throughout the project lifecycle.
- Assign risk to the party best equipped to manage it. For example, contractors handle construction risks, designers manage compliance risks, owners manage property risks.

Ensure Regulatory & Stakeholder Alignment

- Engage permitting authorities early to prevent regulatory delays.
- Maintain transparency with community stakeholders, investors, and end-users to avoid opposition.
- Ensure the design-builder understands local building codes and zoning laws.
- Use progressive community engagement to incorporate feedback and reduce resistance.

Conclusion: Key Takeaways for a Successful Design-Build Project

Best Practice	Why It Matters
Define clear project objectives	Reduces scope creep & misalignment
Select the right design-build team	Ensures expertise & collaboration
Use a well-structured contract	Prevents disputes & clarifies risk
Promote open communication	Enhances teamwork & problem-solving
Leverage early contractor involvement	Optimizes design for cost & schedule savings
Proactively manage risks	Minimizes costly delays
Align with regulations & stakeholders	Avoids legal and community pushback

With these best practices, owners can maximize the benefits of Design-Build, ensuring a cost-effective, high-quality, and timely project delivery.

5.3 Construction Management at Risk

Construction Management at Risk (CM@R) is a procurement method where the Construction Manager (CM) is engaged early in the project and assumes responsibility for cost, schedule, and quality. The CM provides preconstruction services and then acts as a general contractor during construction, usually under a Guaranteed Maximum Price (GMP) contract. See Appendix A-3 for a fulsome description of CM@R including its key features, advantages, challenges, and summary "when to use" criteria.

To maximize the benefits of CM@R, follow these best practices:

Select the Right CM

- Use a qualifications-based selection process rather than choosing solely based on price.
- Assess the CM's experience with similar project types, budgets, and complexities.
- Review past projects for collaboration skills, cost control success, and risk management strategies.
- Conduct interviews and reference checks to evaluate the CM's ability to work within a team environment.

Engage the CM Early in the Design Phase

- Involve the CM at 30% design or earlier for preconstruction planning.
- Leverage the CM's expertise in value engineering, constructability analysis, and scheduling.
- Use Target Value Design to ensure the project stays within budget.
- The earlier the CM is involved, the better they can help avoid design inefficiencies and costly rework.

Define a Clear and Realistic Guaranteed Maximum Price (GMP)

- Establish a well-defined scope of work before setting the GMP.
- Allow flexibility in the contract for adjustments based on market conditions.
- Ensure transparency in cost estimates with an open-book approach.
- Require the CM to conduct early trade partner outreach to get accurate cost estimates before finalizing the GMP.

Use an Open-Book, Cost-Transparent Approach

- Require the CM to provide detailed cost breakdowns, bids, and subcontractor pricing.
- Allow for the owner to participate in subcontractor selection to ensure competitive pricing.
- Require a contingency fund to be included but managed transparently.
- Use GMP savings-sharing clauses so that cost savings benefit both the owner and the CM.

Promote Collaboration Between Owner, Designer, and CM

- Require regular design coordination meetings to align all stakeholders.
- Define KPIs for cost, schedule, safety, and quality.
- Require the use of commercially available collaborative project management software.
- Foster a problem-solving culture rather than an adversarial one.
- Use performance incentives to encourage the CM to meet or exceed project goals.
- Implement IPD-inspired collaboration strategies within the CM@R framework to improve teamwork.

Ensure Strong Risk Management & Contingency Planning

- Clearly define risk ownership (e.g., the CM is responsible for cost overruns beyond the GMP).
- Require robust dispute resolution mechanisms in the contract to handle conflicts early.
- Require early feasibility studies and site investigations to reduce unforeseen risks.
- Require the CM to create a risk register to track and mitigate potential project risks.

Implement Value Engineering & Cost Control

- Require the CM to identify cost-saving alternatives without sacrificing quality.
- Use life-cycle cost analysis instead of focusing solely on initial cost savings.
- Conduct third-party inspections at key project stages.
- Require continuous cost tracking and adjust the plan as necessary.
- Require regular budget reports to ensure the project stays on track financially.

Optimize Construction Scheduling & Phasing

- Require the development of a realistic project schedule with clear milestones.
- Consider a requirement for fast-tracking where possible (e.g., breaking ground before the full design is complete).
- Require a collaborative scheduling process involving trade partners to help prevent delays.

Plan for Project Commissioning, Closeout & Warranty Management

- Require the CM to deliver as-built drawings, commissioning reports (where applicable), warranties, and O&M manuals.
- Contractually define a post-construction warranty period with a clear process for resolving defects.
- Require a lessons-learned session to capture best practices for future projects.
- Require a one-year warranty walkthrough to address any lingering issues.

Conclusion: Key Takeaways for a Successful CM@R Project

Best Practice	Why It Matters
Select a CM based on qualifications	Ensures expertise and collaboration skills
Engage the CM early	Improves constructability and cost control
Define a clear GMP	Prevents cost overruns and disputes
Use cost transparency	Builds trust and ensures fair pricing
Foster collaboration	Reduces design conflicts and change orders
Manage risks proactively	Prevents delays and cost escalations
Implement value engineering	Optimizes cost without sacrificing quality
Optimize scheduling	Enhances efficiency and minimizes delays
Set performance metrics	Ensures quality, safety, and budget adherence
Plan for closeout	Provides a smooth transition to operations

By implementing these best practices, Construction Management at Risk (CM@R) can deliver projects faster, reduce cost overruns, and improve collaboration between all stakeholders.

5.4 Integrated Project Delivery

Integrated Project Delivery (IPD) is a highly collaborative procurement model that aligns owners, designers, and contractors under a single shared contract to promote efficiency, risk-sharing, and innovation. The fundamental difference between an IPD and traditional contracts is the underlying principle of a non-adversarial approach between the contracting parties. This is achieved through establishment of good faith commitments, and adoption of no-dispute provisions.

The IPD contract and supporting structures promote a positive culture based on "no-fault, no-blame" and unanimous decision-making. It requires all participants to find the "best for project" solutions. The collaboration requires a greater time commitment on the Owner's part, but efficiencies and win-win situations are maximized. See Appendix A-4 for a fulsome description of IPD including key features, advantages, challenges, and summary "when to use" criteria.

To maximize the benefits of IPD, follow these best practices:

Establish a Collaborative & Trust-Based Culture

- Select partners who value openness, teamwork, and innovation.
- Foster a no-blame culture, encouraging problem-solving instead of finger-pointing.
- Hold a partnering session at the beginning to align goals and expectations.
- Use collaborative leadership training to improve communication among stakeholders.

Use a Multi-Party Agreement for Risk & Reward Sharing

- Ensure the contract aligns financial interests across all parties.
- Structure risk/reward incentives so that all key players benefit from cost savings and project success.
- Clearly define decision-making responsibilities to avoid disputes.
- The CCDC 30 contract provides a proven IPD framework.

Engage Key Stakeholders Early

- Bring owners, architects, engineers, contractors, and suppliers into the process from day one.
- Encourage early input from trade partners to optimize cost, constructability, and design efficiency.
- Use lean principles to eliminate waste and unnecessary steps in the workflow.
- Early contractor involvement helps improve budget predictability and design feasibility.

Utilize Advanced Technology for Collaboration

- Use BIM for real-time coordination.
- Implement cloud-based project management tools for document sharing and communication.
- Conduct virtual design and construction simulations to optimize scheduling and logistics.
- Establish a single source of truth by maintaining one centralized digital model.

Define Clear Performance Metrics & Project Goals

- Set measurable KPIs for cost, schedule, quality, and sustainability.
- Monitor progress with real-time dashboards and regular project check-ins.
- Align all parties around a shared vision of success rather than individual interests.
- Use target value design to keep project costs aligned with the owner's budget.

Promote Open-Book Cost Transparency

- Require all stakeholders to share cost breakdowns and financial data.
- Use open-book accounting to enable real-time cost tracking.
- Ensure contingency funds are shared rather than allocated to separate entities.
- Transparency reduces adversarial relationships and fosters trust among all partners.

Establish a Robust Decision-Making Framework

- Use collaborative decision-making processes rather than top-down directives.
- Set up clear dispute resolution mechanisms to handle conflicts proactively.
- Encourage data-driven decisions through real-time project insights.
- A structured governance model helps prevent slowdowns in key decision points.

Conduct Regular Risk Assessments & Issue Resolution

- Identify potential risks early in the process to allow for proactive mitigation.
- Require the use of risk-sharing mechanisms so that all parties contribute to resolving unforeseen challenges.
- Establish regular check-ins to ensure issues are addressed before they escalate.
- Require a collaborative risk register to help track and manage project risks dynamically.

Plan for Lifecycle Costing, Commissioning, & Post-Project Handover

- Design for long-term operational efficiency, not just initial construction cost.
- Require the team to provide comprehensive as-built documentation, commissioning documentation (where applicable), training, and maintenance manuals.
- Require a post-project review to capture lessons learned for future IPD projects.
- Consider a performance-based maintenance contract to ensure long-term facility performance.

Conclusion: Key Takeaways for a Successful IPD Project

Best Practice	Why It Matters
Build a culture of trust & collaboration	Prevents conflicts and improves teamwork
Use a multi-party contract	Aligns financial interests and risk-sharing
Engage all key stakeholders early	Enhances constructability and cost control
Leverage BIM & technology	Improves coordination and reduces rework
Set clear performance metrics	Keeps the project on track and accountable
Promote cost transparency	Reduces disputes and builds trust
Define a strong decision-making framework	Ensures timely and effective problem-solving
Manage risks proactively	Prevents costly delays and disputes
Plan for lifecycle costs & facility operations	Enhances long-term value for the owner

Using these best practices, IPD can significantly improve project efficiency, reduce costs, and enhance collaboration, leading to a successful, high-quality construction project.

Strategies to Improve Procurement in Ontario

6.1 Encourage Procurement Entities to Adopt a Change Culture

Current practices in public sector procurement are a function of deeply embedded processes, broad regulations, and highly risk-averse mindsets. It is often said that change is the only constant in life. However, implementing meaningful change in the public sector is a significant challenge. Fortunately, it is not an insurmountable one. If those involved in public sector procurement are going to routinely consider alternative procurement models for projects, and also adopt the best practices within those models as described in this Guide, then it will be necessary for them to adopt a change culture.

A successful change culture is not about simply managing a single transformation. It's about cultivating an environment where change is expected, embraced, and embedded in everyday work. The goal is to foster a more agile, outcomes-focused, and innovative approach while maintaining the transparency and accountability necessary to ensure public resources are being properly allocated.

The following are the key steps in adopting a change culture within a public sector organization:

Step 1. Define the Case for Change

- Clarify the 'why': Communicate the need for change (e.g., improving value for money, enabling innovation, responding to policy shifts, reducing waste).
- Link to public value: Frame change in terms of improved service delivery, better infrastructure, and taxpayer accountability.

Step 2. Secure Leadership Commitment

- Top-down support: Gain buy-in from executive sponsors and procurement leaders who can champion change.
- Model new behaviors: Leaders should demonstrate openness to innovation, collaboration, and continuous improvement.

Step 3. Shift from Compliance-First to Value-First Thinking

- Redefine success: Move beyond process compliance to focus on delivering outcomes, supporting local economies, and driving innovation.
- Update KPIs: Include metrics like supplier performance, social value, sustainability, and user satisfaction.

PHOTOS: OLIVIER LE MOAL

Step 4. Train and Upskill Procurement Teams
- **Build commercial capability:** Provide training in category management, market engagement, negotiation, and risk-based decision-making.
- **Support cultural skills:** Develop key soft skills like collaboration, adaptability, and change management.

Step 5. Pilot New Approaches (Start Small)
- **Use demonstration projects:** Launch pilots using innovative procurement models (e.g., early market engagement, outcome-based contracts, agile procurement).
- **Learn by doing:** Document lessons and scale successful practices.

Step 6. Foster Cross-Sector Collaboration
- **Engage suppliers early:** Create opportunities for dialogue, innovation challenges, and co-design sessions.
- **Build trust with industry:** Make procurement a partnership, not just a transaction.

Step 7. Modernize Processes and Tools
- **Digitize procurement:** Use e-procurement platforms, contract management tools, and data analytics for decision-making.
- **Standardize and streamline:** Simplify overly complex processes that hinder agility.

Step 8. Create a Culture of Reflection and Improvement
- **Encourage feedback loops:** After tenders, debrief both suppliers and internal teams to identify what worked and what didn't.
- **Celebrate innovation:** Publicly recognize individuals and teams that try new approaches, even when outcomes aren't perfect.

Step 9. Align Policy, Legal, and Governance Frameworks
- **Enable flexibility:** Work with legal and policy teams to reinterpret procurement rules in a more risk-managed, outcomes-oriented way.
- **Embed change in policy:** Update procurement policies to explicitly allow and encourage adaptive, value-driven approaches.

Adopting a change culture within public sector procurement organizations will drive better value for money and public service outcomes, encourage supplier innovation and competition, reduce procurement cycles and improve delivery timelines, and build a more engaged and capable procurement workforce.

6.2 Focus on Outcomes

In addition to a general shift to an organizational culture that embraces change, public sector procurement would benefit from a specific change in mindset from one that is focused on process to one that is focused on outcomes. Shifting an organization's focus from process to outcomes requires both a cultural and an operational transformation. The goal is to prioritize results and impact over rigid adherence to procedures.

1 Reframe the Organizational Mindset
- **Clarify the 'what' and 'why':** Help teams understand what outcomes matter (e.g., customer satisfaction, efficiency, revenue growth) and why they matter more than just following the steps.
- **Promote value creation:** Emphasize delivering value over merely executing tasks.

2 Define Clear, Measurable Outcomes
- **Set outcome-based goals:** Use SMART goals (Specific, Measurable, Achievable, Relevant, Time-based) that are focused on results (e.g., "Reduce customer churn by 10% this year" vs. "Implement a new CRM process within 6 months").
- **Cascade outcomes:** Align team and individual objectives with broader organizational outcomes.

3 Empower Teams with Autonomy
- **Give ownership:** Let teams decide how to achieve the outcomes, allowing flexibility and innovation.
- **Remove bureaucratic barriers:** Eliminate unnecessary approval steps or procedures that don't directly contribute to the end goal.

4 Shift Metrics and Accountability
- **Measure results, not activities:** Focus KPIs on impact (e.g., customer retention, time-to-market) rather than volume of tasks completed.
- **Outcome-based reviews:** Use performance evaluations that assess contributions to strategic outcomes rather than task completion.

5 Foster a Learning and Adaptive Culture
- **Experiment and iterate:** Encourage rapid testing of ideas and learning from results, rather than perfecting processes.
- **Celebrate outcome wins:** Publicly recognize when teams achieve results—even if the process looked different than expected.

6 Train for Results-Oriented Thinking
- **Upskill leaders and staff:** Offer training on agile thinking, OKRs (Objectives and Key Results), and customer-centric approaches.
- **Coach managers:** Teach them to ask, "What are we trying to achieve?" rather than, "Are we following the process?"

7 Align Incentives with Outcomes
- **Reward impact:** Design bonuses, promotions, and recognition systems around successful outcomes.
- **De-incentivize box-checking:** Remove rewards for simply completing procedural tasks without proven value.

8 Monitor and Adapt Continuously
- **Use feedback loops:** Regularly gather insights from customers, employees, and data analytics to refine goals.
- **Stay flexible:** Adjust outcomes and approaches as business needs and environments change.

To focus on outcomes, organizations must redefine success by what gets achieved and not just what gets done. This requires empowering teams, measuring impact, and continuously aligning efforts with tangible, strategic goals.

6.3 Enhance Communications and Liaison

Going forward, enhancing communication and liaison between the design/construction industry and public sector buyers will be critical for delivering successful, cost-effective, and sustainable infrastructure. As detailed in the various "issues" discussed in Section 3, misalignments can often arise due to differences in goals, language, timelines, and regulatory constraints.

1 Establish a Joint Governance Framework
- **Create a liaison committee:** Form a regular forum or working group with representatives from public sector agencies, designers, contractors, and consultants.
- **Define roles and responsibilities:** Clearly articulate who is accountable for what at each project phase.

2 Promote Early and Continuous Engagement
- **Involve industry early:** Engage designers and builders during the feasibility and planning stages, not just post-tender.
- **Use Early Contractor Involvement (ECI):** Bring contractors into the design phase to flag constructability, risk, and cost concerns early.

3 Standardize Communication Protocols
- **Develop shared templates and language:** Use standardized forms, contracts, terminology, and digital tools to reduce ambiguity.
- **Define communication channels:** Set clear lines for escalation, updates, and decisions across organizations.

4 Adopt Collaborative Procurement Models
- **Use alliance or integrated project delivery models:** These align incentives and promote joint problem-solving rather than adversarial relationships.
- **Encourage outcome-based contracting:** Focus on delivery of performance outcomes, not just inputs.

5 Invest in Digital Tools and Transparency
- **Implement common data environments (CDEs):** Use platforms like BIM, shared project management systems, and dashboards to give all parties visibility.
- **Use digital twins and live dashboards:** Enhance transparency for all stakeholders, especially during design and construction phases.

6 Build Mutual Understanding and Capability
- **Cross-sector training:** Provide joint workshops on procurement, risk management, value engineering, and public accountability.
- **Secondments and exchanges:** Enable staff to spend time in the "other" sector (e.g., a public buyer spending time on-site with contractors).

7 Strengthen Relationship Management
- **Assign dedicated relationship managers:** Individuals tasked with maintaining open lines of communication and resolving disputes quickly.
- **Foster trust through consistency:** Use the same teams across projects, when possible, to build long-term working relationships.

8 Encourage Feedback and Continuous Improvement
- **Post-project reviews:** Conduct joint lessons-learned sessions after each major milestone or project.
- **Create feedback loops:** Regularly gather structured feedback from all stakeholders and apply it to future projects and tenders.

Acknowledgements

The production of this Guide would not have been possible without the cooperation and contributions from individuals within the following organizations, who have provided their knowledge, perspectives, and expertise:

Association of Municipalities of Ontario

Canadian Construction Association

Canadian Council for Public-Private Partnerships

City of Hamilton

City of Kitchener

City of Mississauga

City of Ottawa

Heavy Construction Association of Toronto

Infrastructure Ontario

McMillan LLP

Ministry of Transportation

Ontario Public Buyers Association

Ontario Sewer and Watermain Contractors Association

Region of York

Toronto Area Road Builders Association

Appendix A

A-1 | Design-Bid-Build

DBB is the most traditional and widely used procurement method for infrastructure projects. It follows a sequential process where the project owner first contracts with a designer (engineer or architect) to carry out the design work first. Once the design and construction documents are completed, the owner solicits bids, selects a contractor, and the project is finally built by the selected contractor. This method separates design and construction responsibilities, giving the owner greater control over the design but often leading to longer project timelines.

Key Features of Design-Bid-Build:

- **Sequential Process:** The project moves in three distinct phases—design, bidding, and construction.
- **Separate Contracts:** The owner holds two separate contracts—one with the designer (architect/engineer) and one with the contractor.
- **Competitive Bidding:** Contractors submit bids based on completed design documents, often leading to a lowest-cost selection.
- **Clear Design Control:** The owner has full control over the design before construction begins.
- **Low Initial Risk for Owners:** Since the design is completed before bidding, there is more cost certainty before awarding the construction contract.

Advantages of Design-Bid-Build:

- **High Design Control:** The owner can ensure the design meets their exact specifications before construction begins.
- **Competitive Pricing:** Competitive bidding often results in lower initial construction costs.
- **Reduced Design Risk for Contractors:** Since design is finalized before construction, contractors face fewer design-related uncertainties.
- **Established & Familiar Method:** Well understood by industry professionals, making it straightforward to implement.

Challenges of Design-Bid-Build:

- **Longer Project Timelines:** The sequential nature of DBB means that construction typically doesn't start until the design is fully completed and a contractor is selected (unless the project is phased or sequentially tendered).
- **Potential for Cost Overruns:** If design errors or omissions exist, costly change orders may be needed during construction.
- **Limited Contractor Input During Design:** Contractors are not involved in the design phase, which can lead to inefficiencies and missed cost-saving opportunities.
- **Adversarial Relationships:** Designers and contractors may work in silos, leading to disputes over design interpretation, scope, and change orders.
- **Higher Owner Responsibility:** The owner must manage multiple contracts and handle disputes between the designer and contractor.

Comparison: DBB vs. DB or IPD

Feature	DBB	DB	IPD
Contract Structure	Separate design & construction contracts	Single contract for design & construction	Multi-party contract
Risk Allocation	Owner assumes more risk	Shared between owner & DB team	Shared among all parties
Timeline	Longer (sequential process)	Faster (overlapping design & construction)	Fastest (collaborative approach)
Cost Control	Less predictable due to potential change orders	More predictable due to early contractor involvement	Optimized through collaboration
Collaboration	Low (siloed roles)	Moderate (contractor & designer work together)	High (early involvement of all parties)
Best For	Projects requiring high design control, public sector projects	Faster delivery & cost efficiency	Complex, high-innovation projects

When to Use Design-Bid-Build?

- When the owner wants full design control before construction begins.
- When lowest initial cost is a priority, especially in public sector projects that require competitive bidding.
- When the project is simple and low-risk, with minimal design changes expected.

DBB is common in government and public infrastructure projects (e.g., schools, municipal buildings, roads), where transparency and fairness in contractor selection are key. However, for complex projects requiring speed and efficiency, DB or IPD may be better alternatives.

A-2 | Design Build

DB is a procurement method in which a single entity, the design-builder, takes responsibility for both design and construction services under a single contract. There are a number of variants of this procurement method, but in the most common version the design-builder assumes the risk for both design and construction. A project owner's statement of requirements, including performance specifications, is required to provide a basis for planning, design, pricing, and executing the project. DB projects are typically carried out under a stipulated price form of contract.

Key Features of Design-Build:

- **Single Point of Responsibility:** One entity (often a contractor-led or architect-led team) is responsible for both design and construction.
- **Overlapping Design & Construction Phases:** Construction can begin before design is fully completed, reducing project timelines.
- **Faster Project Delivery:** With fewer delays between design and construction, project schedules are typically shorter.
- **Cost & Schedule Certainty:** The design-builder is often responsible for ensuring the project stays within the agreed-upon budget and schedule.
- **Collaboration & Innovation:** Since designers and builders work together from the outset, constructability and value engineering can be integrated early.
- **Reduced Risk for Owners:** The design-builder assumes more risk for design errors, cost overruns, and schedule delays.

Advantages of Design-Build:

- **Faster Project Completion:** Overlapping design and construction speeds up delivery.
- **Reduced Administrative Burden:** Owners deal with one contract instead of managing separate design and construction contracts.
- **Improved Cost Predictability:** Early cost input from the contractor helps control budget.
- **Minimized Claims & Disputes:** Fewer finger-pointing issues between designer and contractor.
- **More Innovation & Efficiency:** Collaboration between designers and builders leads to better solutions.

Challenges of Design-Build:

- **Less Design Control for Owners:** Since design and construction happen simultaneously, owners have less influence over design changes.
- **Difficult for Complex or Iconic Designs:** For projects requiring highly customized or artistic designs, the DB model may not be ideal.
- **Risk of Quality Compromises:** If not well-managed, contractors may prioritize cost savings over design quality.
- **Requires Trust & Clear Communication:** Owners must select a competent and reliable design-builder to ensure project success.

Comparison: DB vs. DBB or IPD

Feature	DB	DBB	IPD
Contract Structure	Single contract	Separate design & construction contracts	Multi-party contract
Risk Allocation	Shared between owner & DB team	Owner bears more risk	Shared among all parties
Timeline	Faster (overlapping phases)	Slower (sequential phases)	Faster (high collaboration)
Collaboration	Moderate (contractor & designer work together)	Low (design & construction are siloed)	High (early involvement of all parties)
Cost Control	More predictable	Less predictable	Flexible, but optimized for value
Best For	Time-sensitive projects, cost efficiency	Traditional projects, high design control	Complex projects needing innovation

When to Use Design-Bid-Build?

- When speed is a priority (e.g., infrastructure, commercial buildings, industrial projects).
- When owners want a single point of responsibility to reduce risk and complexity.
- When cost certainty is important and early contractor involvement can help manage budget constraints.

DB is commonly used in infrastructure projects (e.g., highways, bridges), commercial developments, and government buildings.

A-3 | Construction Management at Risk

CM@R is a procurement method in which a Construction Manager (CM) is engaged early in the project to provide pre-construction services. The project owner separately contracts with a designer (engineer or architect) to complete the design. The CM then takes on the role of the general contractor during construction. Typically, the CM commits to delivering the project within a Guaranteed Maximum Price (GMP), transferring significant risk from the owner to the CM.

Key Features of CM@R:

- **Early Contractor Involvement:** The CM is engaged during the design phase, providing cost estimating, scheduling, and constructability reviews.
- **Guaranteed Maximum Price (GMP):** The CM agrees to a GMP, capping the project cost. Any cost overruns beyond this cap (unless due to owner changes) are the CM's responsibility.
- **Separate Contracts:** The owner holds separate contracts with the designer and the CM@R.
- **Flexible Subcontracting:** The CM@R typically subcontracts most of the work to trade contractors, using competitive bidding.
- **Improved Collaboration:** Since the CM is involved early, they can work closely with the design team to optimize the design for cost and efficiency.

Advantages of CM@R:

- **Cost Certainty:** The GMP provides the owner with predictable costs and reduced financial risk.
- **Faster Project Delivery:** Construction can begin before the design is fully complete (phased or fast-track construction).
- **Pre-Construction Expertise:** The CM provides value engineering, constructability reviews, and risk assessment, leading to cost savings.
- **Reduced Change Orders & Disputes:** Since the CM is involved in design, there are fewer surprises during construction.
- **Better Collaboration:** The owner, designer, and CM work together to balance design intent, cost, and schedule.

Challenges of CM@R:

- **Requires Trust & Transparency:** The owner must select a reliable CM who acts in their best interest.
- **Higher Initial Cost than Design-Bid-Build (DBB):** Pre-construction services and early contractor involvement may increase upfront costs.
- **Potential Conflicts of Interest:** The CM must balance cost savings vs. quality, as they control both cost estimates and final construction.
- **More Owner Involvement than Design-Build (DB):** The owner still manages separate contracts with the designer and CM.

Comparison: CM@R vs. DBB, DB & IPD

Feature	CM@R	DBB	DB	IPD
Contract Structure	Separate contracts with CM and designer	Separate design & construction contracts	Single contract for design & construction	Multi-party contract
Risk Allocation	CM takes on financial risk (GMP)	Owner holds most risk	Shared between owner & DB team	Shared among all parties
Timeline	Faster (construction can overlap with design)	Longer (sequential process)	Fastest (overlapping design & construction)	Fastest (collaborative)
Cost Control	More predictable (GMP)	Less predictable (change orders common)	Predictable, but some flexibility	Optimized through collaboration
Collaboration	Moderate (early CM involvement)	Low (siloed responsibilities)	Moderate (DB team works together)	High (all parties involved early)
Best For	Medium-to-large projects needing cost control & early CM input	Simple projects needing full design control	Projects needing single-source responsibility	Complex, high-innovation projects

When to Use CM@R?

- When cost certainty is important but flexibility in design is still needed.
- When the owner wants early contractor involvement to reduce risks and optimize design.
- When the project is large or complex, such as hospitals, universities, and infrastructure.

CM@R is widely used in public and private sector projects where owners want collaboration without fully committing to a Design-Build model.

A-3

A-4 | Integrated Project Delivery

IPD (also referred to as the Alliance model) is a collaborative procurement model that brings together key project stakeholders (i.e., owners, architects, engineers, contractors, and sometimes suppliers) early in the process to optimize project results, increase value, and reduce waste. The fundamental difference between IPD and traditional contracts is the underlying non-adversarial relationship between the project owner and the firms executing the design and construction work.

This is achieved through good faith commitments and adoption of "no-dispute" provisions in the multiparty contract. The IPD contract and supporting structures promote a positive culture based on "no-fault, no-blame" and require all parties to find the best solutions for the project. The collaboration requires a greater time commitment on the project owner's part, but efficiencies are maximized. Compensation under the IPD model is directly tied to cost, schedule and profitability milestones of the overall project.

Key Features of IPD:

- **Early Collaboration:** All key parties are engaged from the beginning, fostering joint problem-solving and innovation.
- **Shared Risk & Reward:** Instead of traditional contract structures that separate responsibilities, IPD aligns financial incentives so that stakeholders succeed or fail together.
- **Multi-Party Agreement:** A single contract (or set of contracts) typically links the owner, designer, and contractor, defining roles, responsibilities, and financial incentives.
- **Lean Principles & Efficiency:** IPD often incorporates Lean Construction methodologies to eliminate waste, improve workflow, and increase productivity.
- **Transparency & Trust:** Open-book accounting and shared decision-making create an environment of trust and accountability.

Benefits of IPD:

- Faster Project Delivery due to early problem-solving and reduced rework.
- Cost Savings through shared financial responsibility and elimination of inefficiencies.
- Higher Quality since teams work collaboratively rather than in silos.
- Reduced Conflicts & Claims because risks are distributed equitably.
- Better Innovation as early collaboration allows for creative solutions.

Challenges of IPD:

- **Cultural Shift Required:** Teams must adopt a mindset of collaboration rather than traditional adversarial relationships.
- **Legal & Contractual Complexity:** The shared-risk model requires carefully structured agreements.
- **High Initial Coordination Effort:** Setting up an IPD project takes more time and effort at the start compared to traditional procurement models.

A-4

Comparison with DBB:

Feature	IPD	DBB
Collaboration	High (all stakeholders involved early)	Low (siloed responsibilities)
Risk Allocation	Shared	Shifted to contractors
Incentives	Aligned (team succeeds/fails together)	Individual (each party protects its interests)
Contract Structure	Multi-party agreement	Separate contracts
Innovation	Encouraged through collaboration	Limited by sequential process

When to Use IPD:

- Complex projects requiring high levels of innovation.
- Projects where owner engagement and quality control are priorities.
- Situations where cost and time certainty are crucial.

IPD is particularly common in healthcare, large infrastructure, and commercial developments where efficiency and innovation are essential.

Appendix B

Public-Private Partnerships (P3)

Broadly defined, a P3 is an agreement between the public and private sectors to work together to deliver a public infrastructure project. While there is no widely agreed, single definition or model of a P3, it is generally viewed as a long-term, performance-based approach to build, expand or refurbish public infrastructure. The P3 contract allocates responsibilities and business risks among the various public sector and private sector partners. Ownership of the infrastructure asset always rests with the public sector partner, and the private sector partner is responsible for, at a minimum, designing, building and financing the project. In some P3 models, the private sector partner will also be responsible for maintenance and even operation of the asset.

Depending on the project's scope and size (and the P3 model used), the private sector partner is often a consortium that may include one or more developers, designers, contractors, lenders and financial institutions, and maintenance and operation providers.

While P3 and IPD are both collaborative project delivery methods, they differ in their focus, scope, and execution. A P3 involves a long-term contract between a public agency and a private entity to deliver a project, including design, construction, and financing, and possibly operation and maintenance. The P3 contract allocates risk separately to each partner. IPD, on the other hand, primarily focuses on integrating key project stakeholders (owner, designers, contractors) early in the project to achieve a collaborative and efficient delivery. In the IPD model, all risks are shared amongst all of the collaborators.

The P3 model has been used in Canada since the early 1990's. The Canadian Council for Public-Private Partnerships (C2P3) is an association committed to the advancement of P3 models through advocacy, research, and conferences. C2P3 members include a broad cross-section of firms, governments, and associations involved in the design, construction, financing, operations, and maintenance of public sector infrastructure assets.

Because of its complexity and the inclusion of financing and other life-cycle elements of public sector infrastructure, the P3 model falls outside the scope of this Guide. The C2P3 website contains extensive information and reference material regarding the decision process to use the P3 model and the best practices in P3 procurement. As a starting point, the C2P3 document "A Process Guide for Public Sponsors" is an excellent guidance document and reference tool for those contemplating a P3 project.

In Canada, the public sector always owns the infrastructure created through a P3. The government determines when and where to build the project, its scope and its budget. The public sector also uses a competitive process to select the best team of private sector companies.

The P3 model integrates multiple project elements (design, build, finance, maintain and/or operate) into one performance-based contract.

The private sector determines its team members in the consortium to deliver the P3 infrastructure project.

This team forms a special purpose vehicle called a Project Company or a consortium to complete the project. Depending on the project's scope and size, the consortium may include one or more developers, designers, contractors, lenders and financial institutions, and maintenance and operation providers.

P3 and IPD are both collaborative project delivery methods, but they differ in their focus and scope. IPD primarily focuses on integrating key project stakeholders (owner, architect, contractor) early in the project to achieve a collaborative and efficient delivery. P3, on the other hand, involves a long-term contract between a public agency and a private entity to deliver a project, often including design, construction, financing, operation, and maintenance.

Key Differences:

Scope: IPD focuses on the project delivery process itself, while P3 is broader, encompassing long-term financing, operation, and maintenance of the asset.

Stakeholders: IPD typically involves key project stakeholders (owner, architect, contractor). P3 involves a public agency and a private entity, who may further involve contractors, designers, and other parties.

Financial Structure: IPD may or may not involve alternative financing methods, while P3 is often structured around financing the project and potentially collecting revenue through user fees or other means.

Risk and Responsibility: IPD aims to share risk and responsibility among all project parties, while P3 often transfers more risk to the private sector partner.

Duration: IPD is typically used for the duration of the project, while P3 involves a long-term contract covering the lifespan of the asset.

In simpler terms, think of IPD as a collaborative approach to building a project where everyone works together from the start to get it done efficiently. Think of P3 as a long-term partnership where a private company helps finance, build, operate, and maintain a public infrastructure project, often for decades.

CDAO MEMBERS:

Association of Consulting Engineering Companies-Ontario (ACEC-Ontario)

Association of Registered Interior Designers of Ontario (ARIDO)

Concrete Ontario

Heavy Construction Association of Toronto (HCAT)

Mechanical Contractors Association of Ontario (MCAO)

Ontario Association of Architects (OAA)

Ontario Association of Certified Engineering Technicians and Technologists (OACETT)

Ontario Association of Landscape Architects

Ontario Electrical League (OEL)

Ontario General Contractors Association (OGCA)

Ontario Professional Planners Institute (OPPI)

Ontario Sewer & Watermain Contractors Association (OSWCA)

Ontario Society of Professional Engineers (OSPE)

Residential and Civil Construction Alliance of Ontario (RCCAO)

Residential Construction Council of Ontario (RESCON)

Surety Association of Canada (SAC)

Toronto and Area Road Builders Association

CDAO.ca

PHOTOS: KATHRYN HATASHITA LEE