

# CCDC 30 – Integrated Project Delivery: A Paradigm Shift

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In early 2019, the Canadian Construction Documents Committee ("CCDC") published the CCDC 30 – 2018 Integrated Project Delivery Contract ("CCDC 30"). CCDC 30 is nothing short of revolutionary and will re-shape the Canadian construction industry landscape. In this article, I will outline in general terms the IPD construction method and discuss how CCDC 30 seeks to efficiently and harmoniously implement its key components. In upcoming articles, I will canvass in greater detail issues such as builders' lien rights and owner holdback obligations, specific CCDC 30 termination, change order and waiver-of-liability clauses, cash-flow considerations, and the dispute resolution and conflict management processes under the IPD model.

## Integrated Project Delivery

Integrated Project Delivery ("IPD") is not a novel concept. While IPD has been successfully used for decades in the United States and parts of Europe, Canadian construction industry participants have been relatively slow to adopt this model. Succinctly put, IPD seeks to eliminate the many shortcomings of traditional contractual arrangements, including the often adversarial environment spawned by the top-down contractual approach, outlined in Figure 1:

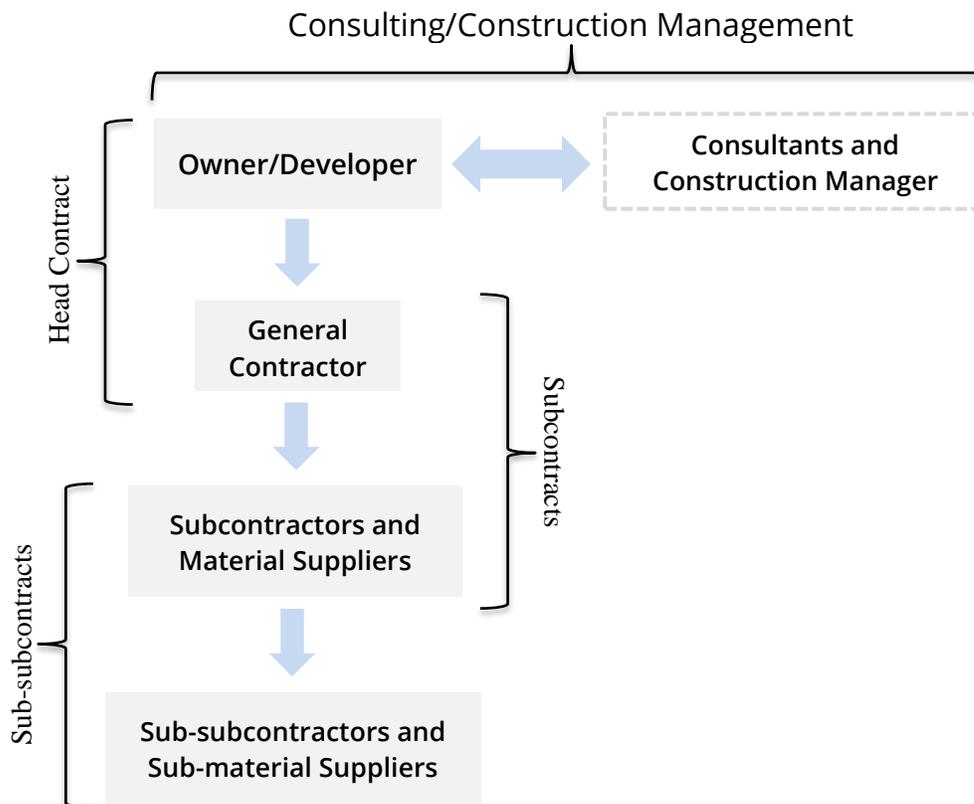


Figure 1

In stark contrast to the traditional top-down approach, IPD leverages an integrated and collaborative model. IPD achieves this by organizing the owner, contractor, consultant(s), construction manager(s), subcontractors, and material suppliers into a cohesive team structure under a single multi-party construction contract (Figure 2):

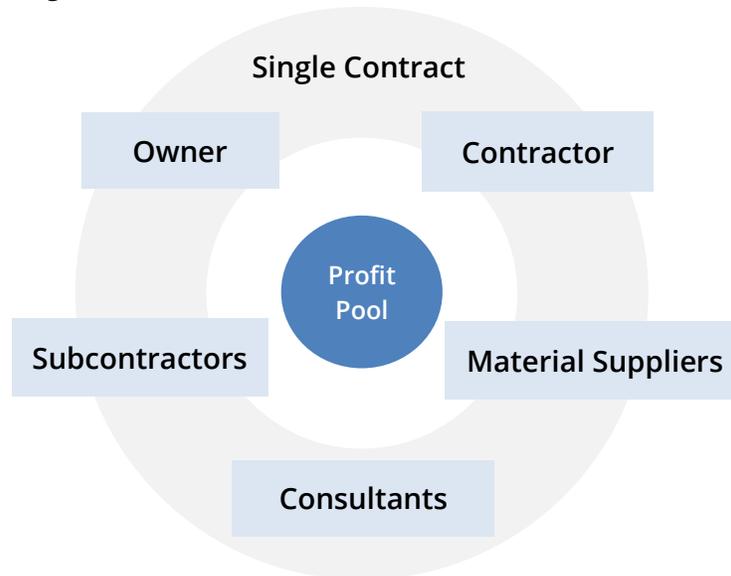


Figure 2

IPD is structured around a cohesive team made up of key project participants guided by core principles of transparency, collaboration, trust, information sharing, and value-based decision making. The result is a team-driven approach to the design, construction, and implementation of projects with participants sharing in financial risks and rewards. Every team member is incentivized to perform at its highest and most efficient capacity because team success is intrinsically tied to project success.

To help implement the innovative IPD principles, CCDC 30 uses uncommon yet welcomed contractual language such as "*atmosphere of mutual trust, respect and tolerance*", "*transparent, cooperative and timely exchange of relevant information*", and "*actively promote harmony, collaboration, and cooperation among all entities performing on the project*". Such phraseology is unique to CCDC 30, and is instrumental in setting out the IPD philosophy, which is built on teamwork, trust, and the amicable resolution of potential conflicts.

### **Risk Pool**

Arguably the most innovative IPD feature is the "risk pool". IPD participants conceptualize and confirm whether the project can be built within the owner's budget. Assuming the owner accepts the PMT's Validation Report, the Target Value Design is undertaken. After careful and transparent cost-planning sessions, the design/construction team agrees on a collective profit number based on the final target cost, all of which is allocated to a risk pool. This risk pool remains "at risk" subject to the achievement of project objectives. If, at the end of the project, profit remains in the risk pool, each IPD participant receives its pre-determined profit share. This way, IPD participants collectively

assume responsibility for agreed project performance. Should the risk pool be depleted, IPD parties must finish the project at pre-determined hard construction costs while foregoing profit. This arrangement incentivizes the design/construction team to complete the project on time and within budget, while the owner mitigates its cost-overrun and delay risks through the cost-only arrangement in case the profit pool is depleted.

Each project participant has a direct pecuniary interest in the final target cost and project outcome. While the owner's interests will often favour a lower final target cost, the construction team has a financial incentive to seek a higher final target cost. This conflict is managed through the careful selection of IPD participants, open-book estimating, and reliance on independent consultants. Each IPD participant's profit (or loss) is determined by the team's success in meeting the project timelines, goals, and budget.

The mistake of one IPD party will put at risk the profits forming the risk pool. Since all parties to the CCDC 30 have waived claims as against each other, everyone must work together to efficiently and cost-effectively overcome delays and remedy deficiencies and defects. Instead of resorting to legal action, the IPD model requires parties to amicably resolve their disputes, while affording other dispute resolution mechanisms if negotiations fail to produce a mutual acceptable solution. These common goals align the parties' interests and incentivizes collaboration while discouraging finger-pointing.

### IPD Teams

CCDC 30 establishes three IPD team categories. Organizationally, the teams are arranged as follows (Figure 3):

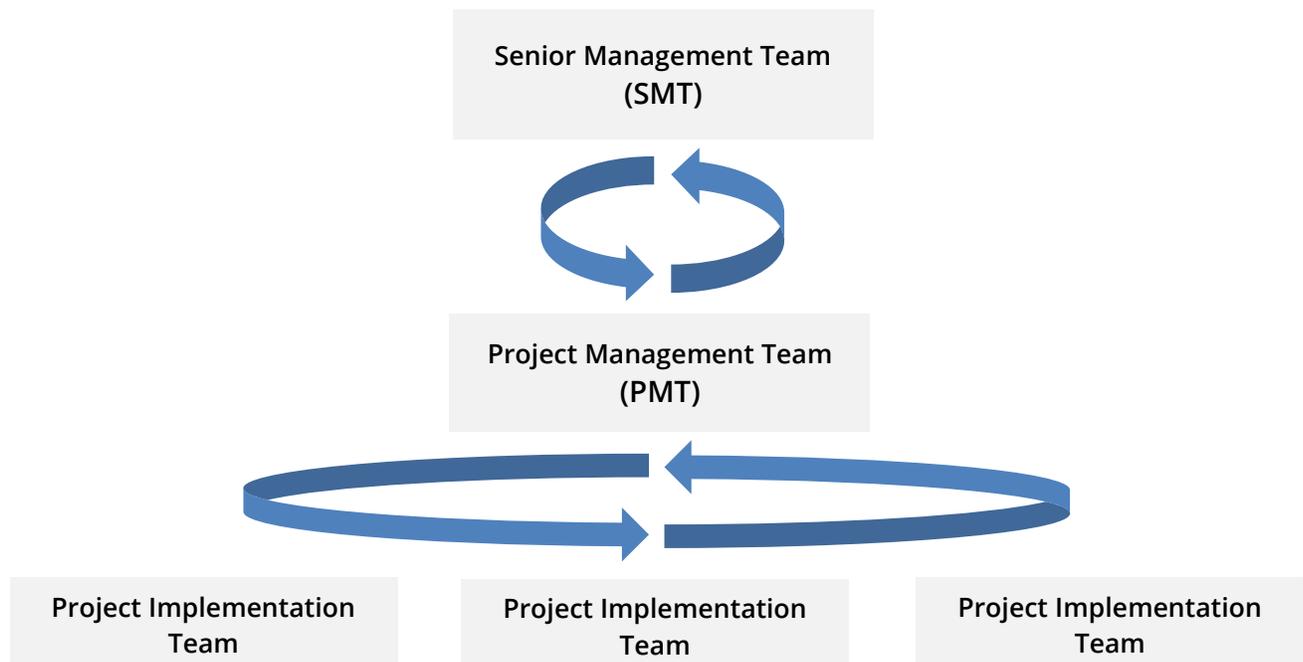


Figure 3

### Senior Management Team ("SMT")

The functions and responsibilities of the SMT are analogous to those of a company's board of directors. The SMT consists of senior executive representatives, one appointed by each contracting party.

The SMT's duties and responsibilities include:

- approving the addition of additional contracting parties after the execution of the contract;
- accepting the validation report prepared by the PMT;
- waiving milestone payment conditions;
- meeting with the PMT to resolve disputes on which the PMT is unable to reach unanimous agreement; and
- terminating a member of the design/construction team (requires the unanimous decision of all members of the SMT, excepting the party sought to be terminated).

### Project Management Team ("PMT")

The functions and responsibilities of the PMT are analogous to those of a company's executive officers. The PMT consists of management representatives, one appointed by each contracting party. The PMT's function is to provide management-level guidance for collaborative planning, design, and construction of the project and to achieve the project objectives.

The PMT's duties and responsibilities include:

- monitoring project progress, developing benchmarks, metrics or standards for progress evaluation;
- managing and coordinating the implementation of the project objectives and providing direction to the PITs;
- interpreting and resolving questions relating to the project scope and construction documents;
- establishing and maintaining regular meetings to review, discuss, and evaluate the project progress;
- removing any party employed with respect to the project;
- recommending to the SMT parties to be added to the project after the execution of the contract;
- approving subconsultants and subcontractors for the project;
- establishing and implementing progress payment application and cost control procedures;
- approving payment applications;
- approving contract amendment requests;
- developing and managing project contingencies;

- arranging and managing insurance coverage; and
- arranging for the joint defence, where appropriate, to third party claims.

### Project Implementation Teams ("PITs")

PITs are interdisciplinary, cross-functional teams organized by the PMT, and consist of consultant, contractor, subcontractor, material supplier, and subconsultant representatives. The PMT organizes PITs into inter-disciplinary, cross-functional teams that will vary depending upon the project progress. The functions and responsibilities of the PITs are analogous to those of a company's site management teams. The PITs are responsible for on-site management and work-level guidance, including:

- collaborating with the PMT and other PITs with respect to project scopes of work, including site use and improvements, selection and installation of construction materials, building systems, and equipment;
- meeting regularly with the PMT throughout the design/procurement phase to evaluate functionality, constructability, sustainability, life cycle cost analysis, and potential value-add changes; and
- continually optimizing and coordinating the project design in accordance with the project scope and goals.

### **IPD Phases**

CCDC 30 establishes four distinct IPD construction phases.

#### Phase 1: Validation Phase

While each phase is specifically tailored to the time-specific needs of construction projects, the initial validation phase ensures early participation by project participants. During the validation phase, the PMT:

- examines the project site;
- reviews all existing site information;
- performs investigatory and survey work, as required;
- documents all relevant site information required to design and construct the project;
- verifies existing site conditions, including points of connection, utilities locations, and the accuracy of existing surveys and other documentation the owner has provided;
- organizes the PITs into interdisciplinary, cross-functional teams;
- develops jointly with the PITs an initial pull-based schedule;<sup>1</sup> and

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<sup>1</sup> A pull-based schedule looks at scheduling in reverse. Based on a required completion date, critical dates are provided by all project participants. A pull schedule is cooperatively created on a large project board and daily and weekly tasks are identified, color coded, and continuously updated on account of overall progress. The collective input received from all parties results in a tremendously detailed and reliable schedule while

- prepares for the written acceptance by the owner a validation report that records the agreed project scope, target cost, milestone schedule, and risk pool.

It is of utmost importance to stress the significance of Building Information Modeling ("BIM") throughout the validation and design/procurement phases. BIM is the use of sophisticated digital representations of physical and functional characteristics of construction projects. For example, if the project involves the construction of a 15-storey steel-frame building, BIM computer software would simulate the construction sequencing of the structural steel components from the ground up. Every bolt and steel girder is painstakingly installed within the digital model.

BIM is a proven method of pre-construction planning and prevents on-site construction errors by enabling conflict or "clash detection" whereby the computer model visually highlights for the construction team any building components that may wrongly intersect (i.e., structural components, mechanical pipes, and ducts). Mechanical contractors have effectively relied on BIM to construct entire mechanical rooms off-site, which are thereafter mobilized to site and installed. BIM can significantly reduce the number of clashes, labour stacking, costs, and construction time.

Many leading IPD contractors refuse to implement IPD without BIM.

#### Phase 2: Design/Procurement Phase

During the design procurement phase, the PMT:

- authorizes early procurement of certain systems, materials, and equipment;
- continues to develop, guide, direct, and organize PITs as appropriate;
- develops jointly with the PITs acceptable project schedules;
- reviews and approves construction documents;
- establishes a final target project cost;
- updates project milestone as required; and
- arranges and manages the insurance program.

#### Phase 3: Construction Phase

The PMT issues a notice to proceed to mark the commencement of the construction phase. During the construction phase, the design/construction team:

- completes the remainder of the design;

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maintaining an eye on the critical completion date. Scheduling in this fashion enables the IPD team to accurately predict workflow and stabilize the project environment, reducing both time and cost without sacrificing quality of construction. Pull-based scheduling differs from the critical path method because all activities are planned and identified beginning at the end of the project. All duration and logic are worked from the end towards the start identifying all resources and tasks that should be completed to achieve project completion.

- procures the remainder of the subconsultants, subcontractors, and suppliers;
- performs the work in a good and workmanlike manner and in accordance with the contract documents;
- arranges for the final testing, start-up, and commissioning of utilities, operational systems and equipment; and
- provides to the owner all required record drawings, record digital model, operation and maintenance manuals, references, warranties, spare parts and materials, and keying schedules.

Upon completion of the construction phase, the PMT must certify substantial performance of the work and issue a certificate of completion pursuant the applicable lien legislation. The PMT must also determine the risk pool distribution, including any withholdings for corrections of known defects and deficiencies in the work, including warranty items.

#### Phase 4: Warranty Phase

During the warranty phase, the owner must promptly inform in writing the design/construction team of observed defects or deficiencies. After receiving the owner's notification, the design/construction team must promptly correct any defects or deficiencies which appear during the warranty phase. The costs of correcting the defects or deficiencies, including the cost of damage resulting from such remedial work, are deemed reimbursable costs (and therefore directly impact the risk pool payouts).

If multiple material defects or deficiencies have to be corrected at significant cost, all IPD parties suffer financially on a pro-rata basis because reimbursable costs affect the risk pool payouts. IPD team members are therefore very much motivated to construct their respective scopes of work in line with the construction documents as well as reasonable industry construction practices.

#### **Summary**

IPD is a revolutionary team-oriented approach to construction. CCDC 30 effectively and concisely encapsulates the IPD approach, while setting out each IPD participant's rights and obligations.

In this article I have addressed in general terms the IPD model and the way CCDC 30 implements that model, but construction industry participants are advised to seek timely legal advice from counsel who focus on construction law, contract drafting, and builders' liens before embarking on the use of this form of contract.