



Canadian Construction  
Association  
**Canadian Design-Build  
Institute**

# Design-Build Practice Manual

## Document 410

# A Trade Contractor's Guide to Design-Build

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## INTRODUCTION

The Canadian Design-Build Institute has identified several key project elements that typically impact the Trade Contractor on a design-build project. These elements are common to most design-build projects and affect the procurement, contracting, and execution phases.

These key project elements are:

- Budget
- Building Information Modelling (BIM)
- Constructability Design Assistance
- Cost estimating and Final Price Determination
- Environmental Impacts
- Equipment Delivery Schedule
- Maintenance and Life Cycle of the Completed Project
- Permits
- Procurement Method
- Site Conditions (eg. dewatering, flat ground, mountainous)
- Site Elevations
- Utility Locations
- Utility Type (eg. traditional, geothermal, solar, or wind)
- Value Analysis
- Work Schedule

It is vital that the Trade Contractor understand the importance of, and the relationship between, these key elements. Due to the importance that these elements have on design-build projects, the Trade Contractor should understand how to properly address each element and the inherent risks associated with them. In order to ensure a successful project outcome, the Trade Contractor must consider and evaluate each one of these elements throughout the design-build process.

# 1. PROCURING DESIGN-BUILD SERVICES

The choices of a project delivery system and procurement method strongly influence the project outcome. These choices are among the first decisions that must be made in the early stages of a project. They form the foundation for how the project will be developed, procured, and executed, and how the key project stakeholders will communicate and interact with each other.

Though there is typically an emphasis on the interests of the Owner and the Design-Builder, consideration of the Trade Contractor's interests is also vital. For example, overlooking the Trade Contractor's interests, or failing to give these interests proper consideration, could undermine the ability of the Trade Contractor to provide an accurate price estimate during the procurement stage. Other negative consequences may also arise during project execution.

Some of the critical concerns during the procurement phase are discussed in the following subsections.

## The Form of the Procurement Process

The form of the procurement process is vital to the Trade Contractor. Procurement documents need to address the relationship between the Trade Contractor and the Design-Builder with clarity in regards to the level of responsibility being asked of the Trade Contractor. The following questions should be asked:

- How will the Trade Contractor be procured? Will there be a call for bids, a request for proposals, or direct negotiation?
- What type of contractual relationship will exist between the Design-Builder and the Trade Contractor? Is it a teaming agreement? If a teaming agreement is being used, each party should have the opportunity to review, understand, and negotiate the terms of the agreement.
- What flow down conditions from the Owner's prime contract with the Design-Builder will affect the Trade Contractor?
- Is the Trade Contractor responsible for their own subcontractors?

## The Complete Scope of Work for the Trade Contractor

Procurement documents need to clearly define the complete scope of work of the Trade Contractor. The following questions should be considered by the Trade Contractor:

- Is the scope description for the work and professional services required from the Trade Contractor clear and concise?
- Are all functional and special requirements properly described in the Owner's Statement of Requirements?
- What budget and schedule must the Trade Contractor adhere to?
- How will the Trade Contractor's work be coordinated with other components of the project?

- What is the Trade Contractor's relationship to the design team members?
- Is the Trade Contractor being asked to provide design-build and/or design-assist services? If so, are they clearly described?
- What elements of design services and construction is the Trade Contractor accountable for?
- What design/construction risk is the Trade Contractor being asked to manage?
- What are the payment conditions, process for changes, and warranty responsibilities?
- Is the Trade Contractor responsible for field review?

All procurement documents should be thoroughly reviewed by the Trade Contractor and the Design-Builder to clarify any ambiguities or overlooked concerns.

### **Presenting Qualifications as a Design-Builder**

The Trade Contractor may be asked to submit resumes of key personnel and documentation outlining company experience, or to participate in staff interviews as part of the proposal evaluation process.

### **Addressing Risk**

The Trade Contractor needs to understand how the design and construction risk is being assigned and how that may change during the course of the work. A clear and fair risk allocation helps produce more accurate and competitive pricing.

Creating a risk matrix to identify risks and their magnitudes, mitigation strategies, and the responsible parties can help manage risks and minimize potential disputes.

### **Budget and Fees**

It is important to address the Trade Contractor's budget and fees up front. One such consideration would be whether the Design-Builder is responsible for paying the Trade Contractor's fees during the procurement phase.

### **Additional Considerations**

The Trade Contractor should understand all aspects of a design-build project that may impact them, including the financing, bonding, land ownership, environmental conditions, existence of adjacent rivers or streams, existing core samples of the property, land location, and utility locations, among others.

## 2. CONTRACTING FOR DESIGN-BUILD SERVICES

CDBI endorses and recommends the use of CCDC 14 'Design-Build Stipulated Price Contract' and CCDC 15 'Design Services Contract between Design-Builder and Consultant' for design-build projects. The principles of these standard contract forms should also be incorporated into the subcontract between the Design-Builder and the Trade Contractor. The following subsections outline some of these key principles:

### Contractual Responsibility

The Trade Contractor's roles and responsibilities are defined in the subcontract documents. These documents should address issues such as design responsibilities, scope of work, applying for and obtaining of permits, coordination with other subcontractors, submittal requirements, records and as-built drawings, risk allocation, penalties, environmental considerations, contaminated soils, archaeological findings, and similar matters.

The CCA 1 'Stipulated Price Subcontract' is the recommended subcontract form for construction and related services. This subcontract form is suitable for the Trade Contractor on a Design-Build project. It includes the following clauses that are important to all subcontracts:

- Financing Information from the Owner
- Payment Provisions
- Indemnification
- Schedule
- Changes
- Concealed or Unknown Conditions
- Insurance
- Dispute Resolution
- Health and Safety Responsibilities
- Toxic and Hazardous Substances
- Mould
- Warranty

### Design Responsibility

The practice of assigning more design responsibility to the Trade Contractor has continued to grow over time. As construction projects have become more complex, and traditional materials have yielded to more specialized ones, designers have given the responsibility for choosing the right product or method to the responsible Trade Contractor. If required to provide design services, the Trade Contractor must first verify the scope of design work, regardless of whether performance or prescribed specifications, are involved. To ascertain this vital information, the Trade Contractor must ask for copies of the contract that has been executed between the Owner and the Design-Builder, and whether there is any reference to value analysis. The issue of design responsibility must be addressed at the procurement stage, and the subcontract documents must also be thoroughly reviewed prior to signing to ensure that they do not conflict with the Trade Contractor's understanding of their scope of work.

### **Definition of Design and Associated Risks**

The Trade Contractor should understand clearly whether their subcontract scope is delegated design, design-assist, or pure construction. They should also be aware of how the following factors change with the three different types of scope:

- Liability
- In-House Design and Engineering
- Responsibility
- Schedule Signing

The risks assumed by each party, based partially on the subcontract scope, must be reviewed and negotiated to the satisfaction of all.

### **Performance Specifications**

The use of performance specifications rather than prescriptive specifications is one method by which the skill and judgement of the Trade Contractor can be relied upon. This leaves the selection of the required materials or equipment to the Trade Contractor, making the Trade Contractor liable for the quality and suitability of the finished product.

### **Insurance Consideration**

When managing the risk of design services, insurance and corporate insurance coverage must work together. Insurance coverage should be reviewed with qualified advisors to understand how coverages complement one another and where there is risk exposure. This includes, but is not limited to, the following types of coverage:

- Builder's Risk Insurance
- Wrap-Up General Liability (project specific)
- Contractor's Pollution Liability (project specific)
- Errors and Omissions Insurance (commonly known as professional liability)

### **Contractual Implications of BIM**

As with any project delivery method, the Trade Contractor must ensure that issues of scope, compensation, and risk management are properly and comprehensively addressed in the subcontract involving BIM.

### **Payment Terms in Subcontracts**

The Trade Contractor should carefully examine the payment terms in the subcontract prior to signing. When negotiating the subcontract, the Trade Contractor should consider entitlement to prompt payment, change order procedures, and flow-down provisions for payment and payment at design/construction milestones.

### **Warranties in Subcontracts**

Many subcontracts contain an express warranty clause obligating the Trade Contractor to correct, at their own expense, any defects or deficiencies in the subcontract work which appear within one year of substantial completion of the entire project, or for longer periods as may be specified in the prime

contract for certain aspects in the work. Warranties should clearly delineate and assign responsibility between the Design-Builder, the Trade Contractor, and any Consultants.

### **Delay Provisions**

It is important for the Trade Contractor to review the work schedule and reach agreement with the Design-Builder prior to signing the subcontract, as this constitutes the subcontract time. If the schedule is revised or not provided by the Design-Builder until after signing the subcontract, it should be mutually agreed upon by the Design-Builder and the Trade Contractor.

### **Additional Considerations**

The Trade Contractor should not be responsible for the Owner's failure to provide permits, land, or other Owner-supplied items. Subcontracts should include provisions that allow, at some level, design-build entities to identify priorities for acquisition in order to optimize the approach to their design solution. Any restrictions that may affect the Trade Contractor's ability to perform work should be clearly specified. Contract securities (e.g. bonding and corporate guarantees), if required, must be in place to the satisfaction of all parties.



### 3. EXECUTING THE DELIVERY OF DESIGN-BUILD PROJECTS

The best practices for project execution found in this section focus on the unique aspects of the design-build process, where a successful outcome is dependant on trust, transparency, and team integration. A successful design-build project relies on qualified members of the design-build team that understand the design-build process and have the ability to work collaboratively. The Design-Builder should include all key relevant Trade Contractors as participants in the design development meetings. Best practice includes documenting any such meetings with agendas, meeting minutes, and detailed descriptions for any design decisions.

Some important considerations are highlighted in the following subsections.

#### **Greater Attention to Safety and Quality Control**

The Trade Contractor may be required to incorporate a health and safety plan and a quality management plan to comply with relevant legislation. Otherwise, they will have to work within the Design-Builder's plans. All design and construction work should be carried out with health and safety in mind.

The Trade Contractor should be aware of the requirements of quality control (e.g. ISO 9001 Forms of Quality Management Plans) and incident reporting and the potential cost impacts that result from these plans.

#### **Design to Limits of Contract and Scope**

Carefully monitoring of the execution stage of design is important to avoid scope and quantity creep during detailed design. Review of bidding phase design to execution design is required, and contracts should incorporate how quantity growth risk is divided between the Design-Builder, Consultants, and Trade Contractors.

Trade Contractors must review the construction documents against the original proposal documents to confirm that quantities and scope remain consistent.

#### **Schedule Control and Adjustment to the Design-Builder**

Following contract award and/or negotiation, the Trade Contractor's original pricing submission schedule must be incorporated into the Design-Builder's updated execution schedule. This schedule will likely see further updates until after the early work stages are complete.

#### **Constructability**

The Trade Contractor may be asked to review aspects of their scope to determine if constructability can be improved to facilitate other aspects of the project, whether at the request of the Design-Builder or other Trade Contractors. The Trade Contractor may also want to improve on design for their own constructability considerations. The Trade Contractor should consider the following questions:

- Has the value engineering exercise affected the time, costs, or other conditions for the Trade Contractor?

- Is the Trade Contractor providing a cost estimating service for the Design-Builder, and how is this covered in the change management provisions?
- What are the effects on constructability and assumed risks at pricing submission?

### **Compliance Issues and Monitoring**

Prior to signing the subcontract, changes during detailed design and value engineering need to be reviewed against the Owner's Statement of Requirements to ensure compliance. Compliance should also be examined during milestone reviews (typically at 70%, 90%, and 100%) as part of the design quality management plan for the Trade Contractor.

### **Change Management**

The Trade Contractor needs to be aware of how change management between the Owner and the Design-Builder may affect their performance. Change management must allow the Trade Contractor to update their pricing when the design is at the issued for construction phase to ensure quantity variances are accounted for, and scope remains as discussed during the pricing submissions. As such, the Trade Contractor must carefully track alterations to their scope, and directions from the Design-Builder, to ensure any changes and their associated costs are documented. The Trade Contractor must also be prepared to support the Design-Builder with claims to the Owner to ensure these costs are paid and the money flows down appropriately.

### **Stakeholder Management and Communications**

Stakeholder management and communication issues may flow down from the Design-Builder to the Trade Contractor. The Trade Contractor can avoid or mitigate these problems by undertaking timely updates to noise, traffic, environmental management, and similar plans.

### **Implied Warranties**

Where the Trade Contractor is clearly obligated to build in accordance with a design agreed to by the Owner or the Consultant, the Trade Contractor's design skill is not being relied upon. The following implied warranties may not apply:

- That the Trade Contractor will use materials of a quality and type suitable for the intended result.
- That the Trade Contractor warrants that the end result will be reasonably fit for the purpose intended by the Owner.

Implied warranties have increasingly been imposed on Trade Contractors, prompted in part by the increasing sophistication of construction techniques and materials as discussed earlier. It is important that Trade Contractors are aware of this shift and the implied warranties that they may be assuming beyond their traditional contractual responsibilities.

## 4. CONCLUSION AND CHECKLIST

It is important for the Trade Contractor in a design-build contract to recognize the differences between typical design-bid-build and design-build project delivery methods. The ongoing modifications and scope changes need to be monitored carefully by the Trade Contractor to ensure what was promised and priced is what gets executed and paid for. The Trade Contractor should also be aware of the performance-based aspects of design-build as well as the difference in risk management when undertaking design services. Working and communicating with the Design-Builder and reaching an agreement on scope and project requirements will help to avoid conflict throughout the course of the project. The following checklist provides some further questions beyond those previously listed to further help the Trade Contractor prepare and succeed in their design-build projects.

### Trade Contractor Checklist

- Does the work described in the contract include all the addenda that was bid on?
- What design responsibility is the Trade Contractor being asked to undertake, and how will this be managed under the form of contract?
- Does the stated price in the agreement include payment for design and design-related insurance coverage and risk premiums?
- Do the payment terms exclude conditional payment clauses such as 'pay when paid' or 'pay if paid'?
- Do the payment terms include payment following completion of design milestones?
- Is the insurance coverage appropriate for a design-build project and the related design responsibilities the Trade Contractor may be assuming?
- Have you secured evidence of the project insurance policies?
- Have you reviewed the insurance and indemnity flow down conditions from the prime contract?
- Does the contract outline change procedures and ensure changes will be mutually agreed upon?
- Does the contract ensure the Trade Contractor will be fully compensated for changes to the schedule not caused by fault of the Trade Contractor?
- Have any changes been made to the terms and conditions of the prime contract since bid closing that are applicable to the Trade Contractor?
- Does the contract ensure the Trade Contractor will be paid for work done and other incurred costs if the contract is terminated without cause?
- Who is providing the quality management plan, and how will it impact the design responsibility of the Trade Contractor?

- Has the Trade Contractor reviewed how health and safety considerations must be incorporated into their design responsibilities?