

# BUILDING CONSTRUCTION – PUTTING IT ALL TOGETHER

## DETAILED DESCRIPTION

Construction is a team effort with owners, contractors, architects, and subcontractors performing key functions throughout the lifecycle of a project. The “Building Construction – Putting It All Together” workshop delivers a step-by-step review of the project lifecycle, from initiation through close-out, with specific attention to the unique roles and responsibilities of these stakeholders at each phase.

### **Part 1: Introduction**

- Construction sectors
- Stakeholders and their roles in the construction process
- Different stages of construction from development through design.

### **Part 2: Project Initiation – The Owner’s Perspective**

- The project lifecycle from the owner’s perspective:
  - market demands
  - financial planning
  - feasibility studies
  - functional programming
  - design and engineering
  - procurement
  - construction

### **Part 3: The Design Process – Architect’s Role**

- Role of the architect through phases of the design process:
  - Pre-design
  - Functional programming
  - Schematic design
  - Design development including the engagement of specialty consultants
  - Construction documents

### **Part 4: The Tendering Process – Owner & Contractor Perspectives**

- Introduction to construction contracts and Canadian tendering law
- The competitive tendering process and RFPs
  - Definitions
  - Preparing tender documents
    - Drawings and specifications
  - Identifying bidders
  - Invitation to bid
- Contractor’s Perspective: Estimating Process
  - Developing the estimate
  - RFI’s
  - Mandatory site visits
  - Submitting tender
- Owner’s Perspective:
  - Receiving tender
  - Reviewing tender
  - Accepting tender/Contract award

### **Part 5: Project Delivery Methods**

- Understanding project delivery systems and different ways that projects are organized and administered.

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- Relationships between the project owner, consultant, and general contractor and how they are influenced by different project delivery methods
- The seven most common types of project delivery methods in Canada:
  - Design-bid-build (DBB) or stipulated price contracts
  - Cost Plus
  - Construction Management for Services
  - Construction Management for Services and Construction
  - Design Build (DB)
  - Public – Private Partnerships (PPP or P3)
  - Integrated Project Delivery (IPD)
- LEAN Construction
- Subcontracts

### **Part 6: Contract Law**

- Basics of the legal agreement between the owner and the general contractor and the general contractor and the subcontractors:
  - Components required to make a contract
  - What documents are included in a construction contract
  - Canadian contract examples
  - Interesting contract terms and conditions
  - Breach of Contract
  - How contract disputes are resolved

### **Part 7: Preconstruction – Roles & Responsibilities: GC, Architect, Subcontractor**

- General contractor's pre-construction responsibilities:
  - Company organization:
  - Preconstruction submittals
    - Bonds
      - Bid Bonds & Consents of Surety
      - Performance Bonds
      - Labour & Material
      - Construction Lien
      - Holdback Repayment
      - Certificates of Insurance
    - Insurance
      - General Liability Insurance and Wrap-up General Liability Insurance
      - Builder's Risk Broad Form Property Insurance
      - Boiler and Machinery/Equipment Breakdown Insurance
      - Automobile Liability Insurance
      - Installation Floater
  - The Construction Execution Plan (CEP)
    - The CEP is a road map that describes how a project will proceed and be executed and includes:
      - Organizes internal Project Team and assigns responsibilities
      - Receives and reviews estimate with Estimating Team at the Internal Handover meeting
      - Organizes the budget and schedule of values

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- Scope of work review and determine the means and methods of construction
- Procurement: secures subcontractors and suppliers
- Secures permits and pays any fees for Letters of Credit (if required)
- Finalizes construction schedule
- Orders materials and equipment
- Organizes labour for duration of project
- Creates Site Specific Safety Plan
- Organizes and schedules required meetings and reports
- Sets up document control
- Identifies required submittals and develops submittals schedule
- Identifies required inspections and testing
- Develops the Site Layout Plan
- Develops a Risk Management Plan
- Initiates the Quality management plan
- Develops a project closeout submittals plan
- Develops a social responsibility plan addressing:
  - The environment
  - Construction
  - Communication/public relations
  - Health & safety
  - Community engagement
- Architect's pre-construction responsibilities:
  - Review agreements:
  - Finalize the construction contract
  - Manage over-budget tenders
  - Review regulatory requirements
  - Assemble the construction document sets
  - Review the construction schedule
  - Review the submittals schedule
  - Review the schedule of values
  - Organize the Owner's Pre-construction Meeting
  - Review of the construction site prior to start of construction
- Subcontractor's pre-construction responsibilities:
  - Obtains subcontract from the general contractor: reviews, negotiates, signs & returns
  - Obtains bonds and insurance as required by subcontract and company policy
  - Scope of work review
  - Develops the Construction Execution Plan
  - Organizes internal project team and assigns responsibilities
  - Receives and reviews estimate with Estimating Team at the Internal Handover meeting
  - Organizes the budget and schedule of values
  - Procurement: secures sub-subcontractors and suppliers
  - Secures permits
  - Secures engineer to provide engineered stamped shop drawings (if required)
  - Reviews construction schedule
  - Identifies required submittals and develops submittals schedule to submit to the general contractor
  - Orders materials and equipment
  - Organizes labour for duration of project

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- Creates Site Specific Safety Plan
- Organizes internal project management control system – accounting, document control etc
- Organizes and assigns responsibilities for internal safety program
- Identifies required inspections and testing
- Organizes a process for tool and equipment management
- Develops a project closeout submittals plan
- Attends Subcontractor Start-up meeting with general contractor

### **Part 8: Construction – Roles & Responsibilities: GC, Architect, Owner, Subcontractor**

- General contractor’s construction responsibilities:
  - Takes possession of the site and mobilizes
  - Issues “Notice of Project”
  - Organizes and manages own forces, equipment and material
  - Organizes Subcontractors and coordinates their work and performance
  - Monitors and manages project site safety
  - Applies the Construction Execution Plan
  - Monitors and manages the construction schedule
  - Monitors and manages delays and claims
  - Cost Control - Monitors and manages the budget
  - Manages the “Request for Information” (RFI) process
  - Manages the change management process
  - Manages the submittals process
  - Manages quality assurance and quality control (QA/QC) program
  - Manages risk and opportunity
  - Engages with Authorities Having Jurisdiction for required inspections throughout the duration of the construction.
  - Manages all ongoing daily and monthly project deliverables
  - Organizes and conducts meetings
  - Manages LEED requirements (if required)
  - Know all pertinent legislation and regulatory issues – Lien Act and others
  - Maintain as-built drawings
  - Maintains a safe and clean site
  - Ensures that all required testing and inspections are completed
  - Organizes and manages the deficiency review process
  - Manages commissioning of the building
  - Organizes and manages the occupancy process
  - Manages the project closeout submittals process
  - Works with the consultants to achieve substantial performance
  - Manages the building turn over process
- Architect’s construction responsibilities:
  - What is Contract Administration
  - Architect’s Role as Contract Administration
  - Construction contract administration processes and documentation
  - General communication requirements and procedures during contract administration
    - Retain and organize project documentation in a project management information system
    - Minutes or Records of Meetings
    - Requests for Information (RFI’s)
    - Supplemental Instructions (SI’s)

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- Contract Changes Management
- Inspection and testing
- Submittal Review - Shop Drawings: Samples, Hierarchy, Mock-ups
- Proposed Alternate and Substitutions
- Construction Site Meetings
- General Review: Purpose, Architect's Considerations, Frequency & Timing (Progress Claims), Preparation, Procedures on/after Site Visit, Report
- Review Of Mock-Ups: Stand-alone, in-place, and virtual mock-ups, Special Requirements
- Certificates for Payment: Schedule of Values. Percentage of Work Complete, Statutory Holdbacks
- Interpretation of Documents
- Deficiency Reviews
- Final Submissions
- Other Certificates and Letters
  - Certificate of Substantial Performance
  - Letters of Assurance and Commitment to General Review
- Commissioning
- Owner's construction responsibilities:
  - Cooperates with the general contractor to the best of their ability
  - Provides timely payment for architect and general contractor
  - Attends Owner's Construction Progress Meetings
  - Reconciles contingency and cash allowances
  - Pays for all legitimate extras to the contractor
  - Ensures that the cost of the work is remaining within the forecasted budget and available monies
  - Works with the consultants and general contractor to resolve disputes quickly
  - Maintains insurances
  - Preparing for the transition to the new facility
- Subcontractor's construction responsibilities:
  - Mobilizes to site at the direction of the general contractor
  - Provides shop drawings and submittals as required
  - Provides input to the construction schedule
  - Ensures all workers are working in a safe manner
  - Maintains a protocol for equipment inspections
  - Attends and engage in all subcontractor meetings
  - Provides schedules of deliveries to general contractor
  - Organizes work
  - Manage cleanliness and organization of materials
  - Submits Requests for Information
  - Manages change management
    - Supplementary Instructions
    - Contemplated Change Order
    - Change Directives
    - Change Orders (CO's) from general contractor
    - Back charges from general contractor
    - Back charges to sub-subcontractors
  - Manages monthly billing
  - Ensures timely payment is made to sub-subcontractors and suppliers
  - Organizes inspections by Authorities Having Jurisdiction

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- Monitors the construction schedule for delay
- Inspects own work to ensure that quality standards are met or exceeded
- Inspects own work for deficiencies and submit list to general contractor – rectify all deficiencies
- Provides project closeout submittals
- Demobilizes from site
- Submits final billings

#### **Part 9: Post Construction – Roles & Responsibilities: GC, Architect, Owner, Subcontractor**

- Contractor’s post-construction responsibilities:
  - Closing out the subcontractors
    - Manage subcontractors’ departure from site
    - Reconcile all change related financial issues
    - Reconcile accounts
  - Closing out the owner
    - Obtain the Certificate of Final Completion
    - Obtain a Letter of recommendation or a completed owner satisfaction survey
    - Prepare and submit the final invoice
    - Submit the invoice for the final release of holdback
    - Follow up on payments
  - Internal project close-out
    - Project Evaluation
    - Identify Outcomes
    - Identify Impacts
    - Project Evaluation Meeting: Attendees & Agenda
    - Lessons Learned
  - Final Commissioning
  - Warranty
- Architect’s post-construction responsibilities:
  - Takeover procedures
    - Ready for Takeover and Substantial Performance
    - Final Certificate for Payment
    - Certification for Release of Holdback
  - Commissioning
  - Warranty
- Owner’s post-construction responsibilities:
  - Furniture, fixtures, and equipment
  - Organizing Employees
  - Making Final Payments
  - Participating In Final Commissioning
  - Warranty
  - Implementing the Operational Readiness Plan
- Subcontractor’s post-construction responsibilities:
  - Reconcile sub-subcontractors financial accounts
  - Make final payments to sub-subcontractors
  - Reconcile financial accounts with general contractor
  - Perform an internal review of the project success
  - Attend meetings as required
  - Respond to warranty issues if required