



CE STUDY ASSIGNMENTS

WEEK 1

- Pre-Construction Activities** - Roles and Responsibilities
- Pre-Construction Activities** - Project Delivery Methods
- Pre-Construction Activities** - Procurement Documents
- Pre-Construction Activities** - Integrated Project Delivery
- Pre-Construction Activities** - Cost Control
- Pre-Construction Activities** - Pre-Construction Submittals
- Construction Observation** - Site Visits and Field Reports

PRE-CON ACTIVITIES - INTEGRATED PROJECT DELIVERY

ASSIGNMENT 4

The pre-construction activities found in Integrated Project Delivery (IPD) are very different from other project delivery methods, so it gets its own section

- » Is IPD strictly a project delivery method?
- » How does IPD utilize agency review?
- » What is the buyout process in IPD?
- » Name and describe the types of approaches used in IPD.
- » What are the benefits of IPD to the owner, architect, and contractor?
- » What is unique about the contract structure in IPD compared to traditional project delivery methods?

Mark items in the list below with “T” if they describe a traditional project delivery method, and “IPD” if they describe Integrated Project Delivery.

- Linear, segregated process
- Communications rely heavily on BIM and simulation
- Team behaviors are adversarial
- Contracts are multilateral and share risk/project information
- Collaborative teams are made up early in the process, consisting of project stakeholders
- Compensation is based on a first-cost basis (not taking maintenance into account)
- Risk is managed individually and transferred when possible
- Trust is an important team behavior
- Risk is managed and shared collectively
- Process is concurrent and multi-level with openly shared information
- Compensation is value-based and tied to the success of project goals

REFERENCES

The American Institute of Architects: [AIA Contract Documents: Integrated Project Delivery \(IPD\) Family](#)

The American Institute of Architects: [Integrated Project Delivery: A Guide \(PDF\)](#)

Lean Construction Blog: [What is Integrated Project Delivery?](#)

Architect's Handbook of Professional Practice, 15th Ed: Chapter 9 Section 9.3 (pg 530-538)

YOUR NOTES

PRE-CON ACTIVITIES - COST CONTROL

ASSIGNMENT 5

One of the most common concerns of an owner is how much the project will cost.

- » How do poorly prepared contract documents impact the bidding process?
- » What are the types of alternates that can be used by the contractor?
- » What is the benefit of an alternate to the owner?
- » Where should unit prices be listed if they are used in a project?
- » If the cost for material or equipment cannot be determined at the time of bid or negotiated proposal, what action can the architect take?
- » When is the best time to utilize Value Engineering (VE) in the design process?
- » How can cost control vary with each project delivery method?

In the bidding process of a new project, bidders are asked to price their base bid but also asked to price how much their bid will be if all exterior aluminum cladding were replaced by blackened stainless steel. This is an example of what tool of the bidding process?

- A. Allowance
- B. Alternate
- C. Substitution
- D. Replacement

Exercise question borrowed with permission from Miguel and Key from WEARE. This is from the CE Preconstruction Activities short quiz, a part of the [CE Exam Bundle](#)

REFERENCES

LevelSet.com: [How to Use Construction Allowances | Construction Accounting](#)

BD+C University: [Value Engineering: Where Quality Control Meets Cost Control](#)

Schiff Hardin | 2019 Week 12 Lecture 11: [The 2017 A-201 General Conditions \(cont.\) and Issues That Arise During Construction](#)

Architect's Handbook of Professional Practice, 15th Ed: Section 10.8 GMP & Unit Prices (pg 706-707) and Substitutions (709-710)

YOUR NOTES

ANSWERS

PRE-CON ACTIVITIES - INTEGRATED PROJECT DELIVERY

ANSWER 4

Linear, segregated process (T)
Communications rely heavily on BIM and simulation (IPD)
Team behaviors are adversarial (T)
Contracts are multilateral and share risk/project information (IPD)
Collaborative teams are made up early in the process, consisting of project stakeholders (IPD)
Compensation is based on a first-cost basis (not taking maintenance into account) (T)
Risk is managed individually and transferred when possible (T)
Trust is an important team behavior (IPD)
Risk is managed and shared collectively (IPD)
Process is concurrent and multi-level with openly shared information (IPD)
Compensation is value-based and tied to the success of project goals (IPD)

Integrated Project Delivery (IPD) is unique because it is applied in multiple ways: IPD is a project delivery method, a contract strategy, and a set of recommended behaviors (you may also see it as “IPD-ish” or “IPD-lite”).

The goal of IPD is to remove the adversarial contractual relationships between the owner, architect, and contractor that lead to wasted time and effort. By front-loading design efforts and working collaboratively, IPD can deliver a higher quality building and greater value for the owner. During the pre-construction phase, the architect contributes to:

1. Agency Review - Includes the early involvement of permitting agencies/authority having jurisdiction (AHJ) in the building code review process. Building Information Modeling (BIM) data may be shared with the agency to streamline the process. The architect would work with the AHJ to ensure code compliance and address questions/issues with the model.
2. Buyout - Involves selecting suppliers and finalizing prices from any remaining subcontractors and vendors that are not part of the IPD process. There is no bidding/negotiating (as you would see in DBB), because the key stakeholders (contractors, subcontractors, vendors, etc.) have already been selected. The architect would review the remaining bidders to ensure that their work matches the design intent.

*Source: Ballast ARE 5.0 Review Manual

The types of approaches used in IPD are transitional forms, multi-party agreements, and a single-purpose entity. From AIAcontracts.org:

Transitional Forms are modeled after existing construction manager agreements and offer a comfortable first step into integrated project delivery.

The Multi-Party Agreement is a single agreement that the parties can use to design and construct a project utilizing integrated project delivery.

Single Purpose Entity (SPE) creates a limited liability company for the purpose of planning, designing and constructing the project. The SPE allows for complete sharing of risk and reward in a fully integrated collaborative process.

Fundamental principles of IPD include mutual respect and trust, mutual benefit and reward, risks identified and accepted early, collaborative innovation and decision making, early involvement of key participants, early goal definition, intensified planning, open communication, and appropriate collaboration technology (typically BIM), and organization and leadership. AHPP 9.3 p.532-534 covers these in detail.**

Because risk and reward are collectively managed and appropriately shared under a single contract, the parties (owner, contractor, architect, subcontractors, vendors) are incentivized to work collaboratively to reduce waste and achieve project goals.

The AIA contracts used for IPD include A195–2008, Standard Form of Agreement Between Owner and Contractor for Integrated Project Delivery, B195–2008, Standard Form of Agreement Between Owner and Architect for Integrated Project Delivery, and C191–2009, Standard Form Multi-Party Agreement for Integrated Project Delivery.



PRE-CON ACTIVITIES - COST CONTROL

ANSWER 5

In the bidding process of a new project, bidders are asked to price their base bid but also asked to price how much their bid will be if all exterior aluminum cladding were replaced by blackened stainless steel. This is an example of what tool of the bidding process?

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The quality of the contract documents (level of detail, accuracy, completeness, etc.) impact the dollar amount of bids received. If the contract documents are poorly prepared, a contractor may be unclear on what is required in order to prepare an accurate bid. The contractor may increase the bid to cover unknowns. In contrast, a well-coordinated, complete set of construction documents enables the contractor to bid accurately with a clear understanding of the scope and quality of work.

There may be some cases, however, where some items are still unknown at the time of bidding. In such instances, the following can be used:

Allowance

In the bidding process, an allowance is a sum of money that is estimated by the architect for an item that cannot be exactly quantified or qualified at the time of the bid. The allowance is stated in the specifications, so all bidders reference the same amount. The contractor must also factor in their own overhead, profit, and related costs. If the allowance is less than or greater than the original estimate, the contract sum is adjusted with a change order.

Unit Price

Unit prices are set costs for certain portions of work, based on an individual quantity. When unit prices are required, they are listed on the bid form. If the total amount of material needed is unknown, the contractor can provide a cost per unit (square foot, yard, etc.) to be evaluated by the owner and architect.

Substitution

Substitutions, when allowed, represent a tool for bidders to request that a substitute material may be considered.

Alternate

An alternate in the bidding documents allows the architect to ask all bidders to supply a price for some form of variation - or alternate - to the base bid, usually another option for a given material or piece of equipment. Alternates give the owner flexibility in modifying the cost of the project once bids have been received. The two types of allowances are material allowances, in which the owner can choose among a variety of material options, and installation allowances, which influences the amount of skilled labor needed in installation.

Value Engineering

Value Engineering (VE) is the process of analyzing a particular material, assembly, system, or even an entire design to see whether the same functional requirements can be met in a less expensive way. The VE process takes a team approach consisting of the client, architect, engineers, and contractors, and should occur as soon as possible to provide the most value.

See the next page for a comparison of how the different delivery methods can impact cost control.



PRE-CON ACTIVITIES - COST CONTROL

ANSWER 5

Project Delivery Method	Cost Control
Design-Bid-Build	<p>Architect has limited ability to adjust project costs.</p> <p>It is only during bidding and negotiation when the owner gets a firm price. If the architect has estimated accurately, it should be close to the bid amount provided by the contractor.</p> <p>Many factors affect the final bid price, so the architect cannot guarantee the final construction price will not vary from their estimate.</p> <p>The architect is obligated by contract to design the project to meet the owner's budget, as well as provide cost estimates.</p>
Construction Management	<p>The architect is not directly responsible for estimating or guaranteeing construction costs, and instead works with the CM to meet the project budget and consider substitutions.</p> <p>The architect clarifies interpretations for the drawings and specifications before the owner accepts the Guaranteed Maximum Price (GMP).</p> <p>The architect assists the owner in reviewing the GMP after it is provided by the CM. (Reference AIA Document B133)</p>
Design-Build	<p>The architect's duties regarding cost control depend on the scope of services in the design-builder - architect agreement (AIA B143).</p> <p>The architect may or may not provide estimating services, or evaluate the cost of the work for the architect's portion of the project provided by the design-builder.</p>
Integrated Project Delivery	<p>The architect has little ability to adjust project costs during preconstruction. Because the contractor is involved early in the design process, adjustments may be unnecessary. At this stage, the contractor provides the owner with the GMP when the detailed design documents are accepted.</p>

