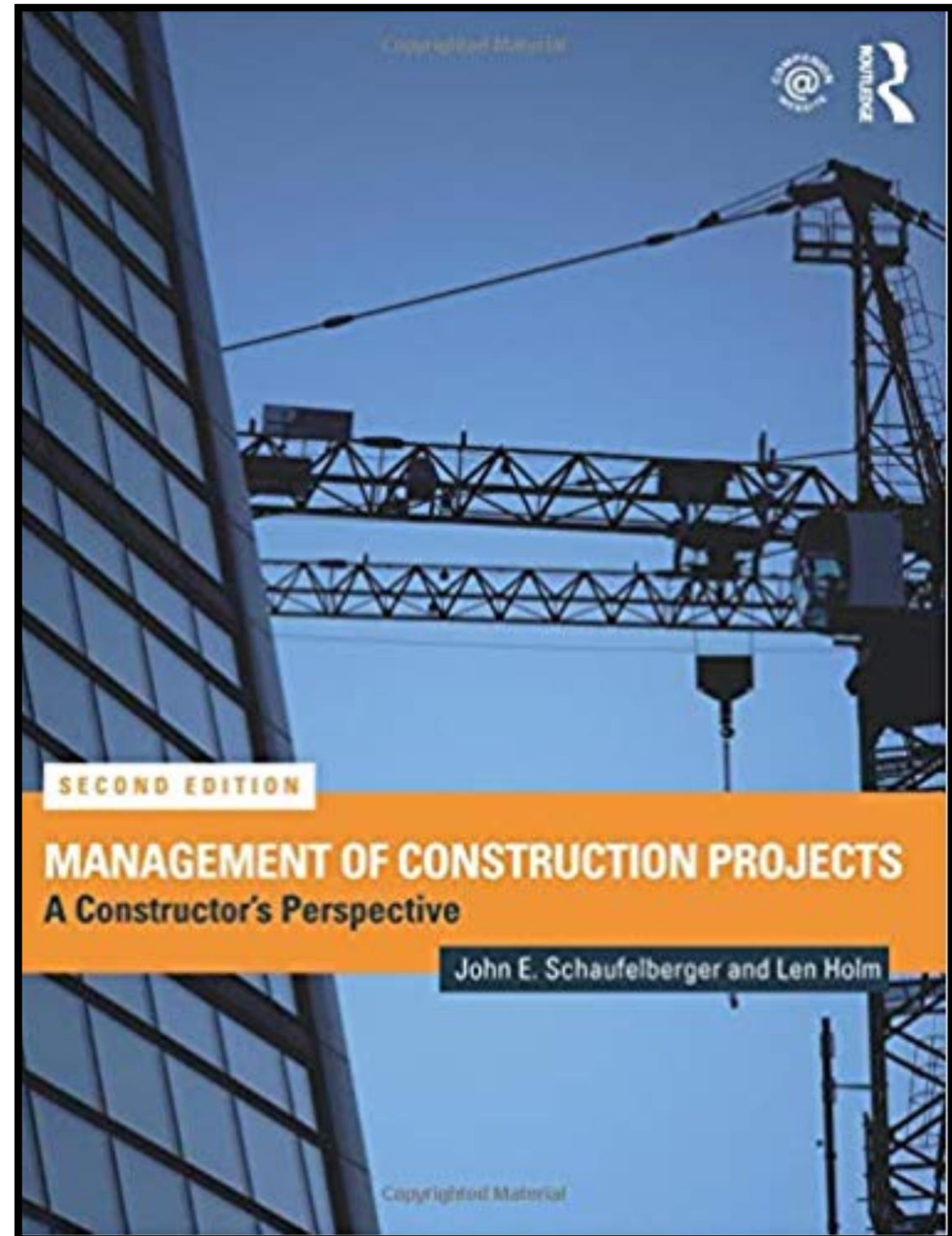




دانشگاه علم و صنعت ایران

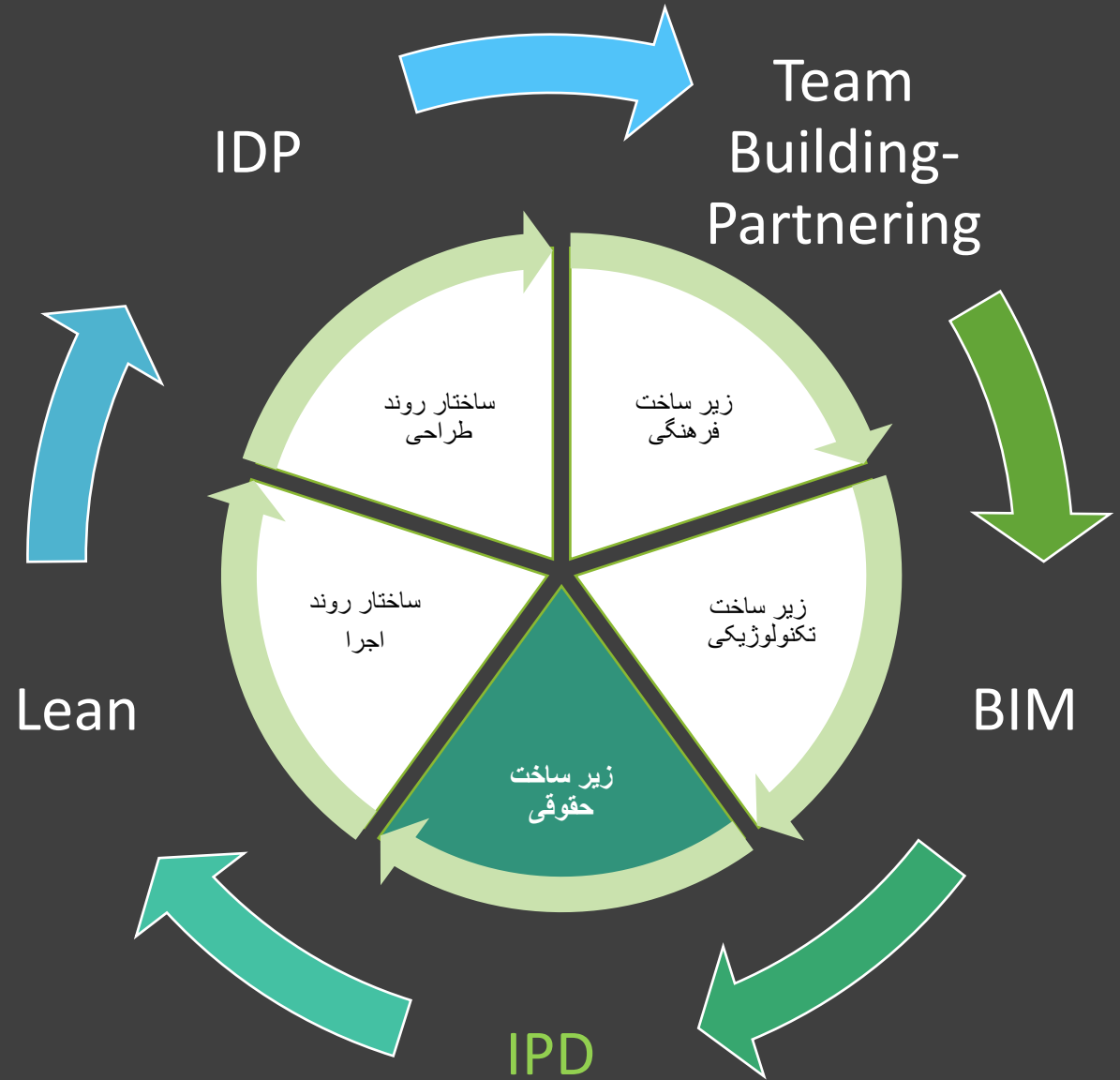
# روش‌های عقد قراردادهای ساختنی

جلسه دوازدهم- مبانی طراحی محیطی،  
نظریه و روش‌ها- خرداد ماه 1399

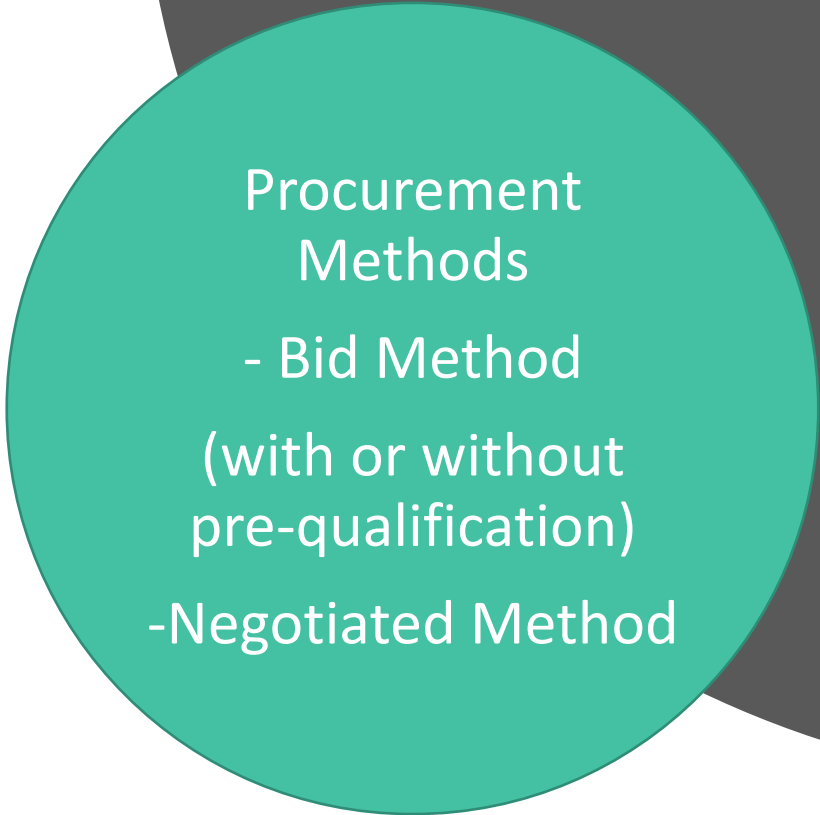


# Introduction

- PROJECT PROCUREMENT METHODS
- PROJECT DELIVERY METHODS
- PROJECT COST ACQUISITION METHODS



Project Procurement method is mostly selected based on the project ownership: Public vs. private



Procurement Methods

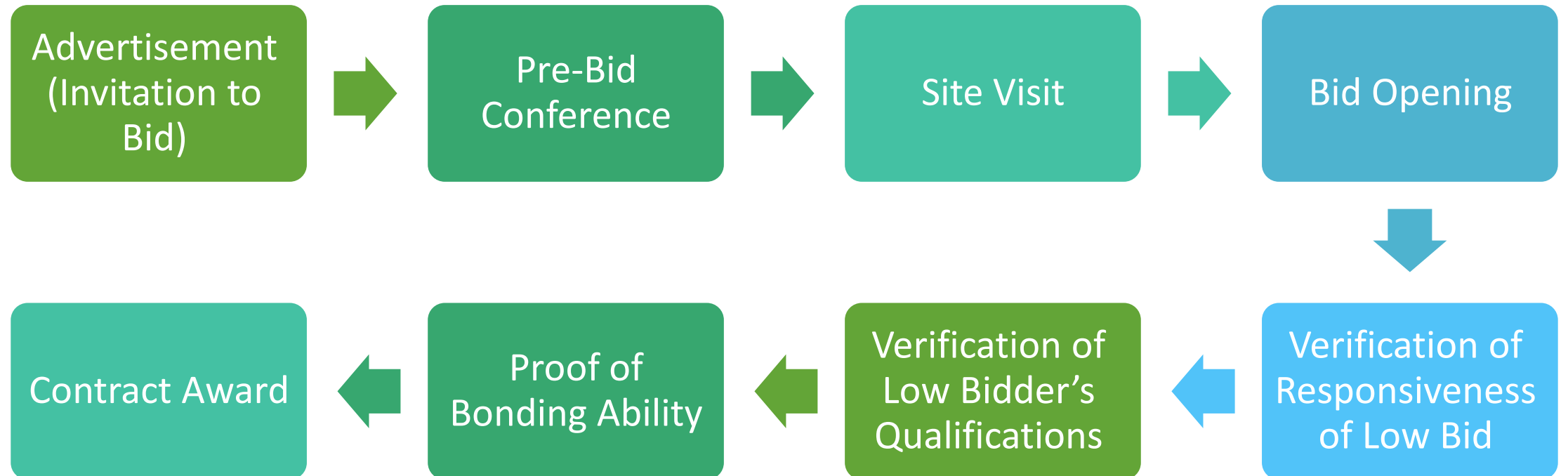
- Bid Method (with or without pre-qualification)
- Negotiated Method

---

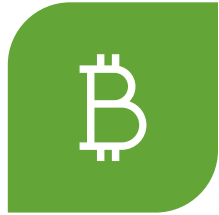
Project Procurement Methods



# BID Method



# Negotiated Method Typical Criteria



COST (OR FEE)



PROJECT DURATION



EXPERTISE



PLAN FOR MANAGING  
THE PROJECT



SAFETY RECORD



EXISTING WORKLOAD



EXPERIENCE WITH  
SIMILAR PROJECTS

# Negotiated Method



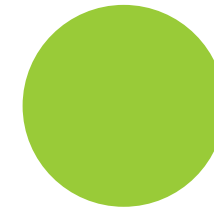
Owners select project delivery method based on:

- 1- The amount of risk they are willing to assume;
  - 2- the size and experience of their own contract management staff.
  - 3- Project Characteristics;
  - 4- Time limits.
- 

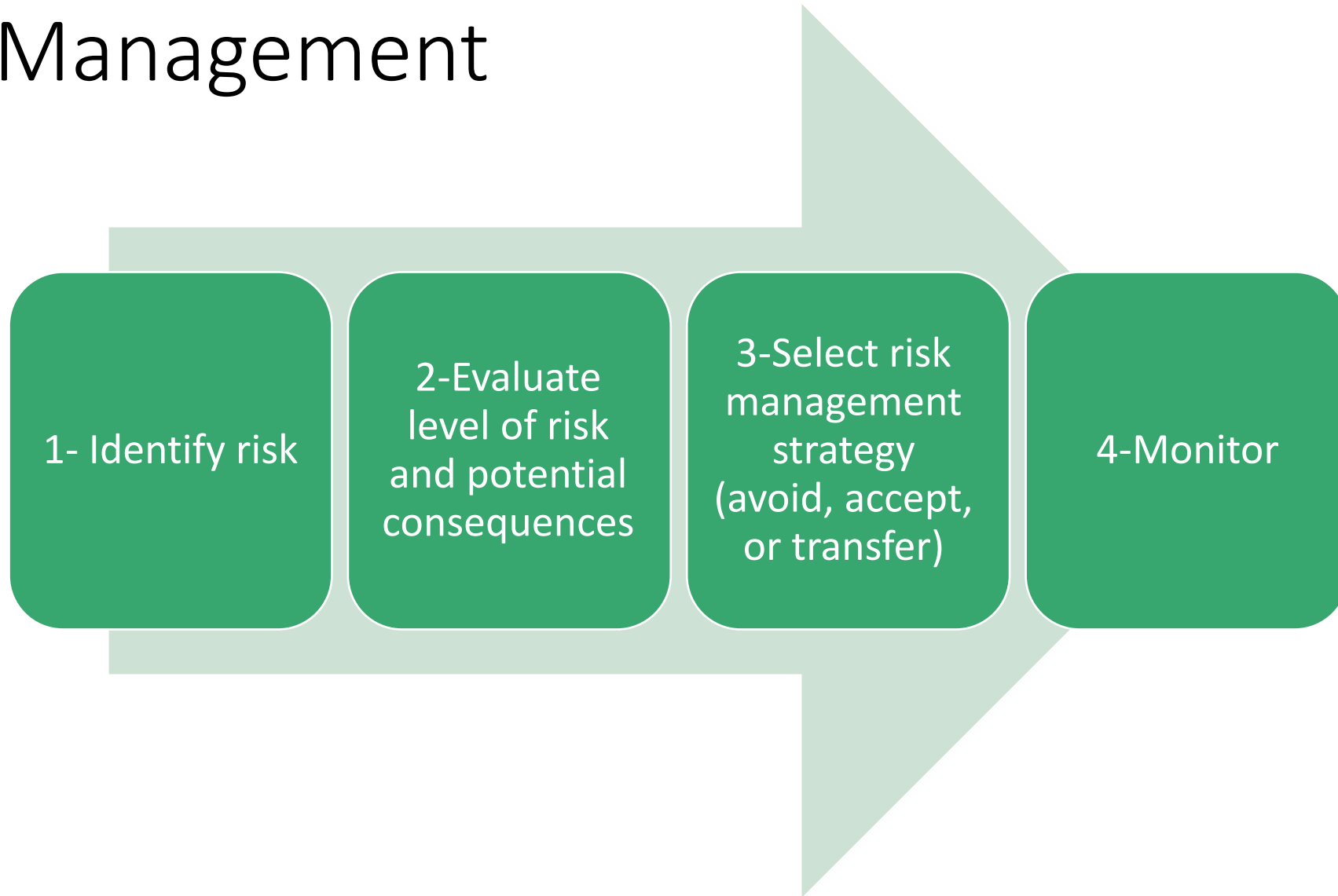
## Contracting Methods

- In-house
- Design-Bid-Build
- Agency Construction Management
- CM at Risk
- Design Build
- IPD

# Project Delivery Methods

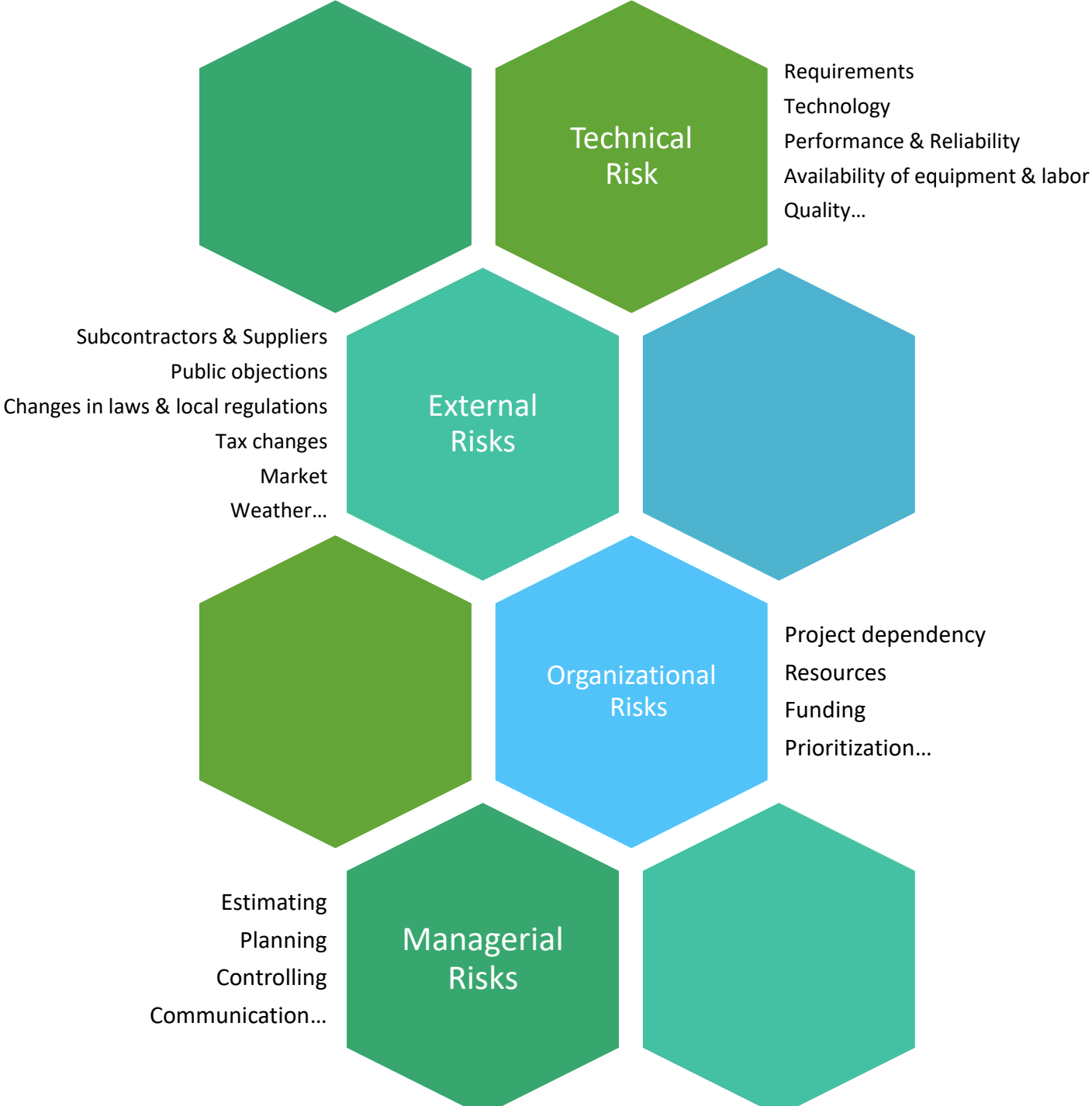


# Risk Management





# Types of Risks in Construction Projects



# In-house Delivery Method

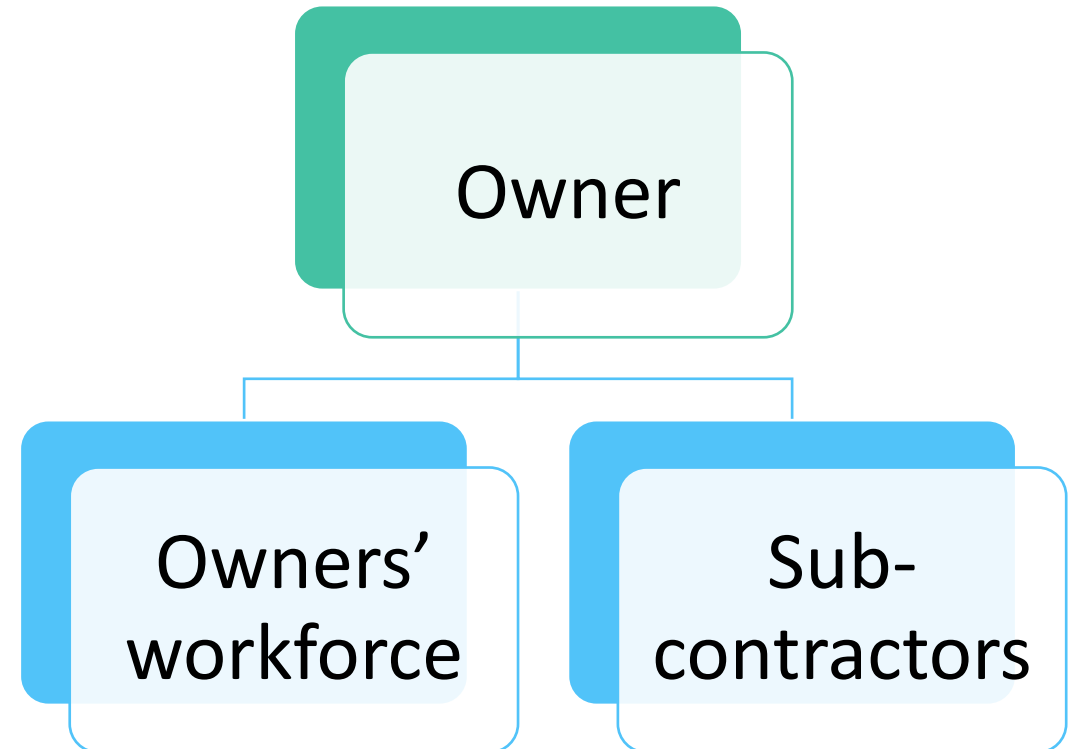
- Owners' ability and resources
- Small Projects (i.e. renovations, repairment, ...)

Pros:

No extra fee for Designers or Contractors

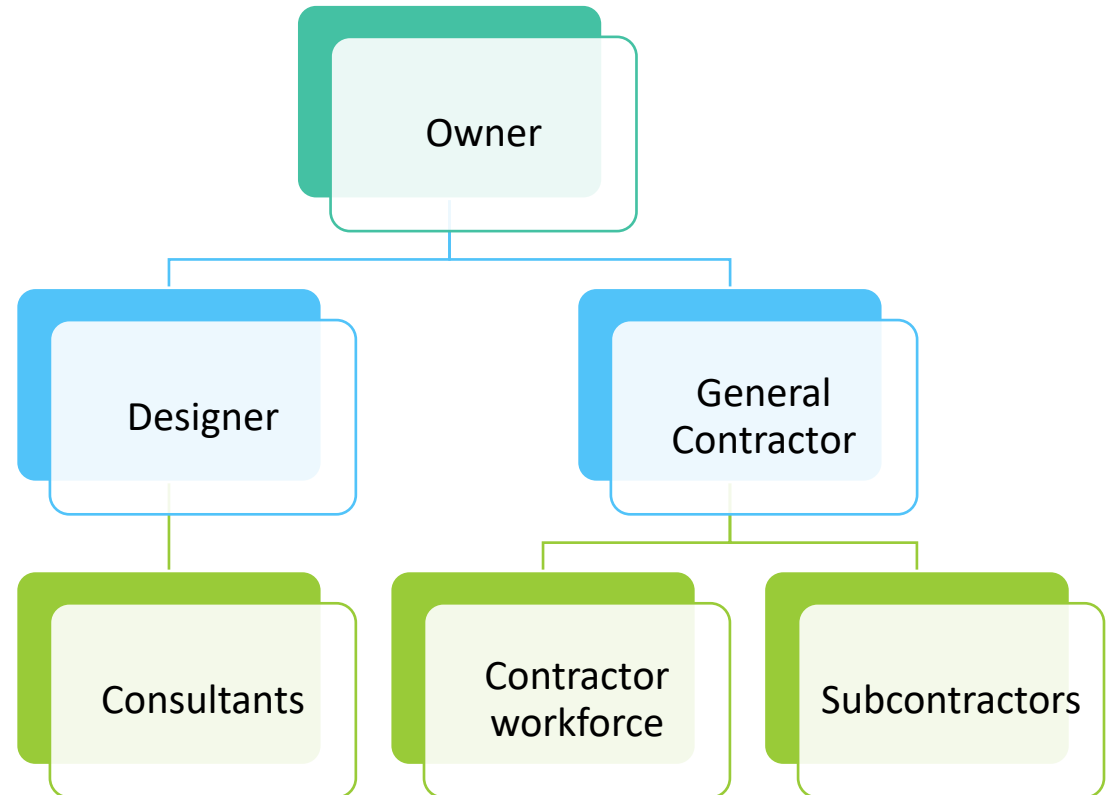
Cons:

- Accepting all the risks
- Lower performance than a professional contractor



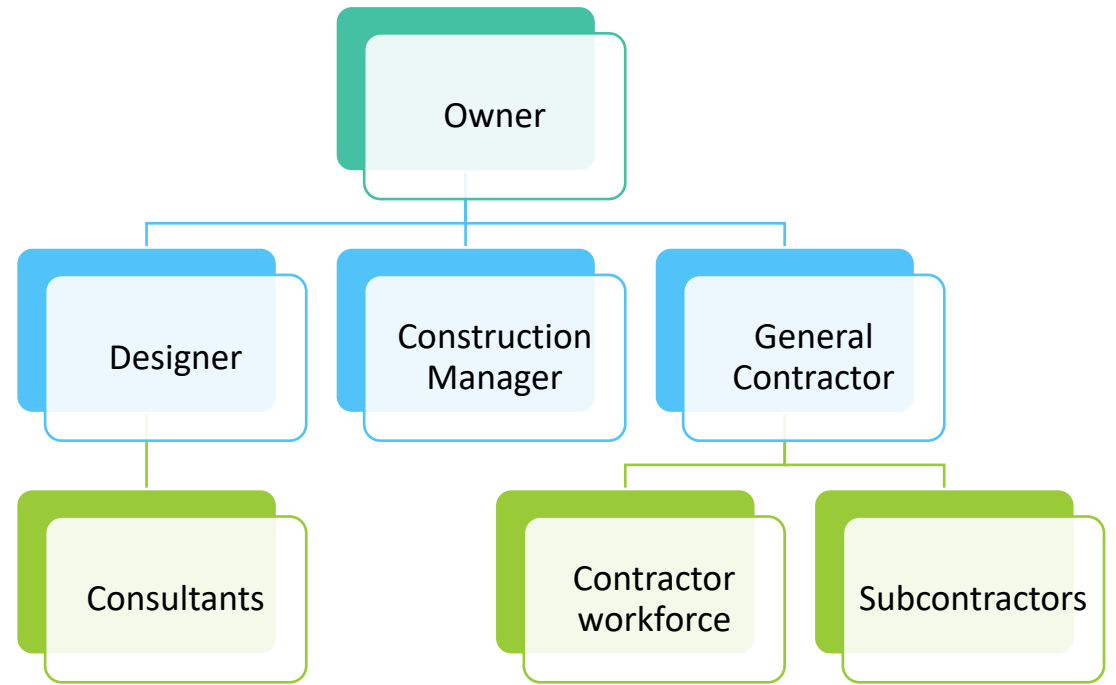
# Traditional Delivery Method (Design-Bid-Build)

- The owner has two separate contracts.
- There is no contractual relationship between the designer & the GC.
- The design is typically completed before the GC is hired.
- The GC is responsible for developing a cost estimate & project schedule, establishing a project management system.



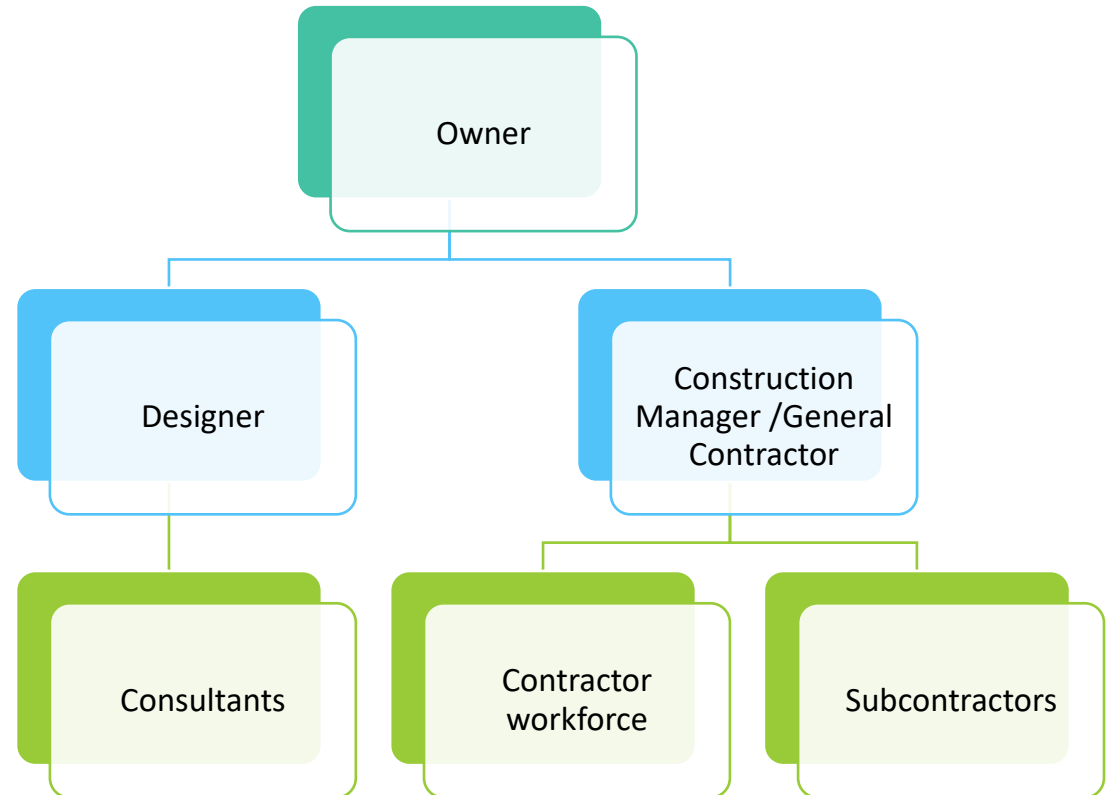
# Agency Construction Management delivery Method

- The owner has three separate contracts.
- CM acts as the owner's agent & coordinates design & construction issues.
- CM is the first contract awarded.
- CM is involved in hiring Designer and GC.
- The design is typically completed before the GC is hired.
- The GC is responsible for developing a cost estimate & project schedule, establishing a project management system.



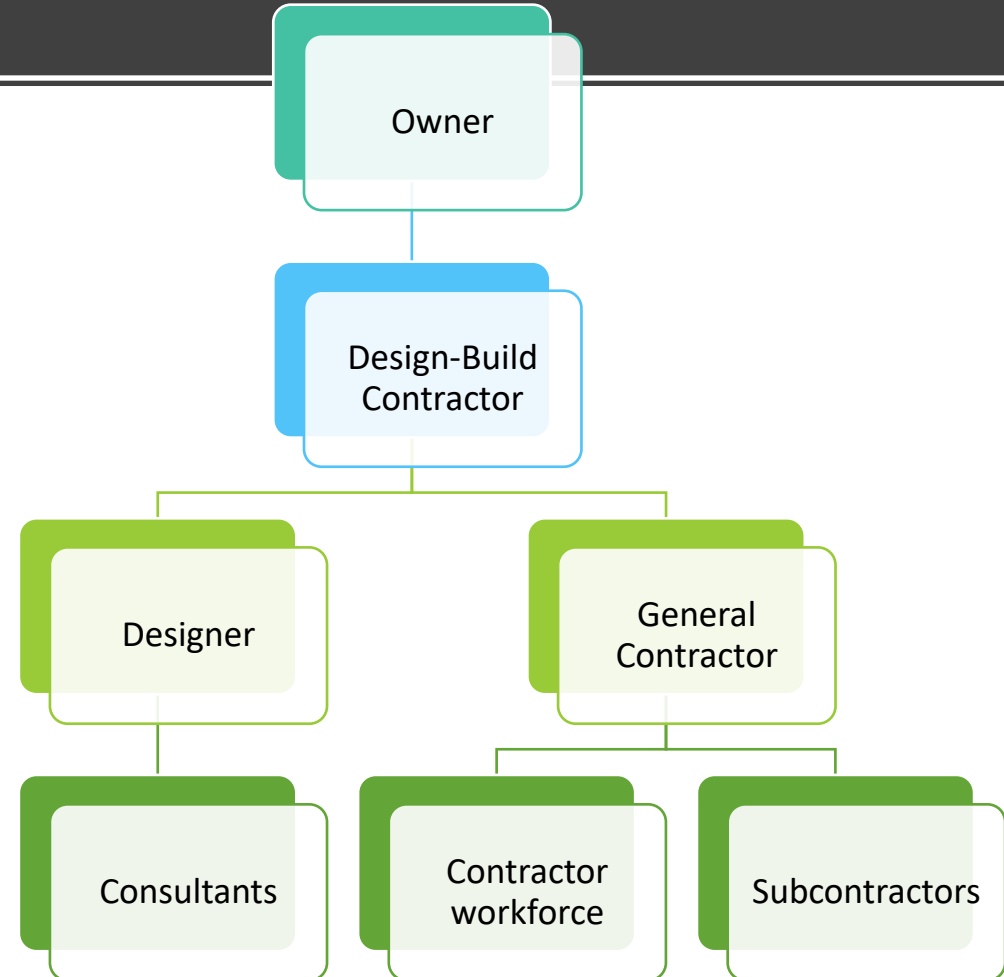
# Construction-Manager-at-Risk Delivery Method (GC/CM)

- The owner has two separate contracts.
- Designer is hired first.
- GC/CM is hired early in the Design Development to perform **preconstruction services** i.e:
  - Cost estimating
  - Constructability analysis
  - Value engineering
- In some cases project construction maybe initiated before the entire design is completed.
- The GC/CM manages the execution of preconstruction tasks.
- Once construction starts, the GC's responsibilities are similar to those in the traditional method.



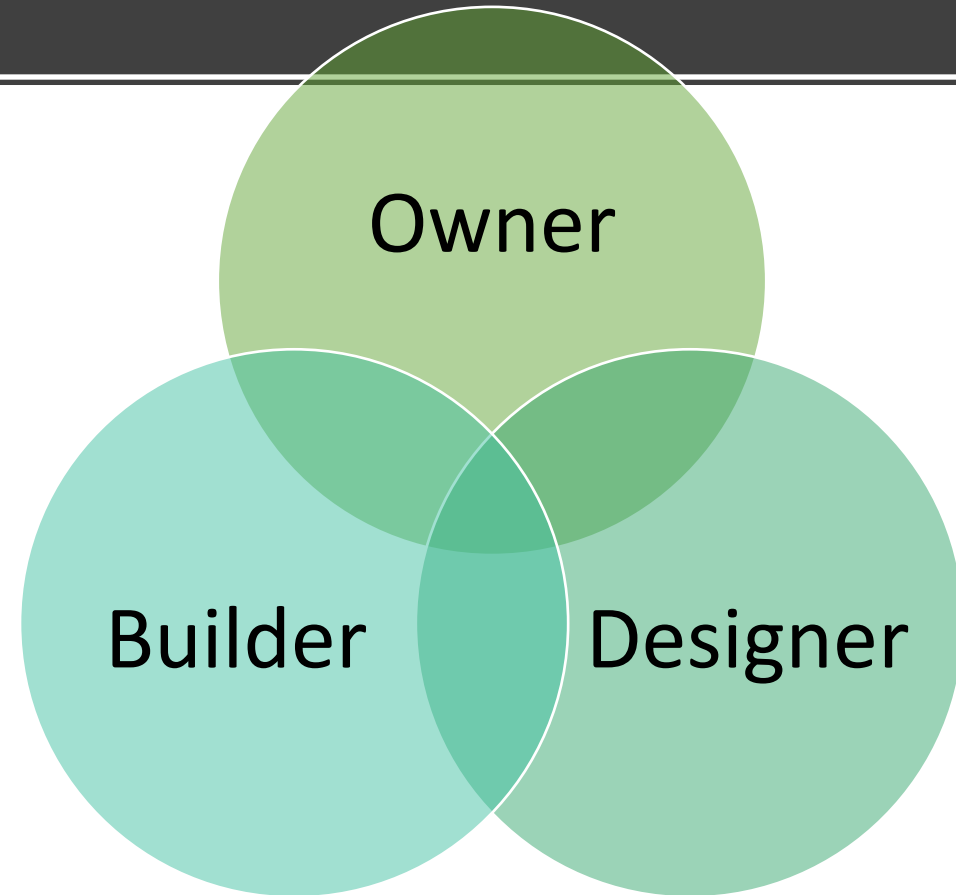
# Design-Build Delivery Method

- The owner has a single contracts.
- The Design-Build Contractor may:
  - Have a design capability within its own organization
  - May choose to enter into a joint venture with a design firm
  - May hire a design firm
- Construction may be initiated early in the design process.
- Design-Build contractor is responsible for interfacing with the owner and managing both design and construction tasks.
- A variation to this method is Design-Build-Operate-Maintenance (often used for utilities projects)



# Integrated Project Delivery (IPD) Method

- Relational Contract as opposed to transactional Contract.
- Risks & rewards are shared.
- The project is managed by the management group composed of senior representative of owner, builder & designer.





## Contract Pricing Methods

- Lump sum
- Unit Price
- Cost Plus
- Time & Material

# Contract Pricing Methods

- The owner chooses a method based on how much risk to assume and how much to impose on the contractor.
- Contractors want compensation for risk they assume.



# Lump-Sum Contracts (fixed-price)



The scope of work can be defined.



The contractor is responsible for determining all the material, labor, equipment, and subcontract costs to establish the project cost.



The initial contract price may be modified by change orders.



Used for D-B-B method and can be used for design-build projects as well.

# Unit Price Contract



Exact quantities of work are not known.

Designer estimates quantities required

Contractor establishes unit prices

Unit price includes both direct & indirect costs.

Total contract price can not be determined until completion of the work.

Work Items	Unit	Estimated Quantity	Unit Price	Bid Amount
Soil Excavation	Cubic yards	12,000	\$6.00	\$72,000
12" Concrete pipe	Linear feet	1,000	\$18.00	\$18,000
Crushed rock fill	Cubic yards	3,000	\$24.00	\$72,000
Compacted fill	Cubic yards	9,000	\$15.00	\$135,000
TOTAL				\$297,000

# Cost-Plus Contracts



The scope of work cannot be defined.



All specified contractor's project related costs are reimbursed by the owner, and a **fee** is added to cover **profit** and company **overhead**.



Fee is based on:

Risk

Size of project

complexity of project

Contractor's reputation



Variations:

Cost-plus-fixed-fee

Cost-plus-percentage-fee

Cost-plus-incentive-fee

Cost-plus-award-fee

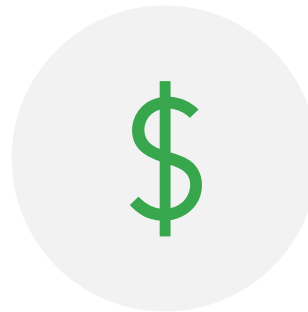
# Cost-Plus Guaranteed Maximum Price (GMP) Contracts



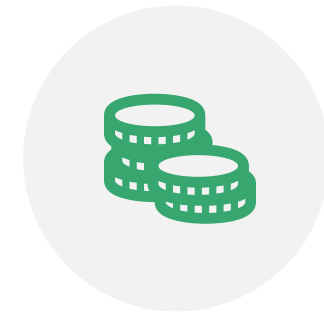
A VARIATION OF COST-PLUS  
CONTRACT WITH A PRE-  
ESTABLISHED MAXIMUM PRICE



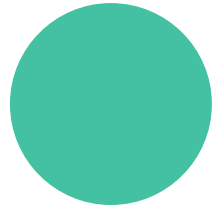
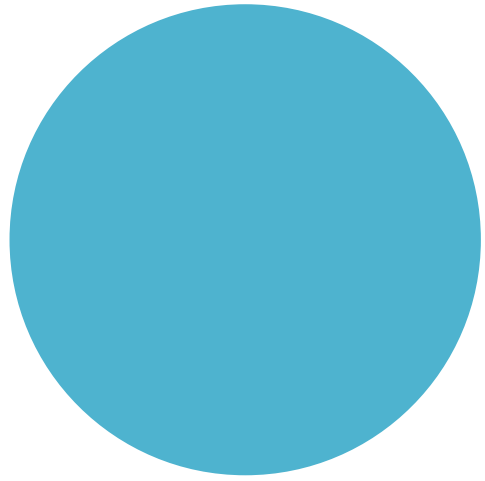
CONTRACTOR GUARANTEES THE  
OWNER A MAXIMUM (NOT-  
TO\_EXCEED) PRICE.



CONTRACTOR ABSORBS ANY  
COST OVERRUN ABOVE  
GUARANTEED PRICE



SAVINGS TO THE OWNER  
UNLESS THERE IS A COST  
SAVINGS SHARING PROVISION.



Which cost-acquisition method is  
best for integrated projects?



- Work can begin before project scope is completely defined=> Reducing project time.
- Quicker Response to Design Changes & Unforeseen Conditions
- Owner can Participate in all major construction decisions & control outcome
- Owner can utilize Contractor's expertise during design, in Constructability Studies, during Value Engineering Studies, and in Estimating Construction Costs.
- Can achieve better projects by prequalifying contractors & subs.
- With Guaranteed Maximum Price Option, Owner may pass some of the risk to the contractor.

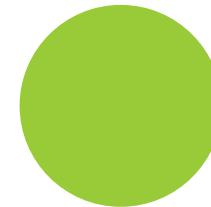
---

## Cost-Plus Contract Advantages (Owner Perspective)

- May not be the most cost effective method particularly in competitive construction environment.
- Contractor can take advantage if the Owner is unsophisticated and does not have knowledgeable personnel to monitor the project.
- Owner's & designer's involvement are greater due to need for additional project controls for expenditure, Schedules approvals, etc.
- Definition of project elements which involve reimbursable and non-reimbursable items will require special attention during negotiations:
  - Tools & equipment
  - Home office expenses vs. project expenses
  - Number of overhead personnel at the job site vs. use of home office staff.

---

## Cost-Plus Contracts Disadvantages (owner's Perspective)



Questions to  
Consider for  
writing the  
Reflections:



1- WHAT ARE SOME OTHER  
DELIVERY METHODS USED IN OUR  
COUNTRY? WHAT ARE THEIR PROS  
& CONS?