



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه

فصل اول: استفاده از بهره هوشی (IQ) در مدیریت پروژه
بخش چهارم: بررسی دلایل وجود مدیر پروژه در فازهای مختلف پروژه

ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)



What we will learn?

- ❑ Why is CM needed?
 - ❖ Part 1: Managing expectations
 - ❖ Part 2: Meeting expectations
 - ❖ Part 3: CM not CA



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
بررسی دلایل وجود مدیر پروژه در فازهای مختلف پروژه

Road map

In this section

WHO? EXPERIENCED MANAGEMENT
PROFESSIONALS IN CONSTRUCTION

WHAT? OWNER ADVOCATES

WHY? BECAUSE SOMEONE NEEDS TO LEAD

WHEN? DURING THE LIFECYCLE OF AN ASSET

WHERE? RIGHT ALONGSIDE THE OWNER

HOW? BY MANAGING TIME, COST, QUALITY
AND SCOPE



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
بررسی دلایل وجود مدیر پروژه در فازهای مختلف پروژه

Why?

- ☐ **Part 1:** How to manage expectations?
- ☐ **Part 2:** How to meet those expectations?
- ☐ **Part 3:** CM not CA

Why Is CM Needed?

(Part 1: Managing Expectations)



Roadmap: Part 1

Under Part 1 emphasis is made on managing expectations.

1) The importance of clearly defined Roles and Responsibilities for all team participants in the preparation of consulting and construction agreements; and

2) how best to communicate expectations in a positive manner.

What are **primary objectives** for a Construction Manager?

Primary objective for a construction manager

- ❑ The **essential objective** for a **Construction Manager** is to employ his or her **management skills** and **knowledge** to **achieve the right balance** of scope, quality, cost and schedule as the Owner's Advocate.

Scope – the program's operation and functionality, aesthetics, and maintainability that control how the project is designed, constructed and maintained.

Quality – the level of attributes expected and ensured through specified testing and monitoring procedures.

Cost – the price of achieving the required scope within the desired time frame and quality expectations.

Schedule – the timing of delivery of the required scope within the cost and quality objectives.

Why **construction industry** is different in **leadership**?

Why construction industry is different in leadership?

- ❑ **Construction** is one of the **few industries** that the **leader of the team** **rarely** has the ability to **select his or her teammates** especially in the **public bid arena**.
- ❑ **Not everyone** plays **harmoniously together** in the **sandbox**.
- ❑ **More difficult** to achieve **balance when divergent groups** with **differing expectations** are tossed together.
 1. **Owners** expect **sound** and **maintainable structures**,
 2. **Architects** strive for award **winning designs**
 3. **Contractors** want to make a **profit**.

How do you effectively form a collaborative team with differing expectations?

Effectively form a collaborative team with differing expectations

Many people talk about “partnering”

- ❑ However, more importantly, one needs to
 1. Understand expectations of each **contracted entity** and
 2. Ensure these expectations are **met**

1. How do we **decide** what the correct expectations are?
2. Who get to **define** them?
3. At what point in the process should they be **defined**?



“Are we Partnering yet?”

Effectively form a collaborative team with differing expectations

We focus here on

1. Roles and responsibilities of the team,
2. How defining these roles more clearly in the contracts

which **left unaddressed** could ultimately lead to
claims or the Mother of all Disputes “MOAD”.

Let's see an example!

Effectively form a collaborative team with differing expectations

Let's see an example!

This is critical when there is a perceived overlap or redundancy of duties, or more importantly, lack of clarity regarding specific responsibilities. Consider that the engineer of record did not respond to a certain Request for Information (RFI) because he never saw it, and the CM/Owner's Representative said he took care of it since RFI's flow through their office first.

CM provided the monthly update schedule on behalf of the General Contractor (GC), without notification to the GC of their lack of contract compliance, requiring monthly updates.

Is it enough if we have a **contract** that is well-written?



Effectively form a collaborative team with differing expectations

Is it enough if we have a **contract** that is well-written?

While written documents are essential they are never perfect, and there is nothing better than good old fashioned communication.

Once you have all the participants together, review Roles & Responsibilities on key issues to clarify expectations and review the Owner's hot buttons.

HOW?

Effectively form a collaborative team with differing expectations

Review and confirm, for example

WHO IS RESPONSIBLE FOR

- ☐ Monthly **schedule updates** vs. **monitoring and reporting** on schedule status.
- ☐ **Receiving** and **reviewing** Requests for Information (**RFIs**) vs. **responding** to RFIs.
- ☐ **Chairing** meetings versus **preparing** and **distributing meeting minutes**.
- ☐ **Receiving, reviewing, preparing** and **approving change orders**
 - ❖ What is the design consultant's role? what is the CM's role?
- ☐ **Bid packaging responsibilities** by trade, depending on selected project delivery model.
 - ❖ **Not doing this** can lead to gaps which cause costly change orders leading to potential claims.
- ☐ **Preparing as-built updates** and **turnover** at project closeout?

What to do where each participant has their **training and experience**?

Effectively form a collaborative team with differing expectations

What to do where each participant has their **training and experience**?

- ☐ Each party may **not follow** the **contracted approach** for the designated project.
- ☐ **CMs** assigned to the field may **not receive a copy** of their contracted scope of work responsibilities.
- ☐ **Architects** and **engineers** may **not check their contract often enough**
- ☐ **Contractors** will **respond only when necessary**
if it is not clearly defined in their contract.

So the moral of the story is:

1. Put it in **writing**.
2. Then perform due diligence by **reviewing and communicating** your expectations

Let's see some of the suggested **techniques**!

Effectively form a collaborative team with differing expectations

Let's see some of the suggested **techniques**!

1. **Positive communications**
2. **Fairness – Non-judgmental**
3. **Personalities**
4. **Knowledge and expertise**
5. **Listening**
6. **Proactive**



Positive communications

- ❑ **Maintain calm and professional** communications not just verbally but in writing.
- ❑ Be especially **cautious** with **emails**.
 - ❖ Don't forget that these are **written legal documents** and
inflammatory statements lead to inflammatory responses
which may result in a paper war with no end.
- ❑ Always **keep things** on a **positive constructive** and **professional note**.
- ❑ It is best sometimes to **just pick up the phone** and talk things through.



Fairness – Non-judgmental

- ☐ Keep an **open mind** and try to see the **other point of view**.
- ☐ The **other guy** may have a **valid point** you have not considered.
- ☐ Do **not personalize**.
- ☐ **Balance** out the issues fairly.



Judgement

Personalities

❑ Recognize the **personalities** on your team. If you have

- ❖ A **stubborn CM** mixed with
- ❖ A **hot headed superintendent**, alongside
- ❖ A **defensive design consultant** with a **strong ego**...

this is surely a **recipe for disaster**.

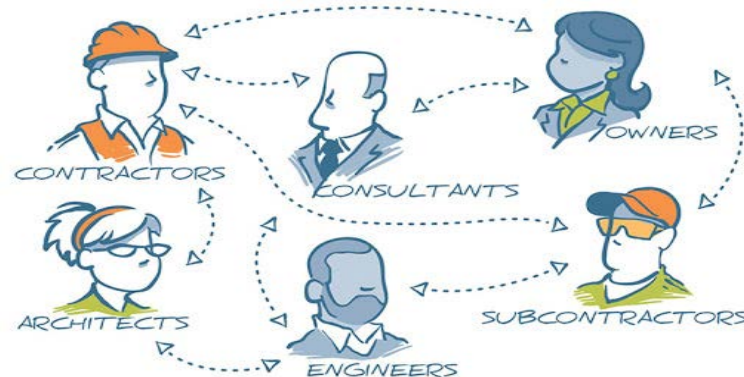


How could we improve this situation?

Personalities

How could we improve this situation?

- ❑ **Owners** have the advantage of being able to **select their consultants**;
- ❑ **Owners** have the option to **insert language** in construction contracts which will allow the **replacement of contractor representatives** without cause, when necessary, to form a **more cohesive team** that aligns with expectations.
- ❑ **CMs** must work with the **consultants the Owner selects**
- ❑ **CMs** must lead a team that will satisfy the **Owner's objectives**.





Knowledge and expertise

❑ **Written roles and responsibilities** do not guarantee a successful partnership of the team.

1. Quickly assess the **strengths and weaknesses** of your team members and
2. Develop strategies for **maximizing** their **strengths** as much as possible.

Let's see an example!

Knowledge and expertise

❑ For example, if you **notice** that the **architect** regularly **violates** the **turn-around time** on **review of RFIs**,

quickly **meet and confer** on a **strategy that will assist him/her**
in **meeting** the **contracted calendar days**.



If still no improvement,

advise your firm of their potential exposure and
the impact on the job.

It is the same with other team participants.

Always know who you are dealing with
so that you can help guide the **outcome to a successful conclusion and expectation.**

Listening

- ❑ If you do **not listen**,
a **minor issue** early on in the project
may turn into a **large claim** at closeout.
- ❑ **Overhearing grumblings** of subcontractors can be essential and not appropriate.
 - ❖ Instead, be an **active listener**.



- ☐ **Be proactive** with the **information** you discover.
- ☐ **Follow-up** and **resolve** issues as **early** and as **collaboratively** as possible.
- ☐ Don't be **lazy** and don't keep your **head in the sand** during construction.
- ☐ **Lean methods** would be helpful





استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
بررسی دلایل وجود مدیر پروژه در فازهای مختلف پروژه

Why we need CM?

WHY? BECAUSE
SOMEONE NEEDS
TO LEAD

Why Is CM Needed?

(Part 2: Meeting Expectations)



Roadmap: Part 1 and Part 2

Under Part 1 emphasis is made on managing expectations.

1) The importance of clearly defined Roles and Responsibilities for all team participants in the preparation of consulting and construction agreements; and

2) how best to communicate expectations in a positive manner.

Part 2 provides you with information on how to meet those expectations.

Defining contract roles and responsibilities

- ☐ First, one must confirm the **contractual responsibilities of the CM.**
- ☐ Is the CM acting as **Owner's representative**
 1. During **construction phase only**, or
 2. During design phase in a **pre-construction phase management role** or
 3. From **design through closeout** in a program management role
- ☐ Next, **assess the background and capabilities** of all the participants.

How the CM could meet the expectations?

Defining contract roles and responsibilities

How the CM could meet the expectations?

To meet the expectations, the CM should first understand what is expected by the Owner. Are they looking for construction management, project management, program management or construction administration services?

- Why so many titles?
- Do they mean the same thing?
- If the professionals don't always have a clear understanding of the variations/overlaps in services, how can Owners understand the nuances?
- What is the Industry Standard when Owners don't use standardized contracts?

Aside from design phase pre-construction services forthcoming in the last part, what is the CM's management role specifically during construction and why do some Owners still think CM services are equivalent to and duplicative of construction administration (CA) services performed by design professionals as part of their basic services?

- What is in your contract is what defines your required services.
- If you and/or others are not clear about comparisons to other programs and/or industry standards, the perception of your services is what will define you.
- How do you make all team participants accountable and define project management as a combined effort?

Let's see a summary of the Internal Quality Check (IQ) system!

Defining contract roles and responsibilities

The following is a summary of the Internal Quality Check (IQ√) system developed as a result of several contract performance audits.



One's performance can only be measured against one's job description (or scope of services). To stay in control of your performance, a defined scope of services and clear definition of roles & responsibilities are the essential ingredients to meeting expectations.

- What did you promise to do in your proposal?
- What is in your contract?
- What obligations do others have that impact yours?
- What is the Owner expected to do?
- What is the industry standard for your services?
- Are there any deviations in the contract?

Defining contract roles and responsibilities

The following is a summary of the Internal Quality Check (IQ√) system developed as a result of several contract performance audits.



WHO IS DOING WHAT?

- Define your services.
- Why are you there and how will you fulfill your role?
- Define responsibilities of others on the team.
- Watch for terms defining responsibilities.
- Make sure everyone else's role is clearly defined and understood.

Defining contract roles and responsibilities

The following is a summary of the Internal Quality Check (IQ√) system developed as a result of several contract performance audits.



TERMINOLOGY OF ROLES & RESPONSIBILITIES

The following are key definitions to look for in your contracts and, if used be sure they are clearly stated and match where you believe you are responsible.

Oversight

Monitor management/coordination activities

Management

Oversight of day to day activities

Lead Action

Primary Team member, day to day implementation

Support/Assist

Provide information to Primary Team member

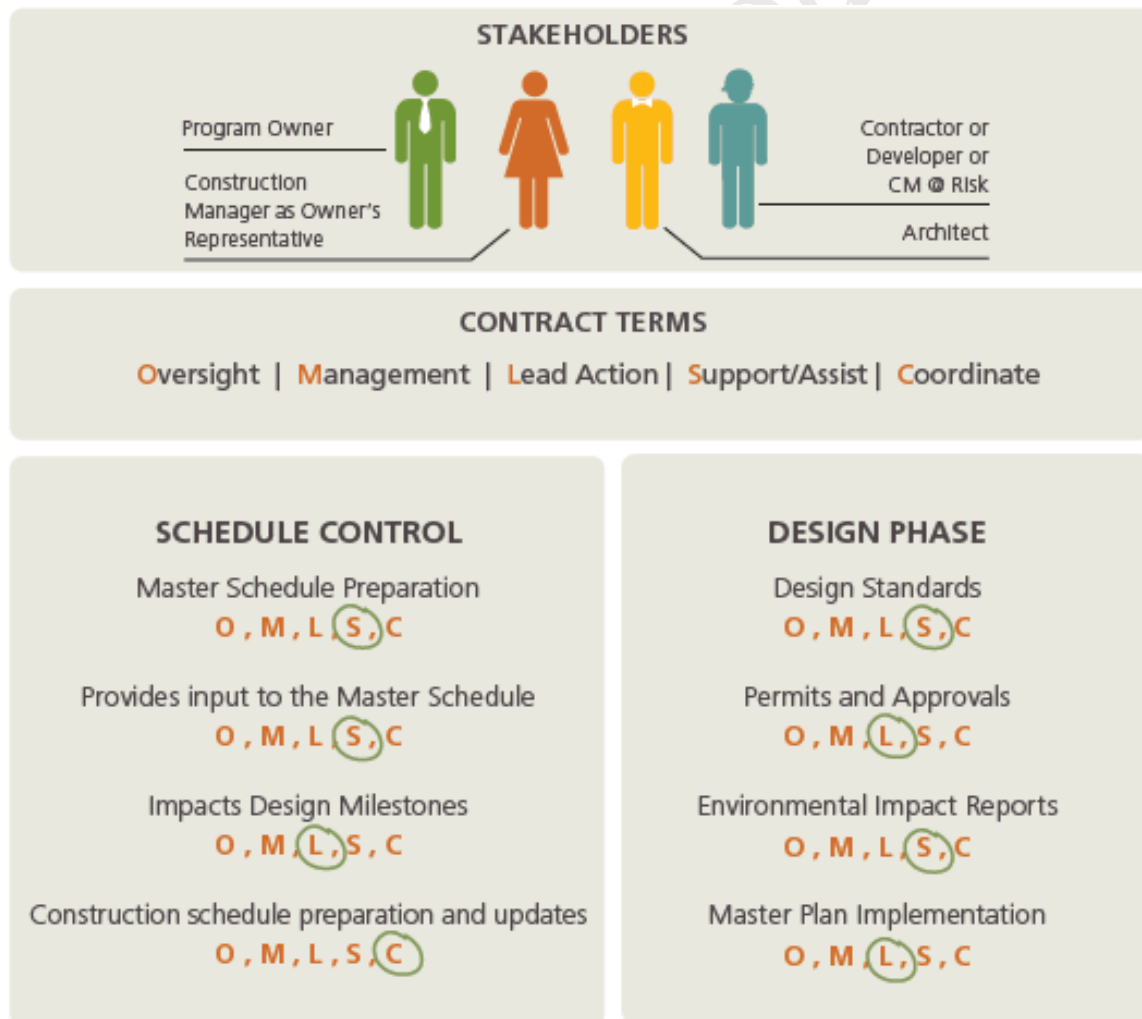
Coordinate

Facilitate lead and support actions

Homework 1: IQ Exercises to apply to contracts

IQ/ EXERCISES TO APPLY TO CONTRACTS

The following sample exercises are for you to consider when reviewing contracts to determine a level of responsibility. Who are the stakeholders and what is in each of their contracts? Create a matrix of Stakeholders' responsibilities using contract deliverables and terms as a guide.



Assign contract responsibility to each Stakeholder. As an example the Architect's role is circled above.



IQ Exercises to apply to contracts

- 1. Choose the party you want (other than AE)**
- 2. Choose the type of delivery system and contract you want**
- 3. Create a matrix like the previous slide**
- 4. Send it to my email (ralavipour@gmail.com)**

Your homework is due on next 2 weeks

Ensure internal quality control

❑ To ensure internal quality control

you **must reevaluate** and **assess** your **contract periodically**.

❖ If you don't, the Owner will by either

1. **Terminating** your contract or

2. **Never recommending** you.

✓ This will **harm your firm** and more importantly,
harm **our industry**,

even if you did what you were hired to do.

*It will **not matter** if your perception differs.*

What should we do?

Ensure internal quality control

Two key points

1. Consider a quarterly meeting with the Owner to
 1. **Review** the contract and
 2. **Obtain** feedback.
2. You should also consider setting up benchmark guidelines with key performance indicators for **assessment** once the roles and responsibilities are defined.



You should know the difference between Construction Manager (CM) and Construction Administration (CA)

Why Is CM Needed?

(Part 3: CM Not CA)

CM not CA

- ❑ It is important to understand the task of **Construction Administration (CA)**.
- ❖ This is the **design consultant team's responsibility** to **administer their contract** during the construction phase.
- ❖ This is **not to be confused** with **Construction Management (CM)**.

Key Elements to Successful CA include the architect and his engineers as sub consultants (or engineer as prime) controlling design within the first 70% to 80% of their fee. They do this through quality assurance of plans by either an internal QA/QC process and/or retaining outside services (offered by some CMs), aka Constructibility Reviews.

Let's look at a checklist to have CA successfully manage their work!



CA's checklist

- ✓ Does anyone know **what percentage of the design consultant's fee** is designated to CA?
- ✓ Are the architects and engineers always successful in **managing their fees** during the **design phase** to **leave adequate reserves** to manage the **construction phase**?
- ✓ What is the **primary interest of the project Owner** once their dream is realized on paper?
Hint...this is what a **CM protects**.
- ✓ Is the **work effort** put in by the design consultant in **pre-construction** **valued the same** by the **Owner**,
or is the **importance factor reversed** when **project time lines** and **budget constraints** come into play?



CA's checklist

- ✓ How has the **Architect's role evolved**?
- ✓ Assuming a **20% fee remaining** for construction administration out of a **\$300,000 fee** that leaves only \$60,000 to manage a 12 month construction project (or \$5,000 per month).
 - ❖ Factoring an average composite billing rate (including principal, project manager, and clerical time) of **\$100/hr.**
that is only 50 hours per month or, roughly, 12 hours per week,

Is this **enough**?

CA's checklist

- ✓ What responsibilities do architects and engineers have during construction?
 - ✓ Can these services be **accomplished** within the **limited time allotted**, factoring in that **8 of the 12 hours** are usually taken up by weekly job site visits/meetings/travel time?
 - ✓ How can design consultants **protect** themselves and their firms against liability, and ensure profitability during the **CA phase of a project**?
- And how can a **competent CM** facilitate their success?

CA and CM relationships

Architects/Engineers should issue a detailed, coordinated and clear set of plans with appropriate information shown within the correct trade. Preserving their fee balance for CA services and mitigating change order exposure to the Owner. CMs can help them achieve this successfully by performing a constructibility review.

How CM could help CA to successfully perform their work?



CA and CM relationships

How CM could help CA to successfully perform their work?

- ✓ **Coordinate** all disciplines.
- ✓ **Make sure** building systems are **correctly accommodated** spatially for installation, replacement, and maintainability.
- ✓ Provide **full documentation** of “existing” features.
- ✓ **Consider impact** to other areas when making a change.
- ✓ Use **technologies** such as **BIM’s Clash Detection** to help identify all conflicts.



CA and CM relationships

How CM could help CA to successfully perform their work?

- ✓ Coordinate technical specifications with plans.
- ✓ Consider **design responsibility** for deferred approval items or non-engineered items.
- ✓ Coordinate specification sections with Owner Contract Provisions.
- ✓ Verify existing site conditions and/or as-builts.

As a result the design team will be able to **demonstrate project benefits**, like what?

CA and CM relationships

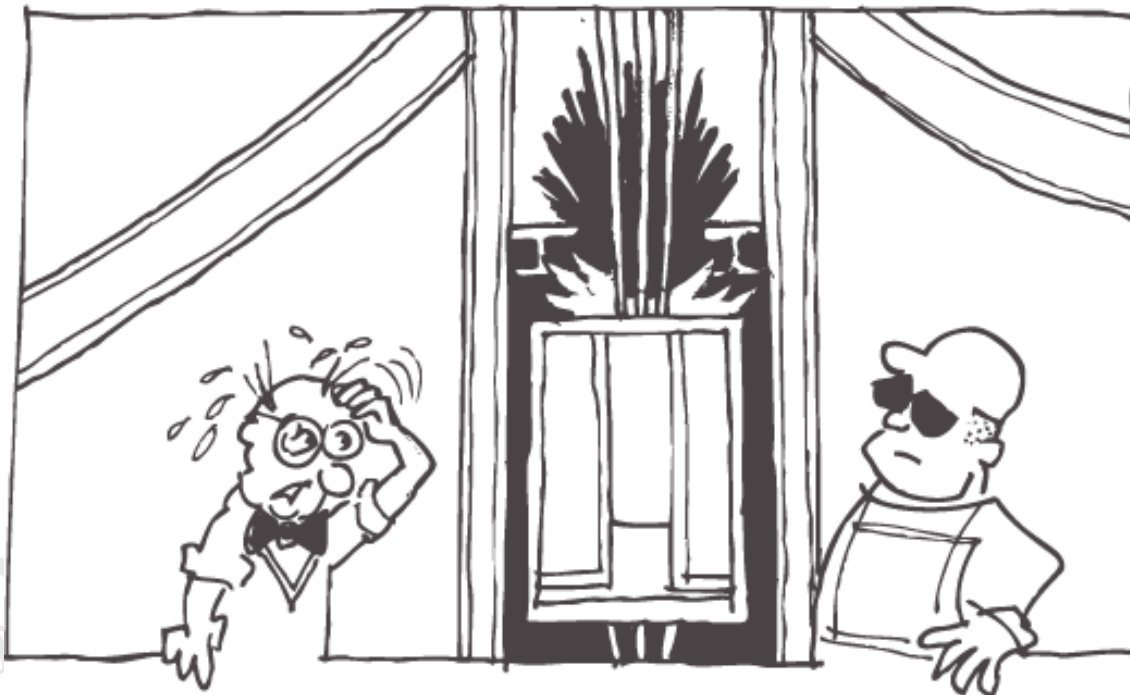
As a result the design team will be able to demonstrate project benefits, like what?

- ✓ **Less Contractor Requests for Information (RFIs) due to errors and omissions.**
- ✓ **A reduction in change orders due to errors and omissions.**
- ✓ **Improved ability to keep the project schedule on track.**
- ✓ **A program whose scope meets Owner's expectations.**

What happens when plans are **not well coordinated**?

CA and CM relationships

What happens when plans are not well coordinated?



"Hmmm...looks like we have a conflict with elevator operations."



CA and CM relationships

Through development of clear "Front End" language in anticipation of changes, issues can be controlled in construction.

What are the benefits of an effective CM?



CA and CM relationships

What are the benefits of an effective CM?

- ✓ **Ability** to **review** detailed **scheduling** requirements.
- ✓ **Assurance** of Owner **reserve days** built-in
 - o Schedule **contingency**
- ✓ **Analysis** of detailed **breakdown** of the **Schedule of Values**.
- ✓ **Inclusion** of **Notice Provisions**.
- ✓ **Adequate** response times for **submittals** and **Requests for Information**.
- ✓ **Inclusion** of **submittal substitution requirements** provided
To **mitigate exhaustive reviews** by the design consultants.



CA and CM relationships

What are the benefits of an effective CM?

- ✓ **Definition** of change order markups.
- ✓ **Definition** of allowable **direct** vs. **indirect** costs.
- ✓ **Establishment** of change methodology
 - When **applying** labor rates/burden and equipment rates
- ✓ **Planning** of an **adequate contingency** for change orders.

What results could be expected?

CA and CM relationships

What results could be expected?

- Less disputes over change order methodology.
- Less liability exposure for the architect.
- Mitigation of delay claims.
- More time to be spent on building, and less on building a case.



"I thought we were building a building?"



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه

فصل اول: استفاده از بهره هوشی (IQ) در مدیریت پروژه
بخش پنجم: چه زمانی و در چه مکانی مدیر پروژه باید ورود نماید و از IQ خود استفاده کند؟

ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
چه زمانی و در چه مکانی مدیر پروژه باید ورود نماید و از IQ خود استفاده کند؟

What we will learn?

- ❑ When and where the CMs plug in?
 - ❖ Part 1: Program/project phases
 - ❖ Part 2: Pre-construction
 - ❖ Part 3: Construction
 - ❖ Part 4: Post-Construction

Road map

In this section

WHO? EXPERIENCED MANAGEMENT
PROFESSIONALS IN CONSTRUCTION

WHAT? OWNER ADVOCATES

WHY? BECAUSE SOMEONE NEEDS TO LEAD

WHEN? DURING THE LIFECYCLE OF AN ASSET

WHERE? RIGHT ALONGSIDE THE OWNER

HOW? BY MANAGING TIME, COST, QUALITY
AND SCOPE



CMs in phases

- ❑ CMs can manage **projects and programs** from **pre-design to closeout** right alongside the Owner, when given the chance.
- ❑ **Many titles** are used for the various phases of the project's lifecycle such as:
 - ❖ Pre-construction, planning phase, concept phase, development phase, design phase, schematic design, design development, etc.
 - ✓ These refer only to the **activities** which occur **during the pre-construction** process.

WHEN?

**DURING THE LIFECYCLE OF
AN ASSET**

WHERE?

RIGHT ALONGSIDE THE OWNER

CMs in phases

PROGRAM/ PROJECT PHASES - PART 1

PRE-CONSTRUCTION - PART 2

DEVELOPMENT PHASE

DESIGN PHASE

PROCUREMENT PHASE

CONSTRUCTION - PART 3

CONSTRUCTION PHASE

POST-CONSTRUCTION - PART 4

PROJECT CLOSEOUT PHASE

MOVE MANAGEMENT

When and Where Do CMs Plug in?

(Part 1: Program/Project Phases)

What do you do for a living?

❑ This section includes **matrices** organized by the phase of a **project's lifecycle** from pre through post construction listing

1. Responsibilities,
2. Processes and
3. Deliverables

of a CM.



"So what do CMs do for a living?"



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
چه زمانی و در چه مکانی مدیر پروژه باید ورود نماید و از IQ خود استفاده کند؟

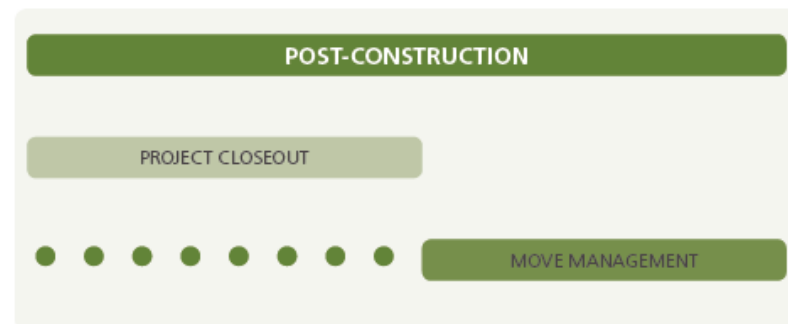
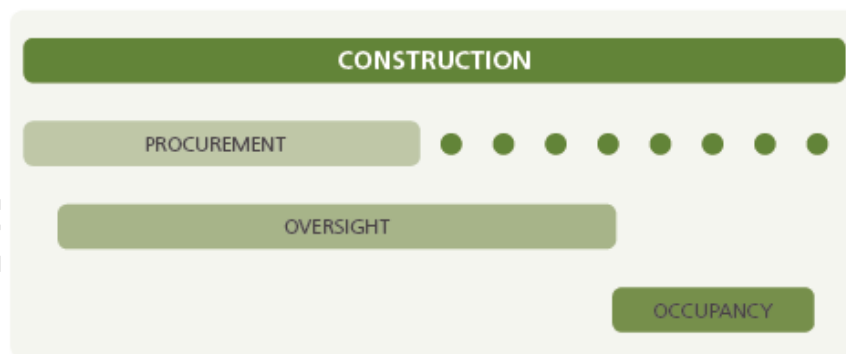
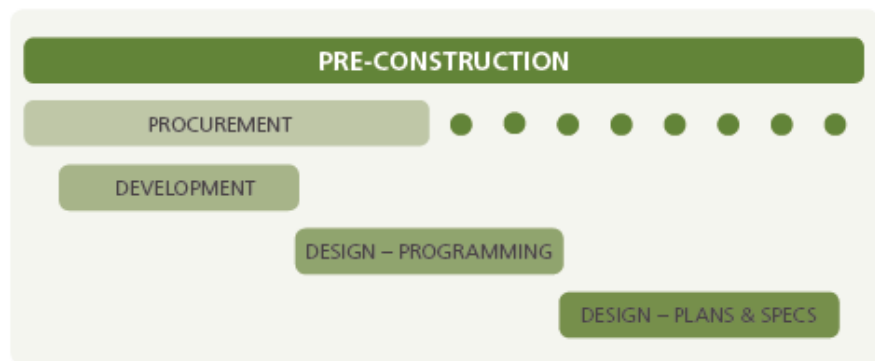
What do you do for a living?

- ❑ Of course, none of these will fit into a neat little elevator pitch, alternatively **simply state:**

"We are experienced management professionals who are the Owner's advocate throughout the lifecycle of a construction project or program. Our product is client satisfaction, which is best achieved by keeping our promise of delivering a quality project on time, on budget and within scope expectations. We do this by safely managing all risks through clearly defined responsibilities, well-documented processes, and best in class deliverables at every step along the way."

– Lisa C. Sachs, 2011

All phases at a glance

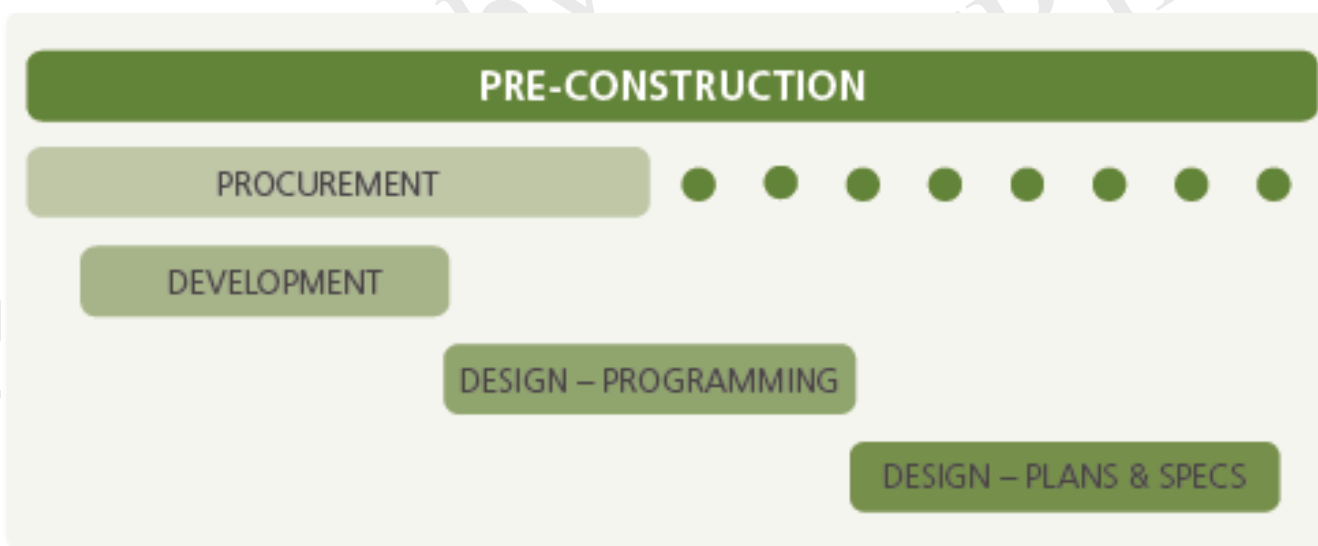


When and Where Do CMs Plug in?

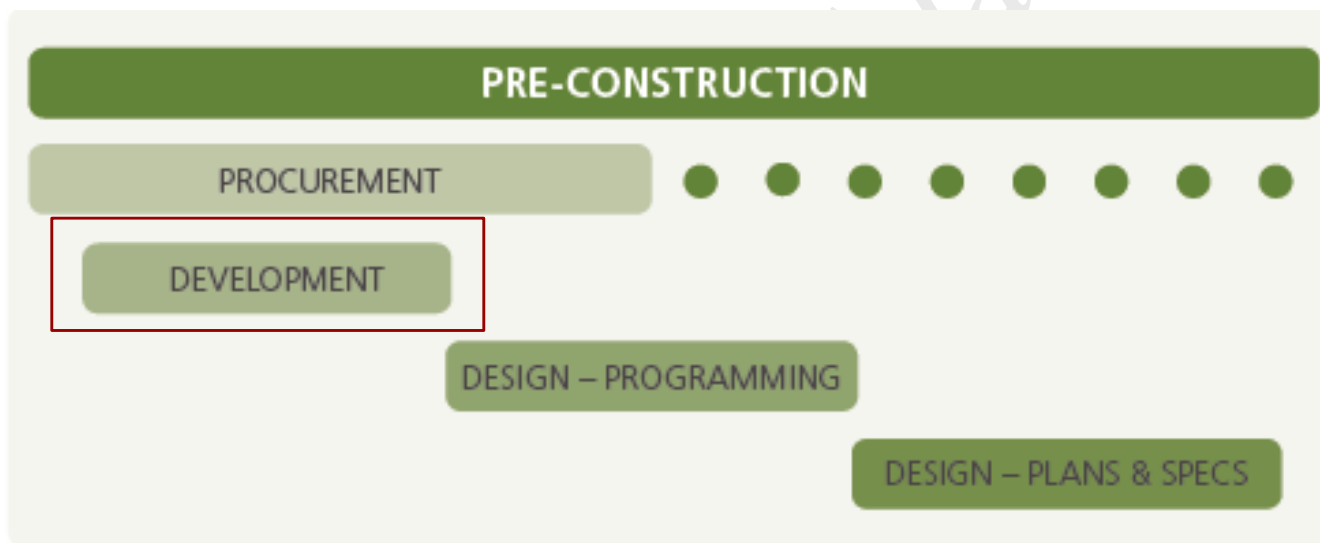
(Part 2: Pre-Construction)

Pre-construction phase

- ❑ You will note that **procurement begins** in **pre-construction** even **before the development phase**, since the **first task** is to hire the **CM/ Owner's Rep** and **continues through construction** so it is included in both phases.



Development phase



Development phase

- ❑ **Development** is the **first step** in the process.
- ❑ **Once funding** has been **identified**, a program or project **can** be **developed**.
 - ❖ First develop the **plan**.
 - ✓ To develop the plan you need an **organization**, and to ensure the organization works efficiently you need to
 1. Establish the **communication tools**,
 2. Target the **right people**, and
 3. Give them clearly **defined roles and responsibilities**.

What terms used commonly at the start of a program?

Development phase

What terms used commonly at the start of a program?

❑ Terms such as

1. Program Management Organization (PMO)
2. Program Management Plan (PMP)
3. Scope of Work (SOW)

are common terms used at the **start of a program**.

What do they mean and how useful are they?

Development phase

What do they mean and how useful are they?

1. **Construction Managers** who work on programs **help their Owners** make
 1. Early technical decisions
 2. Financial decisionsto
 1. Define further the **capital improvement program** and
 2. Develop the **roles and responsibilities** of all of the anticipated team membersthrough a **Program Management Organization (PMO)**.

Development phase

What do they mean and how useful are they?

2. **Program Management Plan (PMP)** is then **drafted** and,

once finally **approved**,

becomes the **Owner's guideline** for

1. Executing
2. Monitoring
3. Controlling the work

Development phase

What do they mean and how useful are they?

3. A **Scope of Work (SOW)** is then developed and

CM works diligently as an **integral part of the PMO implementation** team to ensure the **Owner's goals** **translate** into an achievable program that meets

1. Quality,
2. Scope,
3. Schedule and
4. Cost

expectations of the client.

Let's see each of them more in depth!

Development phase: Program Management Organization (PMO)

❑ The **first task** is to create a

1. **Program management organization chart** including **all stakeholders**
2. **Decision-making matrix** illustrating the **roles and responsibilities** of each.
 - ❖ **Selection of consultants** to join the **PMO** should
 1. **Run concurrently** with the **development of the PMP** and
 2. It is the **start of the procurement process**

How to form the organization?

Development phase: Program Management Organization (PMO)

❑ **Owners** may issue either

1. Request for Qualifications (RFQ) or
2. Request for Proposals (RFP)

to **professional firms** which describes

1. Overall program and
2. Qualifications

to fulfill the roles needed.

How does owner develop RFQ and/or RFP?



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
چه زمانی و در چه مکانی مدیر پروژه باید ورود نماید و از IQ خود استفاده کند؟

Development phase: Program Management Organization (PMO)

❑ Many Owners will rely on their

1. Peers in the industry and/or
2. Legal counsel

to help **develop or modify RFQs or RFPs** from similar programs.

For these reasons an experienced construction attorney **and** CM
should be involved in the **drafting** of an RFQ or RFP.

Development phase: Program Management Plan (PMP)

- ❑ The **PMP** establishes the program processes and procedures for the intended scope of work.
- ❑ The **PMP includes**:
 - ❖ Financial management and control,
 - ❖ Program schedule (milestones and deliverables) and work plan,
 - ❖ PMO plus
 - ✓ Expected resources, budget,
 - ✓ Scope management,
 - ✓ Change management plan,
 - ✓ Issues management,
 - ✓ Quality management,
 - ✓ Risk and safety management,
 - ✓ Procurement management,
 - ✓ Program/project status reporting,
 - ✓ Communication plan,
 - ✓ Move management (including transition plan and interim housing),
 - ✓ Closeout plan and post-construction facility maintenance plan.

How to develop PMP?

Development phase: Program Management Plan (PMP)

❑ Development of the **PMP** involves:

- ❖ Planning and defining of the **program**
- ❖ Strategy definition of the Owner's program wide **capital asset management** and **implementation plan** with **long term goals** and objectives of the organization
- ❖ Set up of the **program's infrastructure** and **management information systems**
- ❖ Identification and incorporation of **continuous best practices**
- ❖ Identification of **program administrative** processes and procedures
- ❖ Update existing **design standards** and **specifications**
- ❖ **Project management** and **consultant resources**
- ❖ Project **planning, budgeting, and scheduling**
- ❖ Coordination of the **overall team**
- ❖ Program/project **status reporting**
- ❖ **Risk management** and **quality assurance**

A PMP is a living document with most areas of the PMP developed over the life of a program. A PMP is best regarded simply as "The Plan" and remember...plans are meant to be updated. Therefore, include the updating in your scheduled meetings with the PMO. Ensure the information is dynamic and retrievable in "real-time" versus stagnant, sitting on a bookshelf collecting dust.

Development phase: Program Management Plan (PMP) – Management Information System (MIS)

- ☐ A Management Information System (MIS) provides **information the PMO requires** to manage resources, technology and data.
- ☐ The Owner's management information system needs to be **evaluated based on specific criteria formulated** by the PMP to control and report on the progress of the program.
- ☐ **Existing computer systems** (hardware and software) are **evaluated and reviewed early**.

Development phase: Program Management Plan (PMP) – Management Information System (MIS)

Remember – communicate, communicate, communicate.

❑ We firmly believe that a **good CM never imposes systems** on the Owner unless welcomed,

and should be **flexible to tailor systems** to **suit** based on

1. People,
2. Program needs and
3. Tools already in place (if workable)

Development phase: Scope of Work (SOW)

- ❑ A **Scope of Work (SOW)** sets forth the **requirements** for a project.
- ❑ An **approved SOW** will detail the program **associated costs and schedule** of priorities.
- ❑ **Collaboration** with user groups, staff, (including site facility committees such as IT, maintenance, safety, etc.) and designers is
an **essential component** to the development of a **SOW**.
- ❑ The **Owner's existing Facility Master Plan (FMP)** is the template for **updating and appending the plan**
to ensure **alignment with objectives**.

If one does not exist then an **FMP RFQ/RFP** should be issued.

Development phase: Scope of Work (SOW)

- ❑ A **final Scope of Work** is then **drafted for approval** based on comprehensive working sessions with the **PMO Implementation Team**.
- ❑ A realistic **budget** and **schedule** can then be established for **final approval** which will factor:
 1. Cost escalations
 2. Market conditions
 3. Appropriate design
 4. Design and construction contingencies

Development phase: Execution strategies

- ❑ **Various execution strategies** to improve program cost, quality and/ or schedule are **likely to emerge** as the **program develops**.

e.g., assessment of project delivery methods or bid packaging strategies

- ❖ The **execution strategy, once approved**, is fully **documented in the PMP**.

- ❖ The **approved PMP** provides both

1. Technical Guidance
2. Administrative guidance

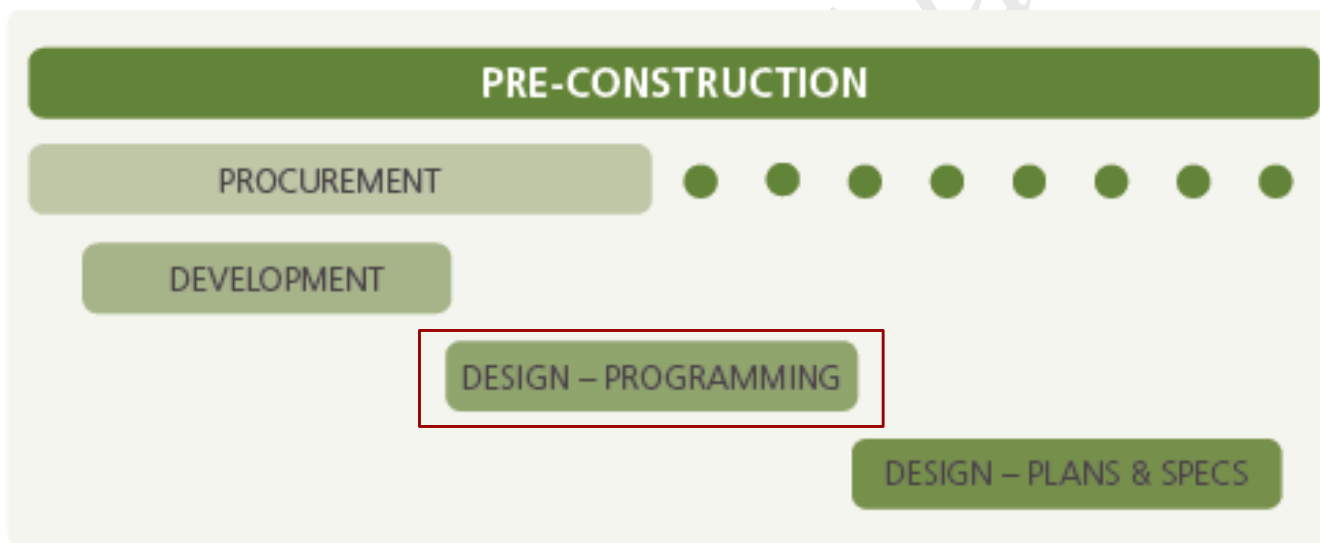
at the **executive level for the PMO**, and

remember...is **subject to change**.

Development phase: Responsibilities, processes and deliverables

CM RESPONSIBILITIES	CM PROCESSES	CM DELIVERABLES
- Understand roles, responsibilities, approvals and review processes	1 Roles & Responsibilities	Roles & Responsibilities Matrix
- Prepare Professional Consulting Services RFP - Respond to Q & A - Assist in selection process	2 Professional Consulting Services RFP & Selection	Procurement Design Phase – Requests for Proposal (RFP) & Evaluation Matrices
- Prepare PMP to set process, procedures, standards including program, schedule, and budget criteria - Establish the team - Establish Program Charter: quality work, safe work, in scope, on schedule, on budget, - Develop work plan, budget, scope work, milestones, and reporting - Assess Technology Systems - Assess Team IT capabilities - Establish reporting systems - Validate Program - Plan adequate contingencies - Identify all program components impacting approvals, budgets and schedule	3 Program Development Program Management Office (PMO) Program Charter Work plan Management Information System (MIS) Scope & Budget Definition	PMO Organizational Chart Electronic Document Control Setup

Design phase – Programming



Design phase – Programming

❑ Construction management does **not start** on the **project construction site**.

❖ It is **our responsibility** to help **Owners be successful** from the beginning with their objectives.

✓ This **requires our understanding** of their

1. Goals,
2. Expectations and
3. Constraints.

To assist in achieving the client's goals, we provide **specific services**.

So, what should we do at this stage?

Design phase – Programming

- ❑ Once the **strategic planning** is in place from the Development or Concept Phase, **projects move** into early planning and programming stages to enable **further project definition**.

"He who fails to plan is planning to fail..."

– Winston Churchill

What can we do at this stage as a construction manager?

Design phase – Programming

❑ As Construction Managers, we **provide guidance and work plans** to facilitate the planning/programming phase.

❖ This includes

1. Further definition of **requirements**,
 2. Validation of **assumptions**, and
 3. Confirmation of **scope, budget, and schedule**.
- ✓ Also at this stage, **additional consultants are added** to the **PMO**

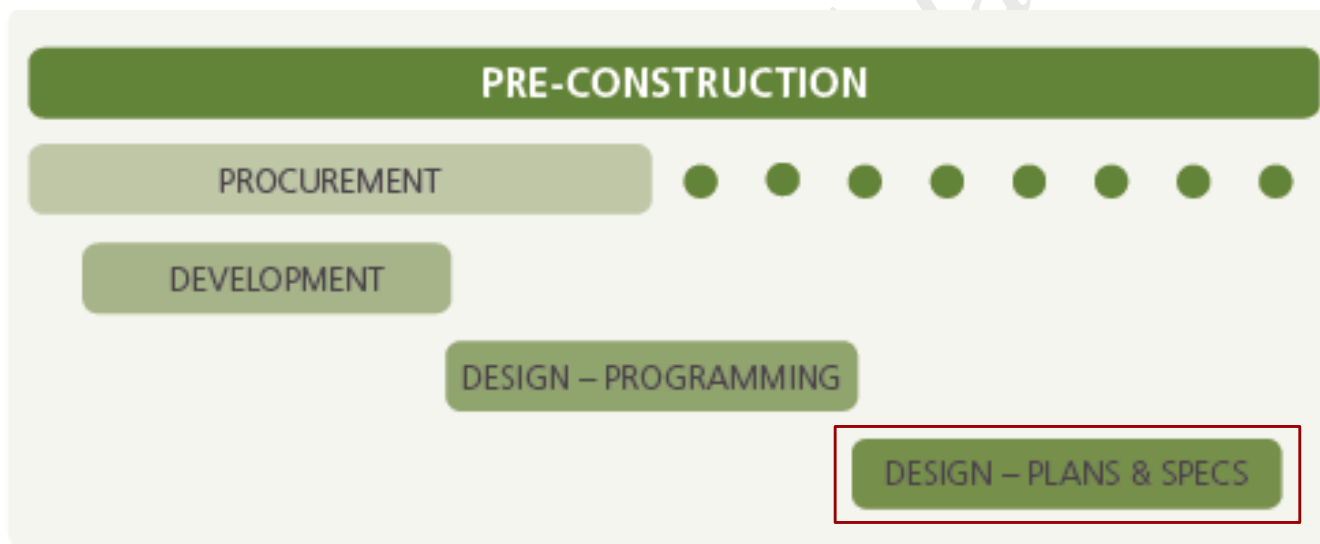
to support the **project plan** including

program consultants, geotechnical consultants, surveyors, hazardous material investigations and other environmental consultant specialists.

Design phase – Programming: Responsibilities, processes and deliverables

CM RESPONSIBILITIES	CM PROCESSES	CM DELIVERABLES
- Establish project goals, financial constraints, schedule constraints - Issue schedule, budget, and goal statement - LEED consideration - BIM consideration - Address community relations	1 Kick off meetings Establish Project Team roles & responsibilities and project goals	Kick off meeting agenda Meeting minutes
- Establish rough program - Establish/confirm standards - Confirm growth projections - Determine space requirements to support technology	2 Definition of requirements	Project criteria documents Program Consultant RFP
- Evaluate entitlement needs - Coordinate soils investigations & site surveys - Assess need for hazardous materials surveys - Oversee MEP system evaluations - Confirm site conditions, infrastructure, and site logistics - Evaluate code & regulation impacts - Determine need for EIR - Initiate SWPP	3 Site and/or facility validation Site Visits Scope Project Budget Project Schedule	Soils report RFP Site Survey RFP Hazardous Material RFP Environmental impact record or negative declaration, historic survey request
- Confirm budget, schedule, project goals, project team, approval authority, and lines of communication - Issue confirming document for approval	4 Revalidation meeting Scope Project Budget + Schedule	Program document sign off

Design phase – Plans & Specs



Design phase – Plans & Specs

❑ As a project moves from a conceptual programmatic scheme to a concrete well defined project, there is a need to

1. Review **milestone deliverables**
2. Evaluate the **scope and goals** of the project,

in order that the **Owner's project goals** are met.

What goals?

Design phase – Plans & Specs

*The goals as already stated, typically fall into **four main categories** or objectives.*

Scope – the program's operation and functionality, aesthetics, and maintainability that control how the project is designed, constructed, and maintained.

Quality – the level of attributes expected and ensured through specified testing and monitoring procedures.

Cost – the price of achieving the required scope within the desired time frame and quality expectations.

Schedule – the timing of delivery of the required scope within the cost and quality objectives.

*The central mission of the Construction Manager is to utilize **his or her management skills and knowledge***

*to achieve the **right balance** of scope, quality, cost and schedule for the Owner.*

Design phase – Plans & Specs

- ❑ At this stage, design professionals are **retained** and CM works with the **design team** throughout the **design process**.
- ❑ Since different delivery methods impact **timing of procurement** for design phase services

We have chosen to **combine the procurement phase** for both design and construction following this section.

What major milestone deliverables?

Design phase – Plans & Specs

❑ The **four major milestone deliverables** to review during the design phase include:

1. Schematic Design,
2. Design Development,
3. Construction Document Progress Submittal, and
4. Construction Document Agency Submittal

How final submission approved?

Design phase – Plans & Specs

- ☐ Remember that the **final submission** to the approving agency is generally **not 100%** but **closer to 80%** and sometimes less if the **design team** has a **tight timeline**.
- ☐ Oftentimes a Post Agency Approval review is also **requested prior to bid** to ensure **all Owner and Agency comments / corrections** have been incorporated in the bid documents along with a **re-verification of the budget**.

*Consider that **different delivery methods** may require adjustments to milestones and durations.*

How CM and A/E ensure that a complete set of documents are prepared?



استفاده از ضریب هوشی (IQ)، هوش هیجانی (EQ) و هوش ارزشی (VQ) در مدیریت پروژه
چه زمانی و در چه مکانی مدیر پروژه باید ورود نماید و از IQ خود استفاده کند؟

Design phase – Plans & Specs

❑ This should always include a constructability review and back check of the **documents prior to bid**

❖ Watch out for “Scope Creep”.

*Oftentimes **project scope** grows from early **concept to final plan approval**
if not monitored closely,*

*because **scope changes** are why many projects bid over budget.*

How approvals obtained?



Design phase – Plans & Specs: Approvals and permits

❑ Approvals are obtained from

1. **Internal** stakeholders from the owner's side
2. **External** stakeholders including outside agencies.
 - ✓ Many view the **business of permit and entitlement** management as something of a **confusing black hole**.
 - ✓ **Construction Managers** are **not always experienced** in handling the politics of governmental regulations.
 - ✓ Depending on the complexity of a particular project, **specialty entitlement consultants** may be **needed** to augment the team.

Design phase – Plans & Specs: Approvals and permits

❑ **Permitting** and **entitlement** both involve **governmental agencies**;

however they are in fact **very different from each other**.

1. **Entitlements** regulate “**what**” can be built
2. **Building permit** controls “**how**” the project is built

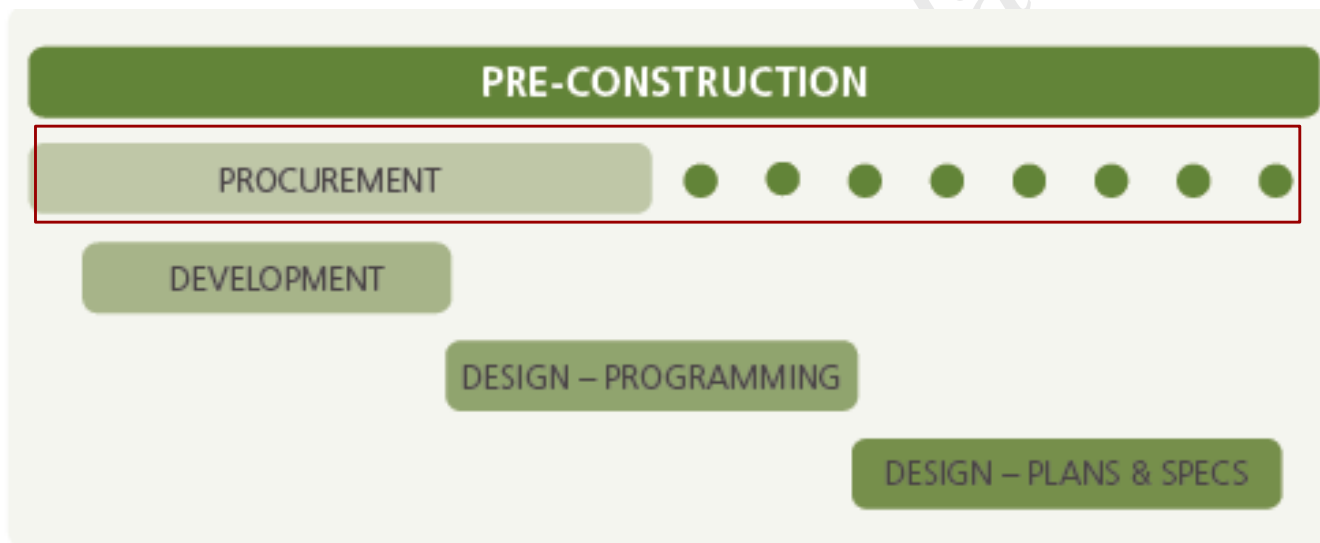
Entitlements secure the Owner’s right to improve their property subject to certain constraints that are commonly applied for through the zoning laws and/or other statutes. Many of these laws are statewide or national in nature such as the Clean Air Act, Environmental Impact Reports (EIRs), and historic regulations. Other laws are local such as Conditional Use Permits (CUPs), planning approvals, historic regulations, architectural reviews, etc. This process is usually undertaken very early during planning to determine what the government will allow to be demolished, reconstructed or newly constructed on the particular site.

Building Permits are the control mechanism for the policing of the building code and statutes that drive the physical construction so that it is built to local, state and federal regulations for safe construction. At this level, the plans are reviewed through a “plan check” process by the Building Department (or other governing authority) for technical issues, safety requirements, building code requirements, etc. This permit is more technical in nature and far less political than the entitlement process and usually takes place after the project is through the design stage.

Design phase – Plans & Specs: Responsibilities, processes and deliverables

CM RESPONSIBILITIES	CM PROCESSES	CM DELIVERABLES
- Obtain SD's from program document, assess alternatives - Obtain client sign-off of the SD plans and confirm costs and schedule	1 Schematic Design Phase	SD Alternatives & Cost options SD sign off
- Coordinate design development meetings with client, A/E team and selected sub-consultants as required - Issue DD budget estimate for Client and Design Team review - Perform value engineering and phased constructability review and obtain Client sign-off of the DD plans. Confirm costs and schedule	2 Design Development Phase	DD cost estimate & value engineering DD constructability review DD sign off
- Coordinate construction document review meetings with client, A/E team and selected sub-consultants as required - Coordinate Client procured items and confirm responsible party for installations - Issue a CD project budget estimate for Client and Design Team review and obtain Client sign-off of CD plans	3 Construction Document Phase	CD cost estimate CD constructability review CD sign off
- Issue plans to approving agency for review concurrent w/final constructability review - Ensure constructability review and first round plan check comments are incorporated for issuance to bidders in bid set (or as an addendum if permit is not required prior to bid)	4 Construction Document Completion & Permitting	Bid cost estimate Bid set review Obtain all permits Back check documents to ensure incorporation of agency and CM comments

Procurement phase



Procurement phase – Design

- ❑ **Selection of the design team** typically occurs as the first step following
 - ✓ **Completion of the programming phase** and
 - ✓ **Receipt of the owner's authorization** to proceed with the project.
 - ❖ In most instances, the Owner may **have already retained a design architect or CM** to assist with **development of the program**.

The **RFQ/RFP selection process** used to hire **AE firms** for both

1. Program and
2. Design/production

is **similar** to the process used to **select CMs** and

is also used to **select consultants** who may be retained directly by the Owner.

Procurement phase – Design

It is most important at this stage to **understand what delivery method** will be used since this will **dictate the type of consultant contracts** to be used for these services.

How to select consultants?

Procurement phase – Design

❑ Once identification of **consulting needs** are identified,

1. **Request for Qualifications (RFQ)** for potential candidates can be issued.
2. If a **two step process** is used, then a specific **Request for Proposal (RFP)** is issued **following the RFQ** including criteria so that **pricing can be obtained**.
3. **Interviews** are then conducted and **scored** so that tabulation of results can be evaluated for a **fair selection process**.
 - ❖ The **CM** should assist with development of a **scoring matrix**.
 - ❖ It is critical to **ask the right questions** both in the **RFQ** and/ or the **RFP** documents issued as well as during the **interview**.
4. Finally, a **Construction Manager**
 - ✓ **Prepares recommendations** for approval and acceptance by the owner,
 - ✓ **Negotiates agreements** with successful candidates and
 - ✓ **Prepares packets** for governing body consent.

Procurement phase – Design

What primary questions should be asked from candidates?

Procurement phase – Design

What primary questions should be asked from candidates?

Have you...

- Experience with this type of project? When, Where and for Whom? What was your performance track record on containing project costs, staying on schedule and optimizing project scope for the Owner?
- Who is the lead on the project? Are the references listed for projects this particular individual worked on?
- Do you and your team have the requisite experience in working with applicable agencies?
- Are you presenting the team that will perform the work?
- Are you and your team working on any other projects of this nature currently?
- Why should we engage your services? What differentiates your firm?
- Tell me what you know about this project and if you have any recommendations, thoughts or concerns to share that will help ensure its success?
- What is your claims experience?
- Explain how you avoid changes to the design during construction?
- How do you control the quality of your documents (errors and omissions)?

What primary pricing items should be watched when evaluating fees?

Procurement phase – Design

What primary pricing items should be watched when evaluating fees?

- Hourly rates and identification of minimum charges
- Rate escalations
- Inclusions/Exclusions
- Reimbursable expenses and markups
- Subconsultant markups
- Insurance and professional liability limits of coverage

Procurement phase – Design: Responsibilities, processes and deliverables

CM RESPONSIBILITIES	CM PROCESSES	CM DELIVERABLES
- Verify delivery model with client - Confirm consultant scope and selection criteria with client - Issue RFQ documents for consulting and/or construction services - RFP documents to outline scope and criteria - Identify type of agreement	1 Project Design & Delivery Method	Delivery Options Analysis Request for Proposal Documents
- Review RFP submissions and populate comparison spreadsheet - Review bid documentation and conduct interviews with client - Client makes final consultant selections - Finalize contract	2 Bid, Analyze, and Negotiate Services	Assessment of RFP responses and Agreements
- Conduct kick-off meeting with consultant and/or contractor, client, and user to define roles and responsibilities - Review schedule - Set milestone dates for the delivery of documents - Verify capital costs criteria for the project with the team	3 Initial Team Meeting Scope Design Criteria Project Budget Project Schedule Progress Reporting	Kick off Meeting Agenda Meeting minutes

Procurement phase – Construction

☐ Regardless of the selected delivery model chosen for the project

Construction Manager can assist with contractor selection and procurement.

☐ This will include the following sections:

1. Pre-Bid
2. After Bid Opening

Procurement phase – Construction: Responsibilities, processes and deliverables

CM RESPONSIBILITIES	CM PROCESSES	CM DELIVERABLES
- Review Contracts, Div. I, General Conditions, and Supplementary Conditions with Risk Management & Legal - Ensure language is included for CM management, scheduling and confirm T&I requirements	1 Contract documents in consideration of selected delivery model	Assessment of bid documents Testing & Inspection (T&I) RFPs
- Generate bidder interest - Pre-qualify - Advertise - Hold pre-bid conference - Issue addenda - Analyze bids, recommend award	2 Bid and award	Addenda Pre-bid meeting agenda
- Prepare RFP for GC (if a GC is selected on fee and overhead basis prepare competitive bid to a minimum of 3 Subcontractors per trade) - Issue RFP documents to GCs - Schedule job walk with A/E team, specialty subconsultants as required - Collect and analyze GC bid submissions, generate bid qualification and pricing matrix for client review and approval - Conduct interviews with potential contractors - Negotiate final project costs and contract terms and conditions with the selected contractors - Make recommendation for the selection of the most qualified GC - Route construction contract for execution - If traditional DBB, confirm lowest responsive and responsible bidder	3 Bid, analyze, negotiate construction services	Bid evaluation Recommendation to award

Procurement phase – Construction

Pre-Bid:

- Compilation of final bid packages (including criteria development for Design Build).
- Development of the Requests for Qualifications, Pre-Qualifications and Bid Advertisements (in the case of Design Build both the contractor and the design team qualifications are reviewed).
- Assessment and evaluation of qualifications (including scoring criteria for selection based procurement).
- Pre-bid meetings and job walks (know the project before inviting bidders, and include Owner and design professionals as applicable to answer questions).
- Coordinate and distribute Requests for Information/Clarification and include any responses in written addenda (allocate adequate time from last addendum issuance to bid due date).

After Bid Opening:

- Develop bid tally and ensure an “apples to apples” comparison if a cost segregation sheet is part of the bid form.
- Conduct interviews if applicable.
- Make recommendations and obtain Owner approval.
- Review and analyze all bid submittals to ensure compliance with the bid form.
- Finalize agreements and secure necessary authorizations and documentation including certificates of insurance and bonds.

Procurement phase – Checklists

Some key checklists to use during the Pre-construction phase should include:

Contract Document Review Checklist (Division 00 and Division 01) also referred to as Front End Documents or Boiler Plate, not to be confused with the technical specifications;

Document Overview Checklist (Divisions 02 through 48) to identify things to look for when reviewing plans and specifications;

Pre-Bid Checklist in preparation for site walks with potential bidders on the project.

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP:

- Division 00 — Procurement and Contracting Requirements

SPECIFICATIONS GROUP

General Requirements Subgroup

- Division 01 — General Requirements

Procurement phase – Checklists: Contract document review checklist

Division 00 and Division 01

- ☐ **Review Owner Contract Provisions for CM Requirements** to include facilities, oversight responsibilities, and insurance protections.
- ☐ **Review Scheduling Requirements** to include language for early completion protection, acceptable scheduling software and requirement to provide updates electronically in virgin format, cost and resource loaded – manpower and equipment, earned value information – productivity analyses of a resource loaded CPM schedule to analyze lost productivity claim, minimum acceptable activity durations, who owns the float (extra days not on the critical path), built-in Owner reserve days if applicable (for unforeseen conditions), detailed breakdown of schedule of values, normal weather delay allowance, Owner furnished milestones identified for coordination, shop drawing submittals and adequate review periods, detail by building if applicable, phasing considerations, update requirements, and change requirements.
- ☐ **Review Change Modification Requirements** to include written notice requirements, definition of allowable labor, definition of allowable materials and equipment, identification of excluded costs – indirect not allowable vs. direct, allowable supervision hours, allowable markups, prevailing wage rate verifications if applicable, sample Change Order Request (COR) form with calculation methodology explained, Time & Material (T&M) requirements and verification of hours.
- ☐ **Review Submittals** Also substitution requirements and timing, preferably prior to bid award.
- ☐ **Review Payment Procedures** Frequency and form of payment application and certified payroll information if applicable.
- ☐ **Review Cash Flow Reporting Requirements:** Planned cash flow curve – projected manpower indicator, and histograms.
- ☐ **Review General Conditions Costs** Submittal of General Conditions breakdown of costs and/or daily delay costs.
- ☐ **Review Project Accounting** Audit/Access records clause in the contract documents, depending on delivery method.

Procurement phase – Checklists: Pre-bid checklist

- ☐ **Pre-Bid Meeting Sign-in and Introduction** To include Owner representatives and design consultants.
- ☐ **Contract Documents** Ensure all bidders have access to the contract documents, indicate where documents can be obtained and whether the fee is refundable or non-refundable. Indicate any reference materials for review including soils reports, as-builts, utility surveys, hazardous materials reports, etc.
- ☐ **Critical Information** To include prevailing wage requirements, bid opening date, bonding and insurance requirements, liquidated damages, bid forms, instructions to bidders, project specifics, and any bid alternatives and how they will be evaluated at bid opening.
- ☐ **Contractor Safety Management** Review safety requirements.
- ☐ **Project Scope and Schedule** Design Consultant to summarize project scope and Construction Manager to review schedule requirements.
- ☐ **Roles, Responsibilities and Authorities** To include Construction Manager, Design Consultant, Inspector, Owner and User groups, Agencies.
- ☐ **Site Coordination Issues** Discuss any coordination issues impacting site occupants, utility approvals/shutdowns and other requirements .
- ☐ **Site Tour** Be prepared to walk the site. A mandatory bid walk is recommended for inclusion in the bid advertisement.
- ☐ **Questions and Answers** Allow adequate time for Q&A and follow-up in writing and via addendum if there are any changes to the documents.

When and Where Do CMs Plug in?

(Part 3: Construction)

موسسه مهندسی و مدیریت ساخت علوی پور (ACEMI)

دفتر آموزش

تهران، بلوار فردوس شرق، مجتمع آبگینه، طبقه سوم اداری، واحد C42



+۹۸ ۲۱ ۴۶ ۱۰۰ ۴۴۵



+۹۸ ۲۱ ۴۶ ۱۰۰ ۴۵۰



info@dralavipour.com



www.dralavipour.com



@alavipour_pm



@acemi_social



@alavipour_pm



@IRANACEMI

