



حرفه مدیریت ساخت (سند Capstone، از مراجع اصلی اخذ مدارک CMAA)

بخش ششم: خدمات مدیریت پروژه و طرح توسط مدیر ساخت

ارائه دهنده:

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What we will learn?

- ☐ Section Objectives
- ☐ Management
- ☐ Management Professionals & Plans
- ☐ Managing the Project
- ☐ Program Management
- ☐ Partnering

☐ بخشنامه‌های شرح خدمات همسان سال ۱۳۹۲ و ۱۴۰۱

Section Objectives

Section objectives

- ☐ Understand the **three components** of project management and **how** they are related.
- ☐ **Recognize** the **areas** that a **CM** should **focus** on **when managing** a project.
- ☐ Understand
 1. How program management **evolved**,
 2. How it **differs** from project management, and
 3. The roles typically involved.
- ☐ Learn how **partnering** can contribute to the success of a project.

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Management

Introduction

❑ While **leadership** is a **crucial** part of being a CM, solid management skills are also important.

❖ These skills will help CMs

1. Act as effective leaders and problem-solvers,
2. Advance **job performance**, and
3. Possibly lead to **other opportunities**.

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Management Professionals & Plans

Management professionals & plans

❑ To improve processes and optimize resources, an organization uses varying levels of the **three Ps** of project management—

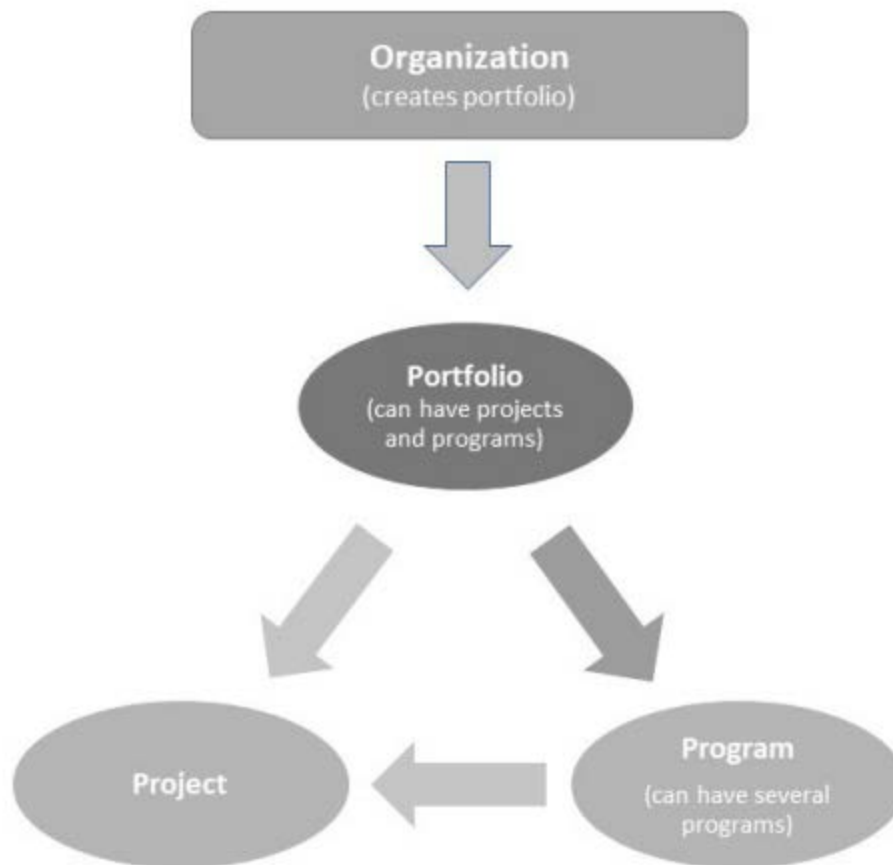
1. Project,
2. Program,
3. Portfolio.

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Management professionals & plans

- ☐ Projects focus on the **tactical aspects** such as budget, scope, and schedule;
- ☐ Programs are used to **control** those **projects** for effective delivery,
programs are comprised of **multiple projects** and
focus on managing the **interdependencies** between projects; and
- ☐ Portfolio supports the organization's strategy by focusing on
 1. Leadership and
 2. The alignment of goals.

Management professionals & plans



Management professionals & plans

- ❑ On **some** programs or projects, in **addition** to the CM,
there **may be** a **management professional** such as those
certified by the Project Management Institute.

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Management professionals & plans

❑ One of the mainstays of project management is the **written plan**—

the **Project Management Plan (PMP)**—

which is **approved** by the owner and

defines

1. Vision,
2. Implementation strategy,
3. Schedule and budget criteria, and
4. The policies, procedures, and standards for the program.

Management professionals & plans

☐ It is a **living document** that should be updated periodically because

it is the **master reference document** for

the **entire** project/program team throughout the life of the program or project.

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Management professionals & plans

- ❑ **Depending** on the **structure selected** for the **PMP**,
the **construction management plan (CMP)** can be
 1. A component of the PMP or
 2. A stand-alone document/strategy that is incorporated into the PMP by reference.
- ❑ The **CMP** typically **outlines** the **approach** that
 1. Will be used to **manage** the **project** and
 2. Identifies **possible impacts** on the area around the project.
 - ❖ The **CMP** may also **detail** construction schedules, costs, and the tasks to be accomplished.

Management professionals & plans

☐ If there is **no PMP** on the job,

those **responsibilities** may be **handled** by the **CM**.

☐ Either way, the CM **must** have the **ability** to

- ❖ Plan,
- ❖ Coordinate,
- ❖ Budget,
- ❖ Manage,
- ❖ Supervise, and
- ❖ Lead

the construction project.

Management professionals & plans

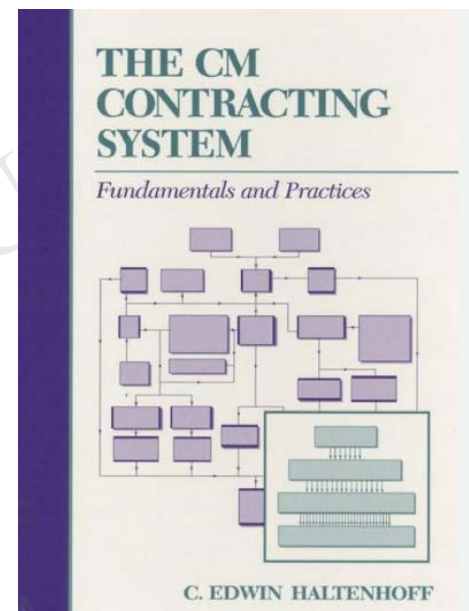
❑ Project Procedures Manual (PPM)

- ❖ A written, project-specific plan that outlines project's scope, organization, and the specific approach to be undertaken to accomplish the various management tasks for the project.
- ❖ These **quality management guidelines** should be **integrated** into the various **sections of the PPM** to maintain a focus on **project quality**.
 - ✓ On certain **large projects**, it may be appropriate for the **CM to prepare a separate** Quality Management Plan (QMP) which elaborates upon the **quality guidance** aspects of the PPM.

Managing the Project

CM body of knowledge

1. Budget management
2. Contract management
3. Decision management
4. Information management
5. Materials/Eqt management
6. Project management
7. Quality management
8. Resource management
9. Risk management
10. Safety management
11. Schedule management
12. Value management





CM body of knowledge

حرفه مدیریت ساخت (بر اساس سند مهمی از CMAA)
بخش ششم: خدمات مدیریت پروژه و طرح توسط مدیر ساخت



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CM Core Competencies

CMAA's Standards of Practice include construction management core competencies and accompanying body of knowledge that must be learned and successfully mastered before becoming a professional construction manager/project manager. CMAA's publications include competencies around the following subject areas:

CONSTRUCTION MANAGEMENT CORE COMPETENCIES

A Guide to the Construction Management Core Competencies and their Body of Knowledge

CM PROFESSIONAL PRACTICE	1
CM PROJECT MANAGEMENT	4
COST MANAGEMENT	7
TIME MANAGEMENT	9
QUALITY MANAGEMENT	10
CONTRACT ADMINISTRATION	12
SAFETY MANAGEMENT	15



Roles of CM

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Trends in Expectations about Duties and Responsibilities of Construction Managers

David Arditi, M.ASCE¹; S. M. Reza Alavipour, Ph.D.²; and
The Committee on Management Practices in Construction (ASCE Construction Institute)

<https://dralavipour.com/blog/view/CM-roles>

❑ As a leader, manager, and influencer, the CM must focus on specific areas of the project:

1. Contract Administration
2. Cost Management
3. Information Management
4. Project Management
5. Quality Management
6. Risk Management
7. Sustainability Management
8. Time Management



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Code of professional conduct

Professional construction management

Project management

Cost management

Time management

Quality management

Contract administration

Safety management

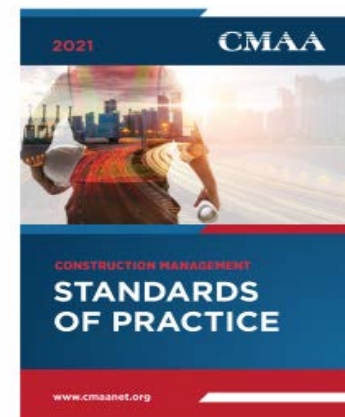
Sustainability

Technology management

Risk management

Program management

✓ Stakeholder, PGMO, MIS, Scope, Procurement





Understanding Your Role

CM/PM Responsibilities
by Project Delivery Method

Acknowledgments

Like all professional associations, the Construction Management Association of America (CMAA) relies on its members' efforts for success. We gratefully acknowledge the following team members who made this manual possible.

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Budget management

❑ Encompasses **all project-related cost** aspects of CM practice, from the first estimate to the final accounting.

- ❖ Providing conceptual estimating
- ❖ Conducting feasibility studies
- ❖ Generating construction cost estimates
- ❖ Familiarity with labor, material and equipment costs
- ❖ Familiarity with equipment and labor production rates
- ❖ Providing cost accounting services

Contract management

❑ Involvement of the CM in the operational and administrative provisions of the contract.

- ❖ Understanding types of contracts
- ❖ Understanding of contract language
- ❖ Familiarity with standard contracts
- ❖ Knowledge of contract law
- ❖ Recommending a contracting structure to the owner
- ❖ Knowledge of traditional contracting procedures

Decision management

❑ **Consistently extracting decisions** from the project team which are in the **best interest of the owner** without alienating the team members.

- ❖ Understanding business structures, organizations, practices, procedures, motivations, and philosophies
- ❖ Understanding the services provided by the members of the team
- ❖ Inducing a productive system of decision-making checks and balances
- ❖ Creating fair processes when decisions are contended
- ❖ Understanding alternative dispute resolution methods

Information management

- ❑ Collecting, documenting, disseminating, safe keeping, and disposing of verbal and graphic project-related information
 - ❖ Effectively communicating and managing project information
 - ❖ Familiarity with information management systems
 - ❖ Familiarity with computer-based information systems
 - ❖ Organizing and running efficient meetings of project team members
 - ❖ Strong sense of ethics

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Material/equipment management

- ❑ Planning, specifying, bidding, acquiring, expediting, receiving, handling and storing owner-purchased material and equipment for the project in conformance with the owner's purchasing policies.
 - ❖ Identifying those materials and equipment that would provide an economic advantage to the owner if purchased in the design phase
 - ❖ Writing technical specifications
 - ❖ Familiarity with purchasing techniques
 - ❖ Familiarity with material and equipment costs

Project management

❑ **Making** the project delivery system **work** from the beginning of design to the end of the warranty period.

- ❖ Providing leadership and expertise in carrying out responsibilities
- ❖ Effectively organizing design, contracting and construction
- ❖ Effectively organizing the activities of the team members

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Quality management

❑ **Coordinating** the activities of the owner in stipulating quality requirements,

1. of the designer in designing to achieve these requirements, and
2. of the contractor by inspecting that these requirements are met.

- ❖ Assisting with technical specifications writing
- ❖ Testing materials and products
- ❖ Being able to assess the quality performance of contractors

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Resource management

- ❑ Selecting, organizing, directing and using all project resources, both human and physical.
 - ❖ Understanding and motivating the project's resources in order to extract the best results
 - ❖ Understanding of human resources and labor relations
 - ❖ Familiarity of conflict management

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Risk management

❑ Identifying, evaluating and disposing of risks such that **economic loss** to the owner is **minimized**.

- ❖ Eliminating risks whenever possible
- ❖ Assigning risks to other parties if appropriate
- ❖ Accepting risks and managing them to minimize their consequences if they occur
- ❖ Understanding insurance and bonding

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Safety management

❑ **Promoting** safe practices at the **construction site** in accordance with prevailing regulations.

- ❖ Urging contractors to have organized safety practices in place
- ❖ Including safety provisions in all contracts
- ❖ Familiarity with safety practices and safety programs
- ❖ Thorough understanding of OSHA

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Schedule management

❑ **Combining** the elements of time and resources from the **start** of **design** to owner occupancy.

- ❖ Proficiency in using scheduling tools
- ❖ Obtaining the team members' cooperation in scheduling project activities
- ❖ Obtaining the team members' cooperation in implementing scheduling decisions
- ❖ Planning, predicting, analyzing and tracking project activities and events

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Value management

❑ **Managing** the **relationship** between the project's cost versus its value.

- ❖ Identifying those elements that deserve consideration for Value Analysis
- ❖ Motivating the designer to use Value Engineering as early in the design phase as possible
- ❖ Familiarity with materials, equipment and methods of construction in order to be able to advise the designer and/or contractor on value engineering decisions.

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❑ Construction management services may include:

- » Alternative Project Delivery Solutions
- » Asset & Facilities
- » Building Information Modeling (BIM)
- » Claims & Contract Solutions
- » Commissioning Services
- » Construction Management
- » Cost Management
- » Energy & Sustainability Solutions
- » Inspection Services
- » Operations & Maintenance
- » Program Management
- » Project Controls
- » Project Management
- » Project Monitoring
- » Quality Management
- » Regulatory Compliance
- » Risk Management
- » Safety & Environmental Health Mgmt.
- » Schedule Management
- » Virtual Design & Construction Services

Management the project

❑ As a leader, manager, and influencer, the CM must focus on specific areas of the project:

- ❖ Contract Administration
- ❖ Cost Management
- ❖ Information Management
- ❖ Project Management
- ❖ Quality Management
- ❖ Risk Management
- ❖ Sustainability Management
- ❖ Time Management

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Contract administration

- ☐ As the **owner's representative**, the CM is responsible for the operational and administrative provisions of the contracts used on the project.
- ☐ This responsibility does **not extend** to
 1. The writing of contracts or
 2. Related legal servicesbut does **include** recommending appropriate contract **provisions**.

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Contract administration

❑ It is the **CM's responsibility** to **help establish** the contracting format for the project, including

each contractor's and consultant's **requirements** as covered in Formats.

❖ To support the format,

the CM should see that appropriate contract provisions are inserted for **contract administration**,

which meet

1. Basic industry standards, as well as
2. The requirements of the project management plan and
3. The project procedures manual.

Contract administration

- ❑ **Each project** must be evaluated from a contracting format perspective, taking into consideration the **unique conditions** and **requirements** of the project and local construction contracting practices.
 - ❖ This includes
 - ❖ The **recommendation** of contract formats to the client,
 - ❖ **Assisting** in assembling contract documents,
 - ❖ **Review** of the documents for the suitability, and
 - ❖ The **coordination** of their use on the project.

Contract administration

❑ The **execution** of these responsibilities requires the CM to have a **thorough understanding** of

1. Contracts,
2. Construction law, and
3. Standard contracting documents.

❑ Knowledge of **traditional**

1. Contracting procedures,
2. Construction management procedures, and

the possibilities for **contracting innovation** is necessary.

Contract administration

- ☐ The **key components** contained within an **effective** contract administration system and their subtopics include the following.

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Contract administration

1. Design Document Review is generally the **periodic review** of design documents for the **purpose** of managing cost, time, quality, and risks, including:

- ❖ Conducting and documenting **pre-design project conference**.
- ❖ **Constructability reviews** at various stages of design documents.
- ❖ **Analysis** of sequencing and phasing of construction.
- ❖ **Reviews** of coordination, consistency, and completeness of design documents.
- ❖ **Strategies** for contractual risk-sharing between owners and contractors.
- ❖ **Recommendations** for specific contract/agreement **provisions**.
- ❖ **Identification** of impractical material/performance specification requirements.

Contract administration

2. The Procurement Process involves the **establishment** of contracting format and the bidding and contracting procedures to be employed, including:

- ❖ Bidder pre-qualification.
- ❖ Bidders' interest campaign.
- ❖ Organization of bid packaging.
- ❖ Designer selection (if opted by the owner).
- ❖ Preparation of Special Provisions in General Conditions and Contracts.
- ❖ Delivery of bid documents and information to bidders.
- ❖ Pre-bid conference.
- ❖ Bid evaluation and negotiation.
- ❖ Coordination for owner-purchased equipment and materials.
- ❖ Identification of required permits, insurance, and labor affidavits.
- ❖ Assistance with contract negotiations.
- ❖ Construction contract preparation.

Contract administration

3. On-site communications involve **establishing** and **maintaining communication procedures** to be used on-site, including:

- ❖ Pre-construction conference.
- ❖ Communication flow chart.
- ❖ Project directory.
- ❖ Correspondence files.
- ❖ Chain of responsibility and authority.
- ❖ Submittal flow chart and logs.
- ❖ Field orders.
- ❖ Progress and coordination meetings.
- ❖ Shop drawings.
- ❖ Directives and reports.
- ❖ Cost and schedule performance data.

Contract administration

4. Project documentation involves **establishing** and **maintaining recording systems** for receipt, handling, and distribution of project documentation, including:

- ❖ Contract documents.
- ❖ Requests for Information.
- ❖ Owner's directives.
- ❖ Designer's directives.
- ❖ Submittal receipt and approvals.
- ❖ Sustainability compliance documentation.
- ❖ Changed condition notices.
- ❖ Change orders.
- ❖ Minutes of meetings.
- ❖ Project reports.
- ❖ Daily field reports.
- ❖ Payment requests.
- ❖ Photographic and video-based documentation.

Contract administration

5. Material management encompasses **all activities** relating to acquiring materials or equipment between its **specification** and **installation**, including:

- ❖ Identification of early purchase needs.
- ❖ Scheduling and expediting procurement and delivery.
- ❖ Inspections during fabrication and at delivery.
- ❖ Transportation and materials handling.
- ❖ Storage, insurance coverage, lien statutes.
- ❖ Specifying, negotiating, and purchasing.

Contract administration

6. Project closeout involves **developing** and **implementing** closeout procedures. (For more information, refer to the CMAA Project Closeout Guidelines document.) These include:

- ❖ Punchlist inspections
- ❖ Punchlist work
- ❖ Final inspections
- ❖ Operational training
- ❖ Record drawings/As-built drawings
- ❖ Operation and maintenance manuals
- ❖ Occupancy permits
- ❖ Claims investigation and resolution

Contract administration

6. Project closeout involves **developing** and **implementing** closeout procedures. (For more information, refer to the CMAA Project Closeout Guidelines document.) These include:

- ❖ Contract closeout
- ❖ Closeout reports
- ❖ Occupancy plans
- ❖ Move-in coordination
- ❖ Warranties and guarantees
- ❖ Sustainability certification submissions (and possibly finalization)
- ❖ Post-occupancy Inspections



Contract administration

- ❑ For more information, refer to the CMAA Contract Administration Guidelines document.

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Cost management

- ☐ The CM usually has the responsibility to generate and track **all project costs**, from the **initial** conceptual estimate to the **final** accounting.
- ☐ The **detailed project budget**,
prepared by the CM before design begins, becomes the designer's guide as the process moves toward the bidding phase.
- ☐ **After bids** are received,
the **value** of the **accepted trade contractor proposals** provides the basis for **updating** the budget.
- ☐ As construction proceeds,
changes to the contract and expense allocations are **recorded**.
- ☐ **Every aspect** of the project's cost is
estimated as early as possible and **documented** when it occurs.

Cost management

❑ The CM should be able to

1. **reasonably forecast project budgets** based on **preliminary information**
without the aid of detailed drawings and
2. **estimate construction costs** with a **high degree of accuracy** from completed contract documents.

❖ This process of moving from

1. Conceptual estimates for budget purposes into
2. Detailed line item construction budgets

is **essential** for **accurate** project cost control.

Cost management

☐ Establishing a cost management system

applies skills and techniques to ensure that

the project is planned, designed, procured, and constructed

in the **most economical way** while meeting the project's original budgetary requirements.

The project phases which are contained within this system and their subtopics include:

Cost management

1. Pre-Design Cost Investigation

Establishing a **cost management plan**, including all cost components, which becomes the basis and framework within which the **costs** of the project are **controlled**, include:

- ❖ Project feasibility studies
- ❖ Energy conservation studies
- ❖ Conceptual budgeting
- ❖ Cost models
- ❖ Preliminary cash flow studies
- ❖ Project funding studies

Cost management

2. Design Phase Cost Management

Provisioning ongoing estimating and cost management services to **ensure that** the budget is preserved as the designs are developed by the designer include:

- ❖ Lifecycle analysis
- ❖ Trade-off studies
- ❖ Estimating and budget updating at the different **phases of project design** development
- ❖ Value engineering (VE).
 - ✓ VE is a specialized cost control technique that **uses a systematic and creative** analysis of the functions of a project or operation to **determine how best** to achieve the necessary function, performance, and reliability at the minimum lifecycle cost.

3. Construction Phase Cost Management

Establishing and **monitoring** cost management procedures through **completion** of construction include:

- ❖ Change order control system
- ❖ Payment request evaluation
- ❖ Claims cost analysis
- ❖ Final project cost

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For more details about these and other related topics,
refer to the CMAA Cost Management Guidelines document.

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Information management

- ☐ Proper **information flow** is crucial to the success of a project.
- ☐ Should **any party** not receive **critical** information during their work,
all parties can be subjected to
additional costs and
the potential for unexpected liabilities.

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Information management

- ❑ A construction project normally **generates** a tremendous amount of **information** that **must** be disseminated to all appropriate parties on a **timely** basis.
 - ❖ The **sources** of this information will cover the **full spectrum**, including contracts, meeting minutes, drawings and specifications, submittals, requests for information, etc.
- ❑ Cloud-based data is an **accepted** and **economical** means of communication and information dissemination.
- ❑ There are a variety of web- and cloud-based project management systems **available** for distributing and storing project information.

Information management – Management information system (MIS)

- ❑ The **MIS** is an electronic platform for information sharing and communication as well as a **repository** for the project records.
 - ❖ These systems come in various forms.
They can be
 1. Developed in-house,
 2. Acquired as a standalone system, or
 3. Purchased as an online subscription service.
- ❑ MIS can be **put in place** and **maintained** by owners, contractors, or CMs.
 - ❖ It is at the **discretion** of the **owners** to **determine** which party will take the **lead** on the MIS.

Information management – Management information system (MIS)

- ❑ MIS can be **integrated** with other relevant systems such as accounting, scheduling, commissioning, facility management, even web cameras, and BIM models.
- ❖ This allows for the integration and sharing of **data** during design and construction and beyond to operations and maintenance and can later **function as historical data** for estimation of future projects.

Information management – Management information system (MIS)

☐ When well-planned and integrated,

the MIS can be **used not only** to manage individual projects but also to
manage project portfolios and major programs.

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Information management – Management information system (MIS)

❑ The **key components** of an effective system are

1. Document management,
2. Reporting and dashboard capabilities, and
3. Workflow management.

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Information management – Management information system (MIS)

- ☐ **All these forms** of information constitute the project record.
- ☐ As the **hub** for the management of all types of data flow,
the CM should be **capable** in the fields of
 1. Correspondence,
 2. Technical writing,
 3. Meeting recording and reporting,
 4. Management information systems,
 5. Business protocol,
 6. Computer systems and networks, and
 7. The legal precedents regarding contract documentation.

Information management – Management information system (MIS)

- ☐ The MIS is **not necessarily** only an electronic system,
but may also include **hard copy storage**, retrieval, and retention policies and procedures.
- ☐ It's also important to remember that the MIS is **only as effective** as the standards of use required by the **manager** of the **information**.

Information management – Management information system (MIS)

❑ The **basic focus** of the MIS should be to

keep the project team **informed**, **continuously**, as to

1. The overall status and
2. Forecast of the project

in comparison with the **established plan**.

❖ **Each phase** of the project may include

- ✓ Reports,
- ✓ Schedules,
- ✓ Data,
- ✓ Processes, and
- ✓ Procedures.

Information management – Management information system (MIS)

Pre-Design Phase	Design Phase
• Design schedule • Schedule and progress reporting • Budget • Lifecycle costs • Design change requests • Meeting minutes	• Schedule and progress reporting • Project cost summary • Change order reporting • Budget • Value engineering • Sustainability checklist • Cash flow projections • Meeting minutes

Information management – Management information system (MIS)

Procurement Phase	Construction Phase
• Schedule and progress reporting • Project cost summary • Summary of bid results • Budget vs. cost • Cash flow projections • Construction schedule • Meeting minutes	• Schedule and progress reporting • Project cost summary reporting • Budget vs. cost • Progress payment reporting • Potential disputes/claims • Cash flow projections • Daily field reports • Inspection reports • Meeting minutes

Information management – Management information system (MIS)

Post-Construction Phase

- Project closeout
- Agency inspections and approvals
- Occupancy permits
- Claims status and disposition
- Final inspection reports
- Sustainability compliance documentation
- Final project cost summary
- Project history

Information management – Management information system (MIS)

- ❑ Owners, trade contractors, and CMs have a **significant number of options** when **selecting an MIS** that best suits their project needs.
- ❖ It is important to consider ease of use and compatibility with the **size** of the project.
 - ✓ **While ease** of use is important, the system should also be **robust enough** to contain the reporting and tracking capabilities needed.
 - The system should be **readily customizable** so that the system setup can be specifically geared to the project.

Information management – Management information system (MIS)

❑ The effective use of MIS is **not without** its **challenges**.

❖ If **all stakeholders**

1. Are **not committed** to the selected system and
2. Insist on **multiple systems** and communicating on **platforms outside** of the MIS,

this will lead to inefficiencies and data entry issues.

❖ In addition, **lack of consistency** in data entry and data management can make it extremely difficult to **retrieve** data.

✓ This can be **further complicated** when

1. Workflows are not clear and
2. Read/write permissions not accurately defined.

Information management – Management information system (MIS)

□ Finally,

- ❖ **technological obstacles** can emerge;
- ❖ **sluggish bandwidth** or **processing speeds** can make use very tedious.
 - ✓ These challenges are **not insurmountable** but should be considered when **planning** for the system.

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- ❑ The **future** of **any construction management firm** will depend on its demonstrated ability to **successfully manage** projects.
- ❑ **Clients** expect the firms they engage to
 1. Perform in **full compliance** with the **contract** and
 2. Meet all the client's interests and requirements.
- ❑ A CM **must** be **skilled** in the full range of
 1. Project management,
 2. Contract administration, and
 3. Organization/control functionsto be able to **fully** represent the **interests** of a **client**.

Project management

- ❑ Specifically, the CM must understand the basic responsibilities and interrelationships of **all team members**;

i.e., the owner (both project management staff and facility user), the designer(s), the contractor(s), and other team members, such as green building facilitators, and other consultants.

- ❑ Additionally, the CM must have the functional knowledge to **define** the interrelationships between such management components like
time,
cost,
contract administration,
quality,
safety, and
risk.

Project management

❑ The CM must proficiently **assess**

1. Team member responsibilities and
2. Functional interrelationships

to **clearly set forth**

1. The project objectives and
2. The team control mechanisms

during the **various stages** of the project.

Project management

- ❑ Decision-making, including

obtaining enough information to make **timely** and **reasoned** decisions,
is a key element, which contributes to a successful project.

- ❑ The professional and ethical CM also understands

1. **When to consult** with a suitable expert in a field, and
2. **How** to judiciously **apply** the **advice** and **recommendations** of an expert consultant in the **decision-making process**.

Project management

❑ The **key planning tools** utilized in project management are the **PMP/CMP** and the **Project Procedures Manual**.

❖ Although these tools may appear to be **synonymous**, they have **different purposes**.

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Project management

☐ The management plans outline

- ❖ The project description,
- ❖ The owner's goals and objectives,
- ❖ The milestone schedule, the budget,
- ❖ The team members (including their roles and responsibilities),
- ❖ The strategy to be used in contracting and procurement, and
- ❖ The MIS.

☐ The Project Procedures Manual describes

the **process** to be **followed** in **controlling** the various construction management components utilized in

meeting the **objectives** contained in the PMP and CMP.

Project Procedures Manual

TYPICAL CONTENTS	
Cost control procedures	Schedule control procedures
Communications procedures	MIS procedures
QA program procedures	Safety program procedures
Contractor coordination procedures	Documentation procedures
Meeting protocol	Roles and responsibilities
Team organization	Levels of authority
Procedures for all contract administration documents	

Project management

❑ During the project,

1. The CMP,
2. Project procedures manual, and
3. Associated PMP requirements must be kept current

with **changes** required due to **various constraints** such as budget, schedule, and regulatory requirements.

For more information, refer to
the CMAA Construction Management Standards of Practice document.

❑ Quality management

1. Begins in the **planning stages** of every project and
2. Continues throughout the project and into the **owner's use** of the **facility**.

❖ Quality management is an **inherent part** of the CM's contract and as such, it is **essential** that the CM be knowledgeable of and capable in **all aspects** of quality management.

❑ Quality is the **degree** to which the project and its components meet the owner's

- ❖ Expectations,
- ❖ Objectives,
- ❖ Standards, and
- ❖ Intended purpose;

determined by **measuring conformity** of the project to

- ✓ Plans,
- ✓ Specifications, and
- ✓ Applicable standards.



☐ Quality control involves

1. Continuous review,
2. Certification,
3. Inspection, and
4. Testing of project components, including

persons, systems, materials, documents, techniques, and workmanship to determine whether such **components conform** to the plans, specifications, applicable standards, and project requirements.

☐ For quality assurance,

the CM applies planned and systemic **methods** to

verify that quality control procedures are being effectively **implemented**.

Quality management

- ❑ During the pre-design and design phases of a project,
normally the **designer** is **responsible** for
specifying quality based on the owner's requirements.
- ❑ From the **perspective** of the **CM**, three things are important:
 1. That the quality of everything is **specified** and **achievable**.
 2. That the quality specifications of system components be compatible.
 3. That the quality specified be at a level that is **commensurate** with the project needs.

- ❑ The CM **needs to work** with the owner, designer, and other consultants to **ensure** **that** these objectives are met.
- ❑ The CM uses contract document reviews and constructability reviews to check all
 1. drawings,
 2. specifications, and
 3. associated documentsto be sure that there are no gaps, inconsistencies, or vagueness that will **create** errors or uncertainties in
 - ❖ cost estimates,
 - ❖ schedules,
 - ❖ bidders' lists, or
 - ❖ purchase orders.

Quality management

- ❑ A careful, detailed review of shop drawings and samples is essential to **ensuring that** trade contractors, vendors, and suppliers maintain the quality standards specified.
- ❑ The CM should **establish** and **maintain** procedures for
 1. Managing the review and
 2. Control of required shop drawings and samples.
- ❑ Normally, the CM should
 1. **Check** all submissions for **completeness** (and, when tasked by the owner, for compliance with the designer's drawings),
 2. **Submit** them to the designer for **review** and **approval**, and
 3. **Expedite** **return** to the contractor or supplier for revision or construction, as appropriate.

- ☐ The CM will **normally provide** for the **inspection** of the project work noting both the status and quality of work in place.
- ☐ Items that require corrective action are placed on a **punchlist**, and the **trade contractors** are required to make **necessary corrections**.
- ☐ This process is continuous and **all punchlist** items must be remedied **before** a project is **closed out** and **accepted** by the owner.
- ☐ If a **punchlist** item will be covered over or will delay **subsequent construction**, **immediate remedial action** should be ordered.
- ☐ The **owner and/or designer** will also develop a **punchlist** when the **contractor declares** substantial completion, and **corrective action** will be managed by the **CM**.

Quality management – Non-conformance

- ❑ If the **CM** does **identify** an issue with quality, that is called “**non-conformance**.”
 - ❖ A **non-conformance** occurs any time a **required specification** is not met, and it can be **anything** from an **issue** with a service or product to a process.
 - ✓ It can be
 1. As **simple** as a supplier **sending** the **wrong product** or
 2. As **complex** as an **issue** with the **quality management system** itself.
- ❑ **Quality issues** are typically identified through
 1. Normal inspection activities or
 2. An internal/external audits.

Quality management – Non-conformance

❑ When a **non-conformance** is **identified**,

it's **up to** the **CM** to **resolve** the issue by

following the established procedures to engage the architect or engineer.

❖ Ultimately, they will **determine whether**

1. The issue can be accepted as is or
2. If corrective action must be taken by the contractor.

❑ The CM should **encourage** a work environment where

team members understand the importance of reporting

any potential quality issues as soon as possible to

reduce any negative impacts to the project.

Quality management – Non-conformance

- ☐ The **CM follows** the quality management process through project **closeout** by ensuring that
 1. Procedures have been defined for systems start-up,
 2. Training has been provided for the owner's personnel, and
 3. Operations manuals have been compiled for the facility.
- ☐ **Training programs** should be conducted either by
 1. The systems installers or
 2. Specialty contractors.
- ☐ If possible, the **training** should be **recorded** so that **operations personnel** hired later can receive the same training.

Quality management – Non-conformance

❑ Objectives of the **training programs** include **ensuring** that the **owner's personnel** can **perform** the following:

- ❖ Start, operate, and shut down the systems efficiently and safely.
- ❖ Efficiently maintain and, if appropriate, repair the systems.
- ❖ Identify parts and service suppliers.
- ❖ Understand warranty terms and conditions.

For more information, refer to the CMAA Quality Management Guidelines document

Risk management

❑ The risk management **methodologies** available range from

1. **Simple** task-based likelihood/impact assessments to
2. **Sophisticated** probability analysis-based quantitative schedule risk analysis (QSRA) techniques

that can be used to

1. Forecast completion dates and
2. Calculate risk-based schedule contingency.

Risk management

- ❑ The **level of assessment** required should be determined at the pre-design phase, as the **benefits** of risk management methodologies **diminish** as the timeline progresses.
- ❖ The **CM** should **implement**
 1. A structured risk analysis methodology, or
 2. Risk management process,such as the **steps** described in **ISO 31000**.
- ❖ **More complex projects** may include the **CM** being **supported by** an experienced and qualified risk management **professional**.

Risk Management Objective

To provide a process for early identification of risks and opportunities in order to properly assess, track, and manage them throughout the project.



Risk management

❑ Qualitative risk assessment techniques involve

1. The **identification** of risks the project is **likely to face**, and
2. **Estimation** of the likelihood and potential impact of each risk.

❖ The **qualitative** methods rely heavily on

1. Historical documentation,
2. Consultation with experts, and
3. Solid judgment by the CM

to **assess** and **address** the risks effectively.

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Risk management

❑ Conversely, **quantitative** methods of risk assessment require complex modeling techniques and intensive calculation.

❖ The **statistical models** used in quantitative risk assessment are **powerful**,
but they must be applied with care to ensure the results are **interpretable**.

✓ The **CM's risk assessment team must**

1. **Not only identify** all the contributing variables that affect project success,
2. But they must also **discern** whether and how those variables are **related to each other**

in order to construct a **worthwhile model**.

Risk management

☐ Whichever method is used,

the **risk results** must be considered in

1. the context of the project and
2. the owner's risk tolerance.

☐ As **risks** are identified and estimated,

the **CM** can **recommend** a course of **action** that may include

1. Avoidance,
2. Mitigation,
3. Transfer, or
4. Even acceptance

of each risk, and **offer** the **likely outcomes** for each possible choice.

Risk management

- ❑ **Opportunities** are also important to **identify** at this stage.
- ❑ The **uncertainty** in any project may **not necessarily** produce a negative impact — sometimes uncertainty can result in **benefits**.
 - ❖ For instance, **fluctuation** in the commodities market may create a condition where
 1. **Well-timed bulk purchases** of materials can save a **significant amount of expense**, and
 2. The prepared CM will be able to **take advantage** of this.

❑ **Time** and **cost** are **not** the **only** areas to consider risk and opportunity.

❖ In the process of **identifying** the risks and opportunities in a project, also consider

- ✓ the impact on safety,
- ✓ legal liability,
- ✓ public opinion, and
- ✓ the project team's reputation.

○ These factors are more difficult to quantify.

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Risk management

❑ Where **risk management** aims to mitigate uncertainty,

pull planning aims to mitigate waste caused by

1. Incomplete planning,
2. Poor process development,
3. Inadequate integration, and
4. Undefined constraints.

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Risk management

حرفه مدیریت ساخت (بر اساس سند مهمی از CMAA)
بخش ششم: خدمات مدیریت پروژه و طرح توسط مدیر ساخت

☐ For more information, refer to the CMAA Risk Management Guidelines document.

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- ❑ One of the primary considerations of **sustainable design** is to **avoid** resource depletion of energy, water, and raw materials.
- ❑ Another is to **prevent** environmental degradation throughout project construction and facility operation by producing designs and constructed environments that have a positive benefit on human health such as
 - ❖ high-quality indoor air,
 - ❖ natural lighting,
 - ❖ high-efficiency HVAC, and
 - ❖ resilient design.

❑ **Common features** of a sustainable project include:

- ❖ Water conservation and management systems
- ❖ Energy conservation measures or features using both passive and active strategies
- ❖ Renewable energy systems and applications
- ❖ Sustainably derived materials
- ❖ Waste minimization plans
- ❖ Systems designed to assure healthy indoor environments by minimizing contaminants during construction and operations
- ❖ Consideration of resilience to climate-related impacts

❑ **Strategies to achieve sustainability** objectives include:

- ❖ Optimization of site/existing structure potential
- ❖ Optimization of energy use
- ❖ Protection/conservation of water, wastewater, and stormwater as resources
- ❖ Use of environmentally preferable products
- ❖ Protection and enhancement of indoor air quality
- ❖ Optimization of operational and maintenance procedures

Sustainability—like cost, schedule, quality, and safety—is an important component of project and construction management.

❑ With respect to sustainability, the **key responsibilities** of the **successful CM** should include the following:

❖ **Understand owner's requirements.**

- ✓ A project with sustainability requirements may come with **significant risk** associated with new/emerging technologies or processes employed on the project.
- ✓ The **CM must clearly understand** boundaries and expectations in order to practice a **policy of “no surprises.”**

❖ **Assist in selection of appropriate designers and contractors.**

- ✓ Projects with sustainability features will involve requirements that may be new or unique to designers, contractors, and consultants.
- ✓ The **CM has a duty to ensure** that project requirements are **clearly identified** so they can be addressed or mitigated.

❑ With respect to sustainability, the **key responsibilities** of the **successful CM** should include the following:

❖ **Manage an interdisciplinary project team.**

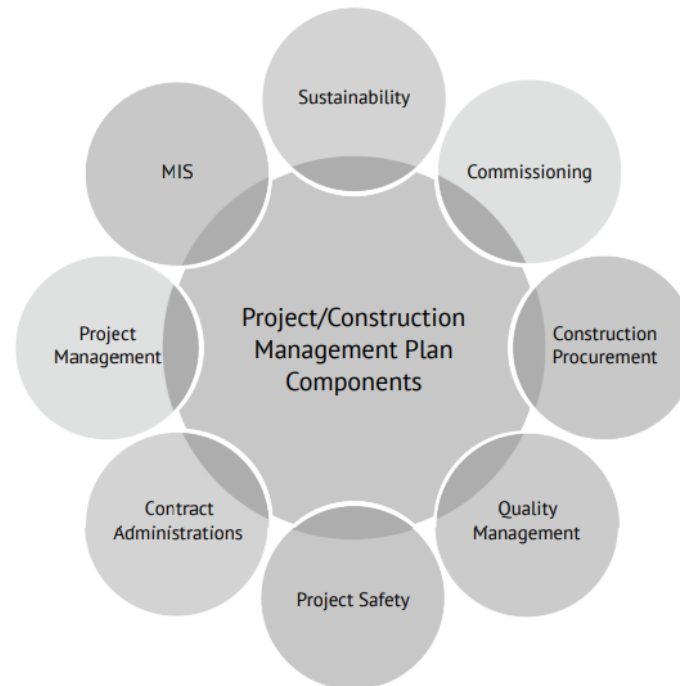
✓ CMs should be **mindful** that sustainable project requirements **may add complexity** through

the addition of team members, new/emerging features and technologies, and unfamiliar installation, testing, or verification processes.

❖ **Coordinate the activities of stakeholders.**

✓ Sustainability requirements **introduce complexity**, which puts more importance on clear and consistent **communication**.

- ❑ The **CM's primary tools** to meet scope, schedule, budget, and quality control objectives should be clearly articulated in the project or construction management plan and its component or subordinate elements.



- ☐ The **following strategies** may be used to integrate sustainability requirements:

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❑ Commissioning Plan

- ❖ This is based on the **owner's** project requirements and requires significant input from the owner.
- ❖ A commissioning plan **outlines**
 1. Training,
 2. Sustainability certifications and requirements,
 3. Installation and functional testing requirements, and
 4. Operational requirementsthat will impact the owner **after turnover**.

☐ Construction Procurement Plan

❖ This should **identify**

- ✓ The contractual relationships and
- ✓ Responsibilities of consultants and contractors charged with
- ✓ Tasks related to delivering a project with sustainability requirements.

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❑ Contract Administration Procedures

- ❖ **While** LEED or other sustainable design and construction requirements may be included in contract documents for reference,
care should be taken to **minimize** coordination risks on project's cost, schedule, scope, and quality parameters by **integrating** sustainability requirements as much as possible in **contract documents** and **project/program management procedures**.
- ❖ **Before** inclusion or use on a project, standard documents should be reviewed and amended as required by **legal counsel** and **insurance** providers for project-specific application.

□ MIS

- ❖ A **project's MIS** is the repository of project data and a project's computer-based "toolset."
- ❖ **Systems** that may be considered **part** of a project's sustainability features include energy modeling and BIM, which can
 - ✓ Facilitate high-performance modeling,
 - ✓ Move the incorporation of sustainability features up in the design process,
 - ✓ Provide LEED credit tracking, and
 - ✓ Support post-construction maintenance plansthat optimize energy efficiency maintenance practices and capital replacement decisions.

❑ Quality Management Plan (QMP)

- ❖ The **QMP** should include sustainability metrics that are thoroughly embedded by
 - ✓ Integrating performance,
 - ✓ Testing and inspection requirements for sustainability features, and
 - ✓ Separately identified as requisite elements of the project's sustainability program
- during construction** so as to **avert compromise** by
cost, schedule, and scope control measures.

☐ Project Management Plan

- ❖ This plan should include procedures guiding the performance of **tasks** in design and construction that ensure development and incorporation of the project's **sustainability features**.

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❑ Project Safety Plan

❖ Because sustainability features or requirements may be **new** to some team members,

special care must be taken to **clearly identify**

❖ construction sequencing,

❖ testing, and

❖ inspecting practices

in any safety plans.

❑ Sustainability Plan

❖ This plan should **clearly identify**

1. Project-specific sustainability goals/objectives/ requirements,
2. Roles and responsibilities, and
3. Key mechanisms for coordinating efforts and tracking progress

on the deliverables and milestones.

❖ A **Sustainability Plan** is both a guidance document and the foundation for a **reporting system**.

✓ It should be as concise as possible.



Sustainability

حرفه مدیریت ساخت (بر اساس سند مهمی از CMAA)
بخش ششم: خدمات مدیریت پروژه و طرح توسط مدیر ساخت

☐ For more information, refer to the CMAA Sustainability Guidelines document.

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Time management

❑ For time management, the **CM** should **understand** how to

❖ Develop and implement schedules for the work on a construction project, and

❖ Prepare related **periodic reports**.

1. How these actions are accomplished and

2. In what detail they are communicated

depend upon

1. The contract;

2. Project type, size, and complexity; and

3. Time, cost, and quality constraints.

Time management

❑ The CM's specific roles and responsibilities

must be **defined** in the contract or agreement

since that will be used to **measure** and **evaluate** the CM's performance.

❖ Ultimately, a thoughtfully implemented time management process

1. **Assists** the client in meeting its financial needs and
2. **Helps** to avoid or **minimize** **time-related conflicts** within the construction team.

Time management – Schedules

- ❑ **Decisions made** at the **beginning** of a project affect later phases of the project's execution.
- ❖ Thus, it is during the **pre-design phase** that consideration should be given to the appropriate scheduling tools and procedures related to the master schedule, design phase schedule, procurement phase schedule, construction phase schedule, and post-construction phase schedule.
 - ✓ The development and maintenance of these schedules need to be considered in defining the **preferred attributes** of project schedules during the **schedule design process**.

Time management – Schedules

The Critical Path

- The longest continuous path of project activities that controls the completion of the project
- On a new schedule, the critical path has zero total float
- Delayed project total float is negative
- CPM schedule allows forecasting the effect of changes
- One day of delay to an activity on the critical path causes one day of delay to project completion

Time management – Schedules

❑ The **CPM** is the preferred scheduling method on all but the **simplest projects**.

❖ Decisions need to be made including

- ✓ the most effective CPM program to use,
- ✓ the level of detail, and
- ✓ the responsible team member for schedule development and preparation of updates

(the CM, the design professional(s), the contractor(s), some combination, or a third-party schedule consultant).

Time management – Schedules

❑ In addition to **assisting** in the design phase with modeling,

BIM can also be used for **planning**

- ❖ construction activities and
- ❖ communicating the construction phase
with team members or stakeholders.

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Time management – BIM integration

☐ From the perspective of BIM integration

- ❖ Facilitates smooth transition of model from design to construction.
- ❖ Maintains a central and updated model.
- ❖ Brings new project team members (subcontractors, vendors) up to speed.
- ❖ Ensures complete and thorough turnover of the model to the owner.
- ❖ Verifies that model meets the project specifications.

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Time management – Schedule types

❑ From the perspective of schedule types

- ❖ **Conceptual schedule** - A conceptual schedule is like a **proposal schedule** except that it is usually time-scaled and is developed from the preliminary design of the project.
- ❖ **Baseline schedule** - The baseline schedule is an **early fixed project schedule** that establishes the time standard by which **project performance** is measured.
- ❖ **Master schedule** - An **executive-level summary schedule** identifies the major components of a project, their sequence, and durations.

The schedule can be in the form of a network, milestone schedule, or bar chart.

Time management – Schedule types

❑ From the perspective of schedule types

❖ **Milestone schedule** - A type of schedule representing **important dates** and/or **events** on the path to project completion.

✓ All milestones may **not** be **equally significant**.

○ The most significant are termed '**major milestones**' and usually represent the **completion** of a **group of activities**.

❖ **Recovery schedule** - The schedule that depicts **action(s)** and **special effort(s)** required to **recover lost time** in the approved schedule.

✓ It can depict the **activities** of **any member** of the project team.

Time management – Schedule types

- ❑ For more details and additional information, refer to the CMAA Time Management Guidelines document.

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Duties and responsibilities of the construction manager

Trends in Expectations about Duties and Responsibilities of Construction Managers

David Arditi, M.ASCE¹; S. M. Reza Alavipour, Ph.D.²; and
The Committee on Management Practices in Construction (ASCE Construction Institute)

<https://dralavipour.com/blog/view/CM-roles>



Understanding Your Role

CM/PM Responsibilities
by Project Delivery Method

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Program Management

Program management

❑ Program management has become a **major element** of the **construction management industry**.

❖ The term “**program management**” may be used by **owners** as a term to **describe** a **wide variety** of management functions.

✓ However, it can be generally described as the practice of **professional construction management** applied to an improvement program of one or more projects from inception to completion.

❖ Program management provides benefits such as

- ✓ Standardization,
- ✓ Leveraged purchasing, and
- ✓ Economies of scale.

Program management

- ❑ **Program management teams** may look **very different** depending on the owner.
- ❖ **Differences** in the makeup of the program management team and its responsibilities are typically the **results** of variations in the characteristics of
 1. The **projects** the team is to manage and the
 2. The **owners** for whom the team works.
- ✓ When an owner embarks on
 1. A large, highly complex project, or
 2. A capital improvement program (CIP) involving multiple projects and/or multiple sites,

it may be appropriate to retain **program management services**.

Program management

❑ A **CIP** is a community planning and management tool that is used to

1. Identify capital projects and equipment purchases and
2. Provide a planning schedule and financing options.

❑ The CIP is typically a **five-to-ten-year plan** that

1. Identifies,
2. Prioritizes, and
3. Maximizes

capital projects to

1. **Improve** efficiency and
2. **Manage** budgets.

The evolution of program management

❑ During the **past few decades**, the industry has seen an increased **prevalence of serial builders**,

representing **owners** that **go beyond** being repeat builders to build a **series of projects** of a particular type.

❖ For example, **most hospitals** are now members of a **chain of medical facilities** owned by

a single, large corporate entity as opposed to
a single, community ownership group.

Similarly, locally owned stores are being replaced by
large box stores and **grocery supermarket chains**.

The evolution of program management

❑ Such owners

1. Are **building** facilities on a **frequent basis** and
 2. **Place** an emphasis on efficiency and cost-effectiveness.
- ❖ These designs, or components thereof, are **utilized repeatedly** in multiple projects.
- ✓ Such repetition and the associated need for predictability and efficiency may require **comprehensive program management** for serial builders to establish **standards** in several locations using different contractors.

Program manager

- ❑ Generally, a **program manager (PgM)** is employed to **manage** and **coordinate** a large capital program, potentially with **multiple facilities** in different locations.
- ❑ The **manager** may be asked to **manage** or **contract** for seemingly unrelated activities,
which may range far from traditional design and construction activities.
- ❖ These activities may include
 1. Assisting the owner in securing financing for the project,
 2. Leading public relations and legislative initiatives,
 3. Operating and maintaining the completed facility, and
 4. Facilitating or purchasing a variety of products or services.

Program manager

- ❑ The owner's needs and resources determine the scope of the manager's services.
- ❖ Owners with **significant in-house expertise** may **not elect to contract** for the full scope of a manager's services,
but rather selectively choose services to **supplement** their own resources and expertise.

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Program manager

- ❑ **Program management services** are provided by a **variety** of professional consultants, such as CMs, design-builders, designers, developers, and others.
- ❖ CMs, by their training and experience,
possess the knowledge, skills, and abilities needed for effective program management.
 - ✓ In many cases, program management may be considered an **expansion** of traditional construction management services.

Program management roles

- ❑ There are many **similarities** between project management and program management.
 - ❖ Both utilize integrated systems and procedures such as
 - budgeting,
 - estimating,
 - scheduling,
 - procurement, and
 - inspection
 - to manage
 - the planning,
 - design, and
 - construction process.

Program management roles

❑ The **primary differences** between project management and program management are

1. The size,
2. Complexity, and
3. Scope

of the projects/programs.

❖ In addition, the **program manager** must have a
programmatic and policy-level perspective

while a **project manager (PM)** is focused on
project implementation and process.

Program management roles

❑ The **PgM** may **also** be **responsible** for providing **all** the project management services for the program or

the **owner** may elect to **engage** independent CMs to **assign** to individual projects or groups of projects within their **CIP**.

❖ In that case, the **PgM** may be **responsible** for

1. **Oversight** and **coordination** of those independent CMs and
2. **Establishing** a clear separation of duties and responsibilities for the PgM and the project CMs.

Program management roles

- ❑ In **most circumstances**, the owner will engage the PgM in an agency capacity, where the PgM is acting as the **owner's representative**, defining and then protecting the owner's interests.
- ❖ However, **unusual owner** or program circumstances **occasionally suggest** the use of program management at-risk, wherein the **PgM** takes on construction responsibility for **some** or the **entire program**.
- ❖ This **role is unusual** because the **expectations** for quality, cost, and schedule are **difficult to define early** in the program in **enough detail** to allow the negotiation of
 1. An appropriate scope of services and
 2. Compensation arrangement associated with an at-risk model.

Program management roles

- ❑ **Conflicting interests** may exist between the owner and the PgM as a result of **this arrangement**.
- ❖ The **most delicate issue** occurs when an owner converts a PgM agency contract to an at-risk contract.
 - ✓ Although the **intent** can be **clear**,
it is **difficult** for both parties to **adjust** their **relationship**.
 - When using the **at-risk delivery method**,
the **owner may want** to consider hiring **consultants** to provide agency PgM to represent their interest.

Program management roles

- ❑ While **program management** draws upon the **same skill sets** performed by CMs on an individual project basis,
there are **additional roles** that are not typically associated with project-based construction management.

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Program management roles

❑ A PgM is **best engaged early** in the conceptual planning phase of a CIP and may include **additional activities**:

- ❖ Assisting the owner in identifying financing for the program/project.
- ❖ Developing design standards.
- ❖ Developing uniform standards for all aspects of project delivery.
- ❖ Providing the framework for reporting and control systems.
- ❖ Leading public relations and legislative initiatives.
- ❖ Providing outreach to other consultants, contractors, and subcontractors.
- ❖ Procuring a variety of services or products.
- ❖ Managing land acquisition and environmental service providers.

Program management roles

❑ A PgM is **best engaged early** in the conceptual planning phase of a CIP and may include **additional activities**:

- ❖ Managing master-planning, programming, and design service providers.
- ❖ Developing the interface management strategy for multiple, concurrent projects.
- ❖ Establishing and documenting quality and performance standards and specifications.
- ❖ Developing contracts and procurement strategies.
- ❖ Assisting the owner with reporting to governing boards.

Program management team

❑ In this early stage, the **program management core team** is generally **small**.

❖ The **team** may be **made up** of

- ❖ planners,
- ❖ schedulers,
- ❖ conceptual estimators,
- ❖ financial experts,
- ❖ lawyers, and
- ❖ other front-end experts as needed.

❑ These professionals may be available

1. Within the owner's organization,
2. The selected program management firm or
3. Within the various specialty firms that make up the program management team and

may be introduced on a **consulting basis** to meet **specific** program needs.

Program management team

- ❑ **Supplementing** the **core team** with part-time professionals helps to keep the **core team** small and efficient.
 - ❖ A staff of administrators, technical professionals, and managers normally supports the program also.
 - ✓ **This staff** is responsible for **supporting** the initial program management team for such tasks as
 1. Information systems,
 2. Logistics support, and
 3. Production of the program management plan.

Program management team

- ☐ The **role** and **authority** vested in the PgM by the owner should be agreed upon at the **onset of the work**.
- ☐ An organization chart and task descriptions should be
 1. **Drafted** and agreed upon together with the owner, along with
 2. A **decision matrix** showing
 - i. How specific recommendations will be formulated and
 - ii. Who will make final decisions.

Program management team

❑ A **program** is **not only measured** by the technical success of the constructed facilities

but also by the proper budget, schedule, and document control.

❑ The **project controls team** is an **essential component** of the program management team and should be **established** during the planning phase.

❖ **Key personnel** on this team include

- ✓ cost control engineers,
- ✓ schedulers,
- ✓ estimators,
- ✓ programmers, and
- ✓ administrators

who assist the PgM in developing the overall scope, cost, and schedule of the program.

Program management team

- ☐ The **project controls team** also defines the means and methods of communication and documentation, **ensuring** that
 1. Processes are in place and
 2. Standards are set for managing the information flow of the project.
- ☐ **Early establishment** of good project controls will enable managers to identify, assess, and manage program trends effectively.

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بخشنامه
شرح خدمات همسان مدیریت طرح

شماره ۹۲/۲۴۱۳۹
تاریخ ۱۳۹۲/۰۳/۲۵

بخشنامه شرح خدمات همسان مدیریت طرح سال ۱۳۹۲



بسمه تعالی

سازمان برنامه ریزی و نظارت راهبردی رئیس جمهور

شماره:	۹۲/۳۴۱۳۹
تاریخ:	۱۳۹۲/۰۳/۲۵
موضوع: شرح خدمات همسان مدیریت طرح	
به استناد ماده (۲۳) قانون برنامه و بودجه و ماده (۶) آیین نامه استانداردهای اجرایی طرحهای عمرانی - مصوب سال ۱۳۵۲ و در چارچوب نظام فنی و اجرایی کشور (موضوع تصویب نامه شماره ۴۲۳۳۹/ت/۳۳۴۹۷-هـ مورخ ۱۳۸۵/۴/۲۰ هیأت محترم وزیران)، همچنین جزء (۳) بند «ت» ماده (۳) آیین نامه خرید خدمات مشاوره (موضوع تصویب نامه شماره ۱۹۳۵۴۲/ت/۴۲۹۸۶-ک مورخ ۱۳۸۸/۱۰/۱ کمیسیون اصل ۱۳۸ قانون اساسی) موضوع بند «ه» ماده (۲۹) قانون برگزاری مناقصات، به پیوست «شرح خدمات همسان مدیریت طرح» از نوع گروه سوم ابلاغ می شود. دستگاههای اجرایی می توانند با استفاده از این دستورالعمل، شرح تفصیلی خدمات را تهیه یا در ابتدا به عنوان یک امتیاز فنی از مشاوران (واحدهای خدمات مدیریت طرح) درخواست نموده و سپس شرح تفصیلی خدمات تلقی شده خود را به همراه سایر اسناد درخواست پیشنهاد (RFP) به منظور استعلام قیمت از مشاوران (واحدهای خدمات مدیریت طرح)، به آنها ابلاغ کنند. دستورالعمل ۱۰۱/۱۹۴۸۵۹ مورخ ۱۳۸۲/۱۰/۲۱، موضوع دستورالعمل انتخاب و ارجاع کار به واحدهای خدمات مدیریت طرح، کماکان به قوت خود باقی است. این دستورالعمل جایگزین بخشنامه شماره ۵۴/۲۹۸۳-۵۴-۸۰-۷۵-۱۰۵ مورخ ۱۳۸۰/۶/۱۳، موضوع شرح عمومی خدمات مدیریت طرح برای تهیه و اجرای طرحهای غیر صنعتی، می شود.	

بهرز مرادی

بخشنامه
شرح خدمات همسان مدیریت طرح

شماره ۱۴۰۱/۵۴۱۳۷۱

تاریخ ۱۴۰۱/۱۰/۰۵

ضوابط ارایه خدمات مدیریت طرح سال ۱۴۰۱

 سازمان برنامه و بودجه کشور رئیس سازمان	
شماره: ۱۴۰۱/۵۴۱۳۷۱ تاریخ: ۱۴۰۱/۱۰/۰۵	بخشنامه به دستگاه های اجرایی، مهندسان مشاور و پیمانکاران
موضوع: ضوابط ارایه خدمات مدیریت طرح	
۱۳۸۳/۴/۲۳ و اصلاحیه های بعدی آن در تخصص مربوط به منظور ارایه خدمات مدیریت طرح در خصوص قراردادهایی که امکان تفکیک عملیات میسر نباشد (به تشخیص دستگاه اجرایی) الزامی نیست. ۶- شرح خدمات عمومی خدمات مدیریت طرح برای اجرای طرح های غیر صنعتی، به شرح پیوست این دستورالعمل خواهد بود. دستگاه های اجرایی می توانند با استفاده از این پیوست، شرح تفصیلی خدمات را تهیه یا در ابتدا به عنوان یک امتیاز فنی از مشاوران (واحدهای خدمات مدیریت طرح) درخواست نموده و سپس شرح تفصیلی خدمات تلفیق شده خود را به همراه سایر اسناد درخواست پیشنهاد (RFP)، به منظور استعلام قیمت از مشاوران (واحدهای خدمات مدیریت طرح)، به آنها ابلاغ کنند. این دستورالعمل جایگزین بخشنامه شماره ۹۵/۸۶۰۳۹۶ مورخ ۹۵/۹/۲ موضوع «شرح عمومی خدمات مدیریت طرح در صنعت احداث (برای اجرای طرح های غیر صنعتی)» و دستورالعمل شماره ۱۰۱/۱۹۴۸۵۹ مورخ ۱۳۸۳/۱۰/۲۱ موضوع «انتخاب و ارجاع کار به واحدهای خدمات مدیریت طرح» خواهد بود. سید مسعود میر کاظمی	

شماره ۴۷۶۱۱۳۵

صفحه ۱ از ۱

 سازمان برنامه و بودجه کشور رئیس سازمان	
شماره: ۱۴۰۱/۵۴۱۳۷۱ تاریخ: ۱۴۰۱/۱۰/۰۵	بخشنامه به دستگاه های اجرایی، مهندسان مشاور و پیمانکاران
موضوع: ضوابط ارایه خدمات مدیریت طرح	
در چارچوب ماده (۳۴) قانون احکام دائمی برنامه های توسعه کشور، موضوع نظام فنی و اجرایی یکپارچه، ماده (۲۳) قانون برنامه و بودجه و همچنین جزء (۳) بند «ت» ماده (۳) آئین نامه خرید خدمات مشاوره (تصویب نامه شماره ۱۹۳۵۴۲/ت/۴۲۹۸۶/ک مورخ ۱۳۸۸/۱۰/۱ هیات محترم وزیران)، ضوابط مربوط به ارائه خدمات مدیریت طرح به شرح زیر ابلاغ می شود تا پس از سه ماه از تاریخ ابلاغ به مورد اجرا گذاشته شود: ۱- موافقتنامه و شرایط عمومی همسان قراردادهای خدمات مدیریت طرح، بر اساس دستورالعمل شماره ۱۰۵-۲۳۵-۵۴/۲۰۱ مورخ ۱۳۸۰/۱/۲۸ تنظیم می شود. ۲- شرکتهای دارای گواهینامه مشاوره یا احراز صلاحیت فنی شده در پایه های (۱) یا (۲) در یکی از تخصصهای مندرج در آیین نامه تشخیص صلاحیت مشاوران منصوب هیات محترم وزیران به شماره ۲۰۶۳۷/ت/۲۸۴۳۷ مورخ ۱۳۸۳/۴/۲۳ و اصلاحیه های بعدی، در صورتیکه متقاضی ارایه خدمات مدیریت طرح در تخصص متناظر باشند، لازم است درخواست مکتوب خود را به امور نظام فنی اجرایی، مشاورین و پیمانکاران اعلام نمایند تا امکان ارایه خدمات مدیریت طرح در تخصص مورد تقاضا در گواهینامه مشاوره آنان صادر و همچنین در سامانه اطلاعات عوامل نظام فنی و اجرایی کشور (ساجار) اعلام گردد. ۳- گواهینامه های خدمات مدیریت طرح که قبل از تاریخ این بخشنامه صادر گردیده، به شرط دارا بودن پایه (۱) یا (۲) تخصص مرتبط، به منزله امکان ارایه خدمات مدیریت طرح بوده و شامل بند (۳) این بخشنامه نمی شوند. ۴- به ظرفیت کاری شرکتهای دارای گواهینامه مشاوره که امکان ارایه خدمات مدیریت طرح دارند یک ظرفیت کاری در تخصص مرتبط اضافه می شود. استفاده از ظرفیت کاری اضافه شده، برای ارایه خدمات مشاوره امکان پذیر نبوده لیکن استفاده از تمام تعداد ظرفیت مشاوره در تخصص مرتبط به منظور ارایه خدمات مدیریت طرح مجاز می باشد. ۵- شرکتهای مشاور که امکان ارایه خدمات مدیریت طرح دارند می توانند تا سقف حداکثر حق الزحمه مناسب آن تخصص در پایه یک نسبت به انعقاد قرارداد اقدام نمایند لیکن رعایت مبلغ حداکثر حق الزحمه مناسب در پایه یک (موضوع جدول شماره (۹) آیین نامه تشخیص صلاحیت مشاوران منصوب هیات محترم وزیران به شماره ۲۰۶۳۷/ت/۲۸۴۳۷ مورخ ۱۳۸۳/۴/۲۳)	

شماره ۴۷۶۱۱۳۵

صفحه ۱ از ۱

Partnering

- ❑ **Partnering relationships** have been in **existence** for many years and cover a broad range of corporate arrangements.
 - ❖ Such relationships, however, are **relatively recent** developments in the construction industry.
- ❑ The **Construction Industry Institute (CII) Partnering Task Force** defined partnering as follows:

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- ❑ “Partnering is a **long-term commitment** between two or more organizations for the purpose of achieving specific business objectives by **maximizing** the **effectiveness** of each participant’s resources.
- ❖ The relationship is based upon trust, dedication to common goals, and an understanding of **each other’s individual** expectations and values.
 - ✓ **Expected benefits** include
 1. Improved efficiency and cost-effectiveness,
 2. Increased opportunity for innovation, and
 3. The continuous improvement of quality products and services.”

- ❑ **Partnering** is a process that attempts to establish **improved working relationships** among project participants who are often described as **stakeholders**.
- ❖ It does **not** establish a legal relationship, **nor** does it **change** any contractual obligations.
 - ❖ **Partnering** is **not applicable** to all relationships and is **not** a cure-all guaranteeing that a project will be **trouble-free**.

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Partnering

حرفه مدیریت ساخت (بر اساس سند مهمی از CMAA)
بخش ششم: خدمات مدیریت پروژه و طرح توسط مدیر ساخت

- ❑ The AGC publication **Partnering: A Concept for Success** lists seven key elements of partnering.

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- 1. Commitment.** Partnering must have a commitment from the **top management** of **all the participants**. Without such a commitment, a partnering process cannot succeed.
- 2. Equity.** All the **parties** (stakeholders) have to be considered in establishing **mutual goals**.
- 3. Trust.** Through the development of personal relationships and communication, **better understanding** between the stakeholders can be achieved. The **understanding** leads to **trust**.
- 4. Development of Mutual Goals/Objectives.** At the **partnering workshop**, which is held following a top management commitment, **stakeholders** identify respective goals. This enables the stakeholders to **ascertain** which interests are overlapping and have commonality.

5. Implementation. During the **workshop**, the stakeholders, working together, develop strategies for implementing mutual goals.

6. Continuous Evaluation. Following the **initial workshop**, a **plan** for periodic joint evaluation of the **mutually agreed** goals is established.

7. Timely Responsiveness. In the workshop, the stakeholders develop **mechanisms** for encouraging rapid issue resolution and establish **lines of communication** for timely decision-making.

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Why use partnering?

- ❑ This is an investment for the future. **AGC** cites the **following benefits** to the stakeholders:

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Why use partnering?

1. Benefits to the Owner

- ❖ Reduced exposure to litigation in favor of open communication and issue resolution strategies.
- ❖ Lower risk of cost overruns and delays because of better time and cost control.
- ❖ Better quality because energies are focused on the goal and not misdirected to adversarial concerns.
- ❖ Potential to expedite construction through efficient implementation of the contract.

Why use partnering?

1. Benefits to the Owner

- ❖ Open communication and unfiltered information to allow for a more efficient resolution of problems.
- ❖ Lower administrative costs because of the elimination of defensive case building.
- ❖ Increased opportunity for innovation through open communication and element of trust, especially in the development of VE changes and constructibility improvements.
- ❖ Increased opportunity for a financially successful project because of a non-adversarial “win/win” attitude.

Why use partnering?

2. Benefits to the Contractor

- ❖ Reduced exposure to litigation in favor of communication and issue resolution strategies.
- ❖ Increased productivity because of the elimination of defensive case building.
- ❖ Expedited decision-making with issue resolution strategies.
- ❖ Better time and cost control over the project.
- ❖ Lower risk of cost overruns and delays because of better collective time and cost control.
- ❖ Increased opportunity for a financially successful project because of a non-adversarial “win/win” attitude.

Why use partnering?

3. Benefits to the Designer and Consultants

- ❖ Reduced exposure to litigation in favor of communication and issue resolution strategies.
- ❖ Minimized exposure to liability and cost impacts for document deficiency through early identification of oblems, continuous evaluation, and cooperative, prompt resolution.
- ❖ Enhanced role in the decision-making process as an active team member in providing an interpretation of design intent and solutions to problems.
- ❖ Reduced administrative costs because of the elimination of defensive case building and avoidance of claim administration and defense costs.
- ❖ Increased opportunity for a financially successful project because of a non-adversarial “win/win” attitude.

Why use partnering?

4. Benefits to the Subcontractors and Suppliers

- ❖ Reduced exposure to litigation in favor of communication and issue resolution strategies.
- ❖ Equity involvement in a project increases the opportunities for innovation and implementation of VE in the work.
- ❖ Potential to improve cash flow due to fewer disputes and withheld payments.
- ❖ Improved decision-making avoids costly claims and saves time and money.
- ❖ Enhanced role in the decision-making process as an active team member.
- ❖ Increased opportunity for a financially successful project because of a non-adversarial “win/win” attitude.

The partnering process

☐ Teams are made, not born.

- ❖ In almost every instance, developing a **superior functioning** project team requires a **formal team-building program**.
- ❖ The process starts with **education**.
 - ✓ Each of the parties needs to **educate** its own organization.

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The partnering process

❑ Partnering is voluntary.

- ❖ Because of its voluntary nature, partnering can be **initiated** by **any of the parties** **without** having partnering included in the bid documents.
 - ✓ However, if the **owner wishes** to encourage partnering, **provisions** can be included in the contract documents or bidding information that **describes** the process and the workshop.
- ❖ If a **partnering program** is to be implemented,
 1. **Costs** can be shared or
 2. An **allowance** for program costs may be included in the **bid price**.

The partnering process

❑ There are several approaches to the structuring of the partnering workshop.

- ❖ This is influenced by the size of the project, availability of parties, and budgetary considerations.
- ❖ The **workshop** should be held at the **earliest possible time** at a neutral site.
- ❖ The **players** involved from **each one** of the stakeholders are
 1. Those who will be involved in the contract performance and
 2. Those with decision-making authority.
- ❖ **Individuals participating** will include executives, project managers, superintendents, architects, engineers, construction superintendents, and foremen.

The partnering process

❑ In certain situations, prior to the workshop, interviews are held with some field representatives (the superintendent, the resident engineer, designer) at the job site.

- ❖ The **interviews** are conducted by the workshop leader(s) to **identify** objectives, goals, issues, and prior relationships of the project participants.
- ❖ The **information obtained** at these interviews is **confidential** but is **used** during the workshop, which is **held** shortly **after** the initial interviews.

The partnering process

☐ A workshop can be structured over one or two days.

- ❖ If **only for one day**, the preliminary interviews are essential.
- ❖ Although an **outside facilitator** is normally used as the **workshop leader**, it is **not essential**.
 - ✓ The **designated leaders** from the project organizations can **share** the **duties** of conducting the workshop.

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The partnering process

- ❑ A neutral facilitator can play a meaningful role in structuring the workshop agenda and providing training for the workshop participants.
 - ❖ The **objective** is to develop a partnering charter at the **conclusion** of the workshop.
 - ❖ This is **not** a contract or agreement but is a **definition of mutually** developed **objectives** of the stakeholders.
 - ❖ The **charter** addresses the commitment of **each one** of the stakeholders to the project.
 - ❖ The culmination of the workshop is the **signing of the charter**; it must be recognized that this is a **‘ceremonial’ function**, **not** the signing of a **new agreement**.
 - ❖ All the common objectives developed in the workshop must be **consistent** with the **contract commitments** of each of the parties.

The partnering process

❑ As important as the partnering workshop is, follow-up or evaluation of the project's status must be continuous during project execution.

❖ It is essential that the **relationships** and **attitudes** developed in the workshop are **not lost**.

- ✓ For this reason, there must be periodic reviews, so the benefits of the workshop are not lost.
- ✓ On many projects, periodic partnering meetings are held.
- ✓ These meetings can include working sessions to **resolve outstanding issues** that have **arisen** since the last meeting where the **input of multiple** participants from each party can be **helpful**.
- ✓ The meetings can also include less formal reinforcement of the working relationships **established initially** through social activities or non-confrontational discussions of how communications can be improved on the project.

موسسه مهندسی و مدیریت ساخت علوی پور (ACEMI)

دفتر آموزش



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