Healthcare Facilities Management

Module 2: Planning, Design & Construction
Student Workbook
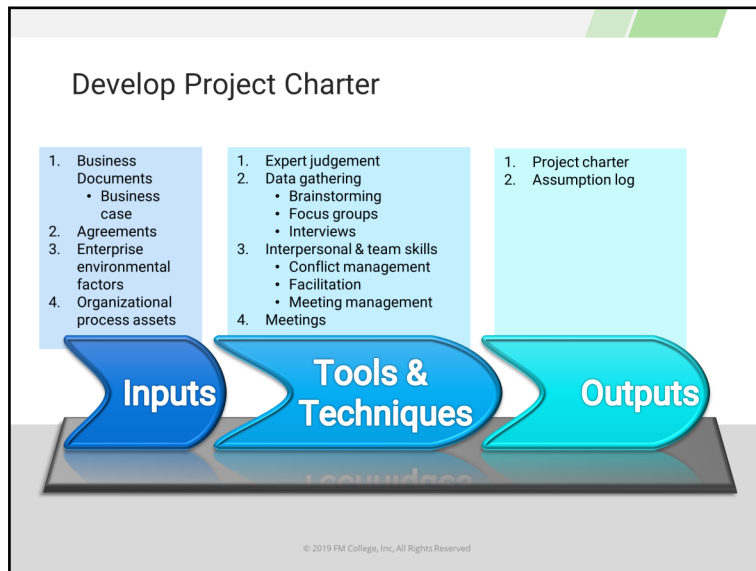

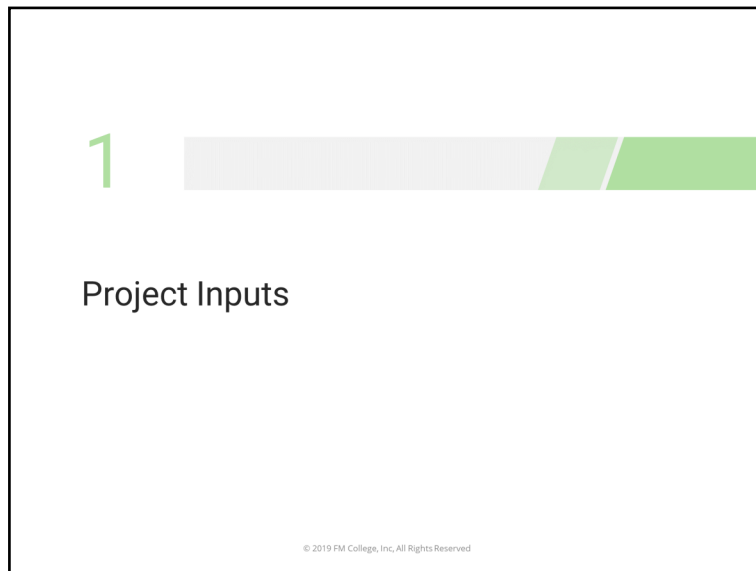Lesson 5 ~ P D & C 2

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PLANNING, DESIGN & CONSTRUCTION

2

MODULE 03-E

STARTING PROJECTS

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Develop Project Charter

Inputs

1. Business Documents
   - Business case
2. Agreements
3. Enterprise environmental factors
4. Organizational process assets

Tools & Techniques

1. Expert judgement
2. Data gathering
   - Brainstorming
   - Focus groups
   - Interviews
3. Interpersonal & team skills
   - Conflict management
   - Facilitation
   - Meeting management
4. Meetings

Outputs

1. Project charter
2. Assumption log

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1

Project Inputs

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Business Case

From Strategic/Tactical Planning
- Market demand
- Organizational need
- Customer request
- Technological advance
- Legal requirement
- Ecological impacts
- Social need

Agreements

Relevant documents
- Contracts
- Memorandums of understanding (MOUs)
- Service level agreements (SLA)
- Letters of agreement
- Letters of intent
- Verbal agreements
- Email
- Other written agreements

Enterprise Environmental Factors

Factors that can influence
- ➤ Government or industry standards
- ➤ Legal & regulatory
- ➤ Marketplace conditions
- ➤ Organizational culture and political climate
- ➤ Organizational governance framework
- ➤ Stakeholders expectations & risk thresholds

Organizational Process Assets

Assets that can influence
- ➤ Organizational policies, processes & procedures
- ➤ Portfolio, program & project governance framework
- ➤ Monitoring & reporting methods
- ➤ Templates, etc. (i.e. Project Charter)
- ➤ Historical information and lessons learned

2

Tools & Techniques

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Expert Judgement

Expertise, specialized knowledge and/or training
➤ Organizational strategy
➤ Benefits management
➤ Technical knowledge of industry/focus area
➤ Schedule & budget estimation
➤ Risk identification

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Data Gathering

Techniques (examples)
- Brainstorming
- Focus groups
- Interviews

Interpersonal & Team Skills

Skills examples
- Conflict management
- Facilitation
- Meeting management

Meetings

Held with key stakeholders
- ➤ Project objectives
- ➤ Success criteria
- ➤ Key deliverables
- ➤ High-level requirements
- ➤ Summary milestones
- ➤ Other information

3

Outputs

Project Charter

- ➤ Project purpose
- ➤ Measurable project objectives & success criteria
- ➤ High-level requirements
- ➤ High-level project description, boundaries, and key deliverables
- ➤ Overall project risk
- ➤ Summary milestone schedule
- ➤ Preapproved financial resources
- ➤ Key stakeholder list
- ➤ Project approval requirements (success, who decides & who approves)
- ➤ Project exit criteria
- ➤ Assigned PM. Responsibility & authority
- ➤ Sponsor authorizing charter

Assumption log

Log will be initiated here, but maintained throughout the project:

- ➤ High level strategic and operational assumptions and constraints from business case
- ➤ Lower level activity and task assumptions and constraintsgenerated throughout the project
  - • Technical specifications
  - • Estimates
  - • Risks
  - • Etc.
- ➤ All other known assumptions and constraints

MODULE 03-F

ORGANIZING & PREPARING PROJECTS

Enter a brief description of the module. Describe the topic of the module and
what learners should pay special attention to.
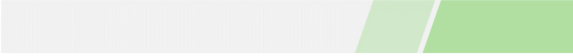
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Develop Project Management Plan

Inputs	Tools & Techniques	Outputs
1. Project Charter 2. Outputs from other processes 3. Enterprise environmental factors 4. Organizational process assets	1. Expert judgement 2. Data gathering • Brainstorming • Checklists • Focus groups • Interviews 3. Interpersonal & team skills • Conflict management • Facilitation • Meeting management 4. Meetings	1. Project management plan

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1

Inputs

Project Charter

Used as a starting point for initial project planning
- Type and amount of information varies depending on complexity and known conditions when it was created.
- At a minimum, contains high-level information that needs elaboration in the project plan

---

Outputs from other processes

Other processes (concurrent?) that may be inputs
- Scope
- Schedule
- Cost
- Quality
- Resources
- Communications
- Risk
- Procurement
- Stakeholder

Note the "iterative" nature of this process

Enterprise Environmental Factors

Factors that can influence
- Government or industry standards
- Legal & regulatory
- Project management body of knowledge for vertical market/focus area
- Marketplace conditions
- Organizational structure, culture, management practices and sustainability
- Organizational governance framework
- Infrastructure (existing facilities and capital equipment)

Organizational Process Assets

Assets that can influence
- Organizational policies, processes & procedures
- Project management plan template
  - Guidelines and criteria for tailoring standard processes
  - Project closure guidelines/requirements
- Change control procedures
  - How modifications to policies, standards, etc. will occur
- Monitoring & reporting methods (risk, communication, etc.)
- Project information from previous similar projects
- Historical information and lessons learned repository

2

Tools & Techniques

Expert Judgement

Expertise, specialized knowledge and/or training
- ➢ Tailoring the PM process to meet the project needs
- ➢ Development of additional components of PM plan if needed
- ➢ Determining tools and techniques
- ➢ Developing technical and management details
- ➢ Determining resources and skill levels needed
- ➢ Determining level of configuration management
- ➢ Determining which project documents will be subject to the formal change control process
- ➢ Work and resource prioritization

Data Gathering

Techniques (examples)
- ➢ Brainstorming
- ➢ Checklists
- ➢ Focus groups
- ➢ Interviews

Interpersonal & Team Skills

Skills examples
- ➤ Conflict management
- ➤ Facilitation
- ➤ Meeting management

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Meetings

Held with key project team members (and stakeholders)
- ➤ Project approach
- ➤ How work will be executed
- ➤ How project work will be monitored and controlled

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Kick-off meetings

Kick-off Meeting (end of planning/start of execution)
- ➢ Communicate project objectives
- ➢ Gain team commitment
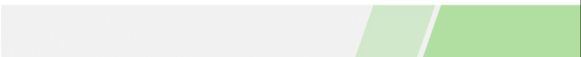- ➢ Explain roles & responsibilities

Small project – one team for planning and execution

Large Projects – PM Team does majority of planning. Rest of team brought on afterwards

Multiphase projects typically have a kick-off meeting at the beginning of each phase.

3

Outputs

Project Management Plan

Subsidiary management plans:
- Scope
- Requirements
- Schedule
- Cost
- Quality
- Resources
- Communications
- Risk
- Procurement
- Stakeholder engagement

Project Management Plan

Baselines:
- Scope
- Schedule
- Cost

Additional components:
- Change
- Configuration
- Performance measurement
- Project life cycle
- Development approach
- Management reviews

Project Management Plan & Project Documents

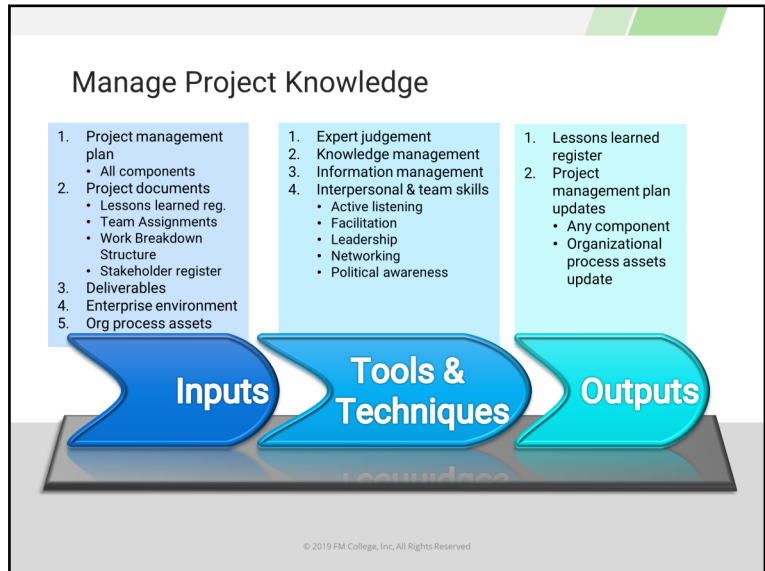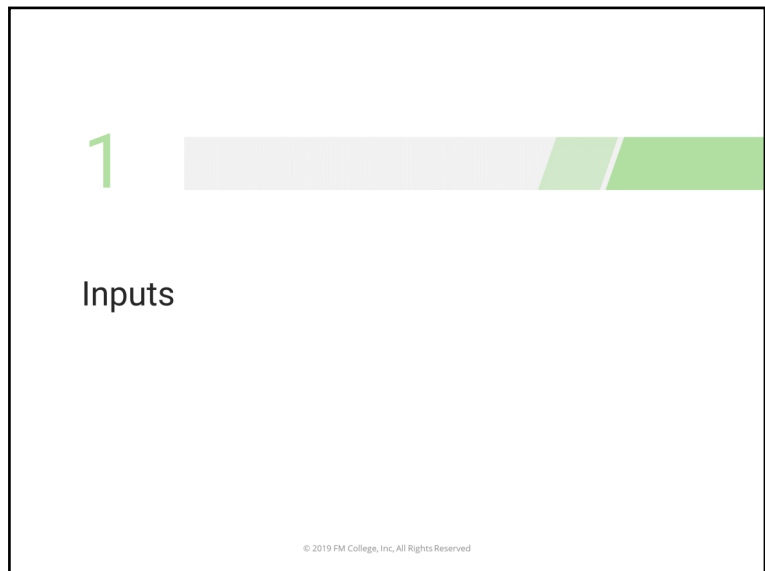| Project Management Plan	Project Documents	
1. Scope management plan	1. Activity attributes	20. Quality metrics
2. Requirements management plan	2. Activity list	21. Quality report
3. Schedule management plan	3. Assumption log	22. Requirements documentation
4. Cost management plan	4. Basis of estimates	23. Requirements traceability matrix
5. Quality management plan	5. Change log	24. Resource breakdown structure
6. Resource management plan	6. Cost estimates	25. Resource calendars
7. Communications management plan	7. Cost forecasts	26. Resource requirements
8. Risk management plan	8. Duration estimates	27. Risk register
9. Procurement management plan	9. Issue log	28. Risk report
10. Stakeholder engagement plan	10. Lessons learned register	29. Schedule data
11. Change management plan	11. Milestone list	30. Schedule forecasts
12. Configuration management plan	12. Physical resource assignments	31. Stakeholder register
13. Scope baseline	13. Project calendars	32. Team charter
14. Schedule baseline	14. Project communications	33. Test and evaluation documents
15. Cost baseline	15. Project schedule	
16. Performance measurement baseline	16. Project schedule network diagram	
17. Project life cycle description	17. Project scope statement	
18. Development approach	18. Project team assignments	
19. Management reviews	19. Quality control measurements	

Source: PMBOK 6th Edition

Project Management Plan

Manage Project Knowledge

Inputs
1. Project management plan
   - All components
2. Project documents
   - Lessons learned reg.
   - Team Assignments
   - Work Breakdown Structure
   - Stakeholder register
3. Deliverables
4. Enterprise environment
5. Org process assets

Tools & Techniques
1. Expert judgement
2. Knowledge management
3. Information management
4. Interpersonal & team skills
   - Active listening
   - Facilitation
   - Leadership
   - Networking
   - Political awareness

Outputs
1. Lessons learned register
2. Project management plan updates
   - Any component
   - Organizational process assets update

1

Inputs

Project Management Plan

Knowledge management:

➢ Scope
➢ Requirements
➢ Schedule
➢ Cost
➢ Quality
➢ Resources
➢ Communications
➢ Risk
➢ Procurement
➢ Stakeholder engagement

Project documents

Lessons learned register
➢ Category & description of situation
➢ Impact, recommendations & proposed actions
➢ Challenges, problems, realized risks, opportunities, etc.
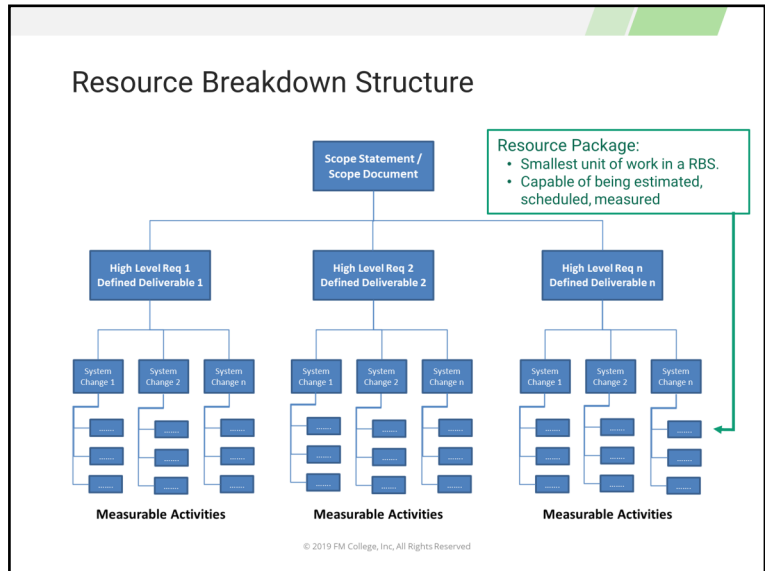
Project team assignments
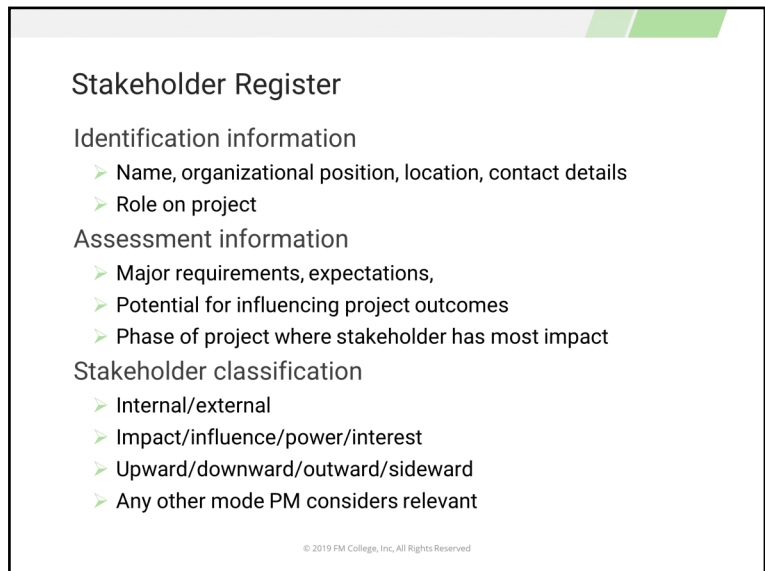➢ Team members, roles & responsibilities
➢ Directory? Org Chart?

Resource Breakdown Structure
➢ Hierarchical Representation of resources by category and type
➢ Labor, material, equipment, supplies, etc.

Stakeholder register

Resource Breakdown Structure

Scope Statement /
Scope Document

Resource Package:
- Smallest unit of work in a RBS.
- Capable of being estimated, scheduled, measured

High Level Req 1
Defined Deliverable 1

High Level Req 2
Defined Deliverable 2

High Level Req n
Defined Deliverable n

System Change 1 | System Change 2 | System Change n

System Change 1 | System Change 2 | System Change n

System Change 1 | System Change 2 | System Change n

Measurable Activities   **Measurable Activities**   **Measurable Activities**

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Stakeholder Register

Identification information
- ➤ Name, organizational position, location, contact details
- ➤ Role on project

Assessment information
- ➤ Major requirements, expectations,
- ➤ Potential for influencing project outcomes
- ➤ Phase of project where stakeholder has most impact

Stakeholder classification
- ➤ Internal/external
- ➤ Impact/influence/power/interest
- ➤ Upward/downward/outward/sideward
- ➤ Any other mode PM considers relevant

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Deliverables

Any unique and verifiable
- ➢ Product
- ➢ Result
- ➢ Capability

Required to complete a process, phase or project

Typically tangible components completed to meet project objectives
- ➢ Can include components of PM plan

Enterprise Environmental Factors

Organizational, stakeholder and customer culture
Geographic distribution of facilities or resources
Organizational knowledge experts
Legal and regulatory requirements and/or constraints

Organizational Process Assets

Organizational standard policies, processes and procedures

Personnel administration

Organizational communication requirements

Formal knowledge-sharing and information-sharing procedures

2

Tools & Techniques

Expert judgement

Individuals or groups with specialized knowledge or training
- ➢ Knowledge management
- ➢ Information management
- ➢ Organizational learning
- ➢ Knowledge and information management tools
- ➢ Relevant information from other projects

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Knowledge management

Tools and techniques
- ➢ Networking
- ➢ Communities of practice and special interest rooms
- ➢ Meetings including virtual meetings
- ➢ Work shadowing and reverse shadowing
- ➢ Discussion forums such as focus groups
- ➢ Knowledge sharing events such as seminars and conferences
- ➢ Workshops including problem-solving sessions
- ➢ Storytelling
- ➢ Creativity and ideas management techniques
- ➢ Training that involves interaction between learners

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Information management

Tools and techniques used create and connect people to information

- ➤ Methods for codifying explicit knowledge
- ➤ Lessons learned register
- ➤ Library services
- ➤ Information gathering, for example, web searches and reading published articles
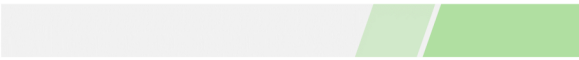- ➤ Project management information system (PMIS)

Interpersonal & team skills

- ➤ Active listening
- ➤ Facilitation
- ➤ Leadership
- ➤ Networking
- ➤ Political awareness

3

Outputs

Lessons learned register

➢ Category and description of the situation
➢ Impact, recommendations, and proposed actions associated with the situation
➢ Challenges
➢ Problems
➢ Realized risks and opportunities
➢ Other content is appropriate

Project management plan updates

Any change to the project management plan goes through the organization's change control process via a change request

Any component of the project management plan may be updated as a result of this process

---

Organizational process assets updates

All projects create new knowledge. Some of this knowledge is:
- Codified
- Embedded in deliverables
- Embedded in improvements to processes and procedures

Existing knowledge can also be codified or for the first time as a result of this process

Special Session: Schedule & Cost Control (NIB) Follows, (time permitting)

4

Schedule & Cost Control

Special Addition (Not in Student WorkBook)

Coordinate new project design/construction activities

Architects and engineers (e.g., design development plans)

Authorities having jurisdiction (AHJ)

General contracts and subcontractors

➢ Working with contractors

Stakeholders

Develop/Review construction schedules

Work Breakdown Structure
Critical Path Method
Schedule Review/Charting

Project Resources: Planning/Scheduling

Critical Path Method (CPM)

➢ Use WBS/task list to arrange tasks in order of precedence. Estimate duration.

➢ Use forward pass scheduling to determine early start (ES) and early finish (EF) for each task in succession. Each task's ES is the preceding task's EF.

➢ Use backward pass scheduling to complete the schedule. Start at the last task's late finish (LF); subtract task duration to find the late start. Work backward task by task to a start date.
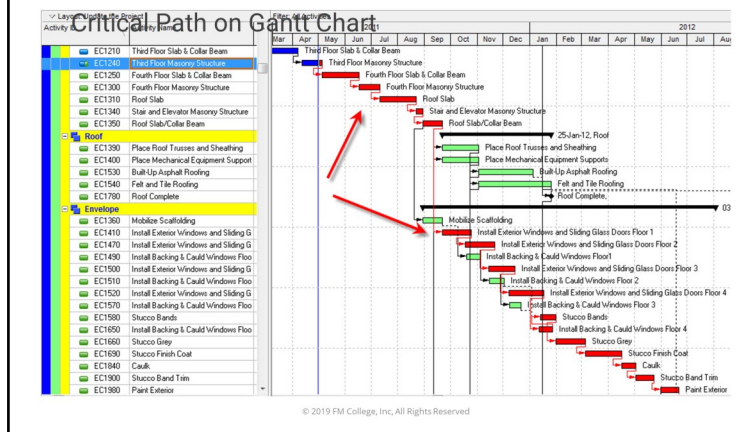

ES: Early start
LS: Late start
EF: Early finish
LF: Late finish
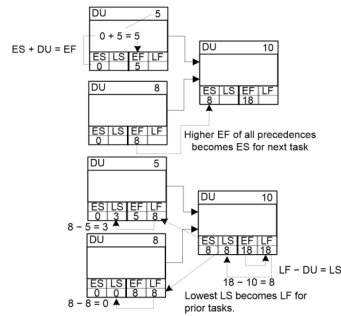
Project Resources: Planning/Scheduling

Critical Path on Gantt Chart

Projects: Cost Calculation

Elements of a Cost Estimate
  ➢ Quantity Takeoff
  ➢ Labor Hours
  ➢ Labor Rates
  ➢ Material Prices
  ➢ Equipment Costs
  ➢ Subcontractor Quotes
  ➢ Indirect Costs
  ➢ Profit Amount

Additional factors to be considered, perhaps outside of estimate:
  ➢ Soft Costs (may be indirect)
  ➢ Owner supplied equipment, etc
  ➢ Move-in costs
  ➢ Utilities
  ➢ permitting
  ➢ Contingency
  ➢ Risks

Projects: Earned Value

Earned Value Management measures progress against a baseline. It involves calculating three key values for each activity in the WBS:

➤ The Planned Value (PV), (formerly known as the budgeted cost of work scheduled or BCWS)—that portion of the approved cost estimate planned to be spent on the given activity during a given period.

➤ The Actual Cost (AC), (formerly known as the actual cost of work performed or ACWP)—the total of the costs incurred in accomplishing work on the activity in a given period. This Actual Cost must correspond to whatever was budgeted for the Planned Value and the Earned Value (e.g. all labor, material, equipment, and indirect costs).

➤ The Earned Value (EV), (formerly known as the budget cost of work performed or BCWP)—the value of the work actually completed.

These three values are combined to determine at that point in time whether or not work is being accomplished as planned.

The most commonly used measures are:

➤ Cost Variance (CV) = EV - AC

➤ Schedule Variance (SV) = EV - PV

➤ Note that contractor pay requests should not exceed the earned value (without documentation such as change-order)

Projects: Cost Control

Cost control is a process requiring continual and systematic cost management as well as monitoring to compare actual costs incurred against targeted budget line item numbers.

Key elements to controlling cost are:

➤ Managing change to occur in the beginning of the project as much as possible;

➤ A thorough understanding and thoughtful buyout of the scope of the project;

➤ Appropriate assignment of risk and managing risk transfer;

➤ Thorough and thoughtful planning for the execution of the work;

➤ Establishing expectations and holding team members accountable for their respective responsibilities and performance;

➤ Respecting roles and working together to solve issues as they arise.

THANK YOU