Construction Management:

Project Cost Management

Processes required to ensure that the project is completed within approved budget.

Major Processes:

1. **Resource Planning** – what resources and what quantities of each should be used to perform project activities
2. **Cost Estimating** – developing an approximation of the costs of the resources needed to complete project activities
3. **Cost Budgeting** – allocating the overall cost estimate to individual work items
4. **Cost Control** – controlling changes to the project budget

Construction Management:

Project Cost Management

- Primarily concerned with the cost of the resources needed to complete project activities
- Life-cycle costing
- Predicting and analyzing financial performance is done outside the project
- When included, cost management also include additional processes and numerous general management techniques i.e. return on investment, discounted cash flow, payback analysis and others

Construction Management:

Project Cost Management – ***Resource Planning***

- involves determining what physical resources (people, equipment, materials) and what quantities of each should be used to perform project activities

- A construction project team will need to be familiar with local building codes. Such knowledge is often readily available at virtually no cost by using local labor. However, if the local labor pool lacks experience with unusual or specialized construction techniques, the additional cost for a consultant might be the most effective way to secure knowledge of the local building codes.

Construction Management:

Project Cost Management – ***Resource Planning***

- Inputs

1. Work breakdown structure
2. Historical Information
3. Scope Statement
4. Resource pool description
5. Organizational Policies

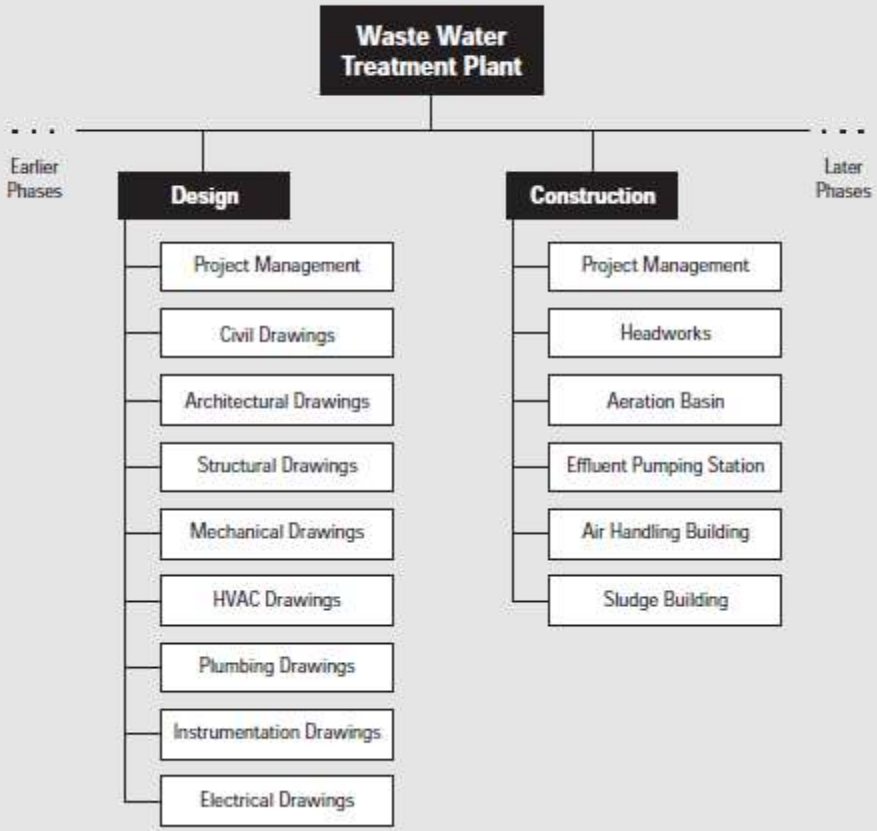
Construction Management:

Project Cost Management – ***Resource Planning***

- Inputs

Work breakdown structure

Figure 5–4. Sample Work Breakdown Structure for Waste Water Treatment Plant



Construction Management:

Project Cost Management – ***Resource Planning***

- Tools and Techniques

1. Expert judgment
   - Other units within the performing organization
   - Consultants
   - Professional & technical association
2. Alternatives identification

Construction Management:

- *Project Cost Management* – ***Resource Planning***

  Outputs

  1. Resource requirements – what types of resources are required and in what quantities for each element of the work break down structure

Construction Management:

Project Cost Management – ***Cost Estimating***

- includes identifying and considering various costing alternatives
- involves developing an assessment of the likely quantitative result- how much will it cost the performing organization to provide the product or service involved.

Difference between "Cost estimating" & "pricing"?

Construction Management:

Project Cost Management – ***Cost Estimating***

- Inputs

1. Work breakdown structure
2. Resource Requirements
3. Activity duration estimates
4. Historical Information
5. Chart of accounts

Construction Management:

Project Cost Management – ***Cost Estimating***

- Tools and Techniques

1. Analogous estimating – cost of previous similar project
2. Parametric modeling – parameter (quantifiable)
3. Bottom up estimating – estimating cost of individual items, then summarizing the total cost
4. Computerized tools – software, spreadsheet

Construction Management:

Project Cost Management – ***Cost Estimating***

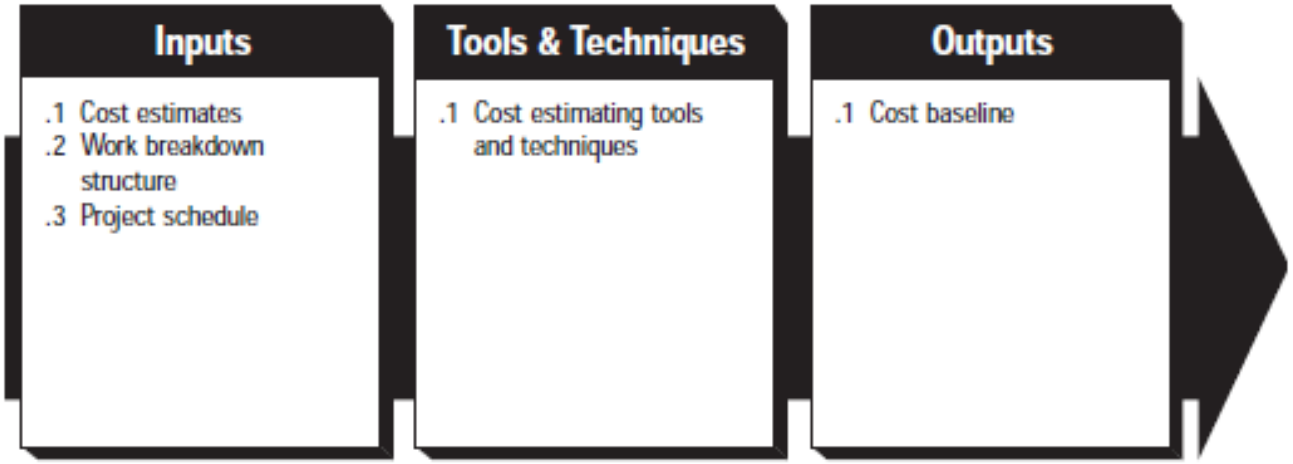
Outputs

1. Cost estimates – quantitative assessments of the resources required to complete project activities. For all resources. Expressed in units of currency (Staff hours/ staff days may be used)
2. Supporting details – A description of the scope of work estimated. Documentation of the basis for the estimate. Documentation of any assumption made
3. Cost management plan – how cost variances will be managed. Formal or informal, highly detailed or broadly framed

Construction Management:

Project Cost Management – ***Cost Budgeting***

- Allocating the overall cost estimates to individual work items in order to establish a cost baseline for measuring project performance



Construction Management:

Project Cost Management – ***Cost Budgeting***

- ***Inputs to Cost Budgeting***

1. Cost Estimates

2. Work breakdown structure – identifies the project elements that costs will be allocated to

3. Project Schedule – planned start and expected finish dates for the project elements that costs will allocated to. This information needed in order to assign costs to the time period when the cost will be incurred

Construction Management:

Project Cost Management – ***Cost Budgeting***

Tools and Techniques for Cost Budgeting

1. Cost Estimating tools and Techniques – the tools and techniques used for cost estimation are used to develop budgets for work items as well

Construction Management:

Project Cost Management – ***Cost Budgeting***

Outputs from Cost Budgeting

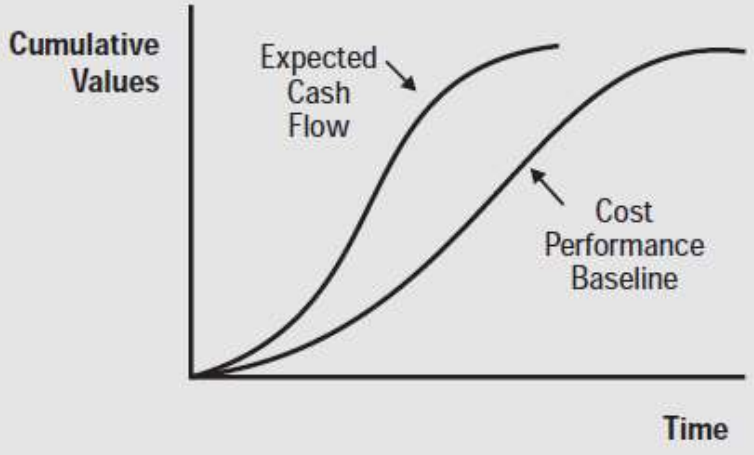
1. Cost baseline – it is a time-phased budget that will be used to measure and monitor cost performance on the project. Developed by summing estimated cost by period, displayed in the form of S-curve

Construction Management:

Project Cost Management – ***Cost Budgeting***

- Cost Baseline

Figure 7–2. Illustrative Cost Baseline Display



Construction Management:

Project Cost Management – ***Cost Control***

Concerned with

a) influencing the factors which create changes to the cost baseline to ensure the changes are beneficial
b) determining that the cost baseline has changed
c) managing the actual changes when and as the occur

Construction Management:

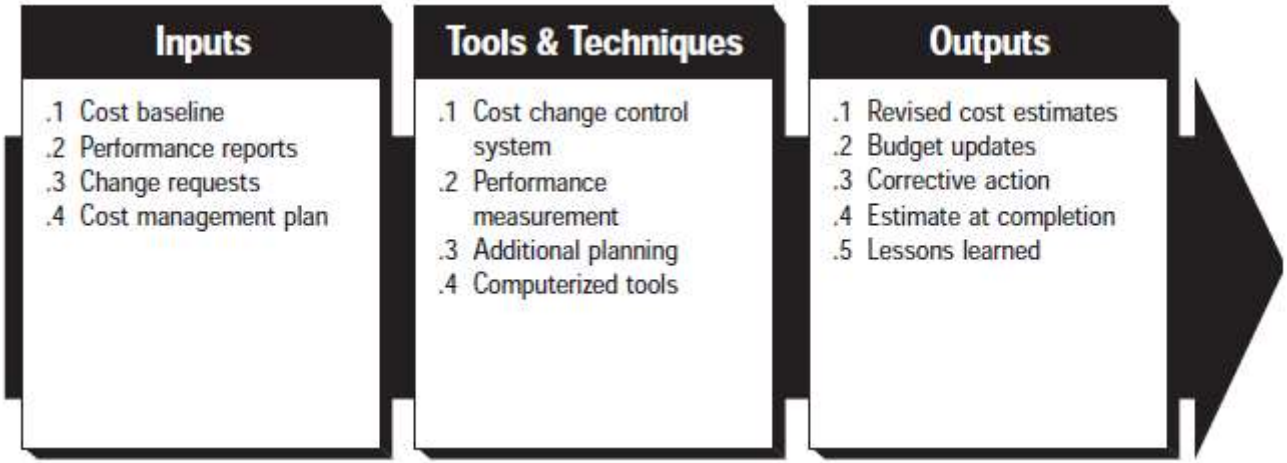
Project Cost Management – ***Cost Control***

Includes

1. Monitoring cost performance to detect variances from plan
2. Ensuring that all appropriate changes care recorded accurately in the cost baseline
3. Preventing incorrect, inappropriate or unauthorized changes from being included in the cost baseline
4. Informing appropriate stakeholders or authorized changes

Construction Management:

Project Cost Management – ***Cost Control***



- Searching out whys of both positive variances
- Must be thoroughly integrated with the other control processes (scope change control, schedule control, quality control)

Construction Management:

Project Cost Management – ***Cost Control***

Inputs to cost Control

1. *Cost baseline*

2. *Performance reports* – provide information such as which budgets have been met and which have not. Performance reports may also alert the project team to issue which may cause problem

3. *Change requests* – Changes may require increasing the budget or may allow decreasing it.

4. Cost management plan

Construction Management:

Project Cost Management – ***Cost Control***

Tools and techniques for cost Control

1. *Cost change control system* – it defines the procedure by which cost base the cost baseline may be changed. It included paperwork, tracking system and approval level necessary for authorizing change
2. *Performance measurement* – help to assess the magnitude of any variations which do occur
3. *Additional planning* – prospective changes may require new or revised cost estimates or analysis of alternative approaches.
4. Computerized tool – software and spreadsheets are often used to track planned costs vs. actual costs and to forecast the effect of cost changes

Construction Management:

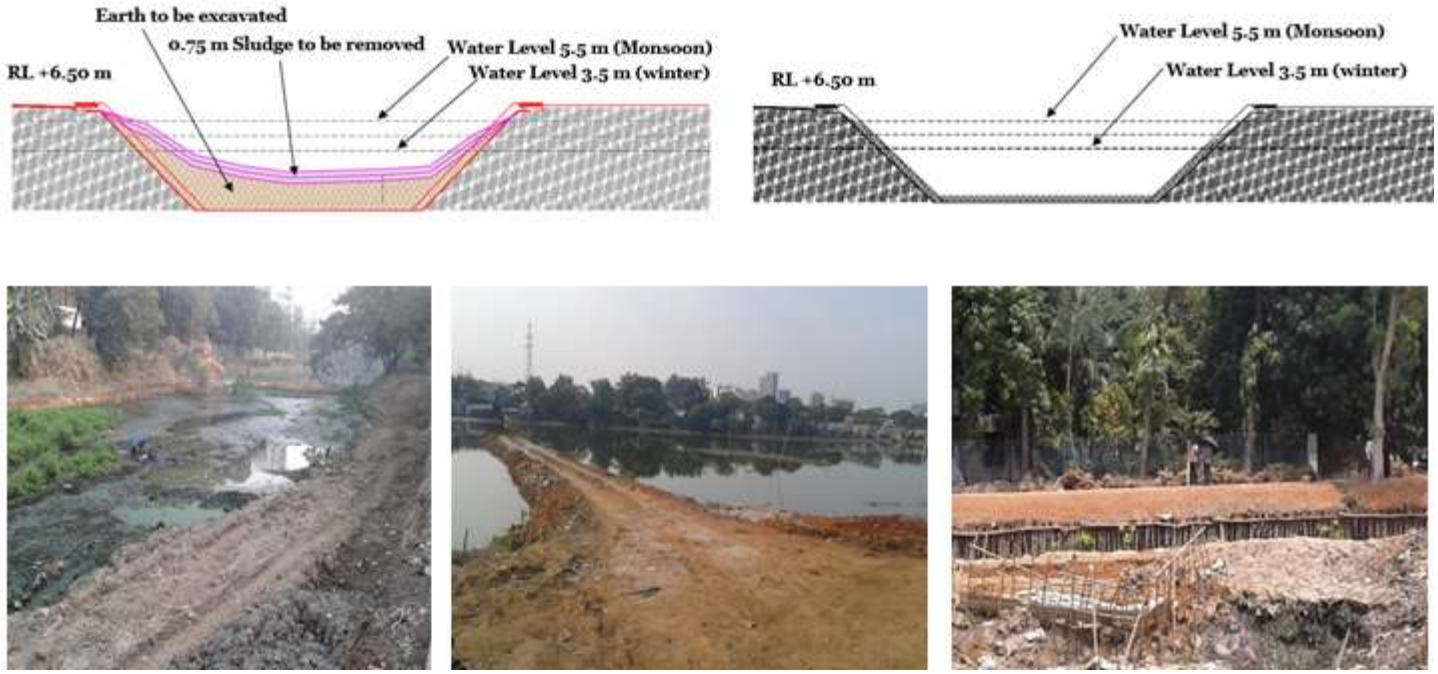
Cost Estimating – Case Study: A lake development project

1. Lake excavation
2. Sludge removal
3. Water quality improvement
4. Road network
5. Walkway
6. Public facilities

Construction Management:

Cost Estimating – Case Study: A lake development project

Lake excavation & Sludge removal



Construction Management:

Delays in construction:

1. Lack of commitment

Site accidents due to lack of
safety measures
Lack of motivation for contractor
(viz. incentive for early finish etc.)
Use of improper or obsolete construction
methods
Delay in material delivery by vendors

Construction Management:

Delays in construction:

2. Inefficient site management

Ambiguity in specifications and conflicting interpretation by parties
Poor labour productivity
Lack of control over sub contractor
Inadequate experience of contractor

Construction Management:

Delays in construction:

3. Poor Site condition

Non availability of drawing/design on time
Slow decision from owner
Unrealistic time schedule imposed in contract
Poor site management and supervision

Construction Management:

Delays in construction:

4. Improper planning

Extreme weather conditions
Lack of skilled operators for specialised equipments
Inefficient use of equipment
Poor coordination among parties
Delay in material procurement (by the contractor)

Construction Management:

Delays in construction:

5. Lack of clarity in project scope

Rework due to change of design or deviation order
Rework due to errors in execution
Frequent change of sub contractor
Increase in scope of work
Improper storage of materials leading to damage

Construction Management:

Delays in construction:

6. Lack of communication

Obtaining permissions from local authorities
Delay in approval of completed work by client (i.e. stage passing)
Consultant or Architect's reluctance for change

Construction Management:

Delays in construction:

7. Sub standard contract

Poor means of contracting
Improper planning of contractor during bidding stage