Training on Real Estate Construction Project Technical staffs for:



By Asmare Walle:; PPECM/1563

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About my self

- *Name:- Asmare Walle*
- *First Degree – BSc degree in Civil Engineering in 1999GC at AAU Technology Faculty*
- *Second Degree – MBA in Construction in 2017 GC at AASTU*
- *Certified & Licensed in Professional Construction Project management By Construction Minister*
- *Certificate of different construction trainings like:- Project management, cost management, claim management, equipment management, Cost and Budgeting*
- *Have experience of Visiting International Mega projects like Three gorges dam of China; Hoover dam of America on Colorado river; Great wall of China; Germany Frankfurt Wirtgen machinery manufacturing Company*

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Training Coverages

I. Objective of Training

II. Expectations from Every trainee after the training

1. Project; project manager and project management basic concepts
   - 1.1. What is a project?
   - 1.2. Who is Project Manager?
   - 1.3. What is the role of the Project Manager?
     - Who is Qualified Project Manager?
   - 1.4. What is project management mean?
     - What is Project Management Office (PMO)?
   - 1.5. How does modern project management benefit you??
   - 1.6. What project management helps you to achieve?
   - 1.7. project management Knowledge Areas
   - 1.8. Project reporting, evaluation and controlling steps
   - 1.9. Typical project structure

Training Coverages

2. Construction projects' process groups

- *2.1. Project Life Cycle (Process groups)*
- *2.2. Project Constraints – Project Monitoring & controlling*
- *2.3. Measuring Project success– (Project Monitoring & controlling*

3. Project Cost Management

- *3.1. What is Cost and Project Cost Management?*
- *3.2. Construction Cost Components*
- *3.3. Cost analysis; components and sample templates*
- *3.4. Cost breakdown components and sample templates*
- *3.5. Earned Value management- What is EVA*

I. Objective of Training

- *This training covers Project Management principles mainly related to planning and executing a project, Monitoring & controlling managing resources, connecting with customers maintaining and managing scope, budget and timelines.*
- *To provide an overview of Project Management – the principles and practices to help you to manage a project or to participate more effectively as part of a project team.*
- *To lead projects with effective, efficient and knowledge*
- *Increase project performance targets;*
- *To identify good performers of the project*
- *To complete the project on time with Planned Budget (BCWS)*
- *To develop good project management system.*
- *Attract and retain good performers;*
- *Clarify individual roles and tasks;*
- *To develop Jenboro Bench marks and standards*
- Understand the importance of project cost management.
- Explain basic project cost management principles, concepts, and terms.
- Discuss different types of cost estimates and methods for preparing them.

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I. Objective of Training

The whole presentation focal points are:

- **The three Constraints**
  - ✓ **Time, Cost & Quality**
- **The three Resources**
  - ✓ **Manpower; material & equipment**
- **To make familiar with basic and common project managements terms**

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II. Expectations from Every trainee after the training

1. *Every group leader is expected to form well defined crew structure with defined task.*
2. *Every group leader expected to prepare a daily plan based on the available Resource/time of constraints but with standard out put (productivity)*
3. *Every group leader is expected to prepare a daily report vs plan evaluation.*
4. *It is expected to prepare sub-contractors' payment certificate-based sample prepared*
5. *It is expected to have a resource a cumulative plan vs execution report at every 15 days.*
6. *It is expected to have the proportion (ratio) of labor, Material & equipment cost at every 15 days.*
7. *Every group leader is expected to have every construction material wastage percentage*
8. *Every group expected to know the daily productivity of mason, carpenters, tilers etc.*
9. *It is expected to know the income vs expense of each work item*
10. *It is also expected to know and practice Earned value management system.*
11. *It is expected to calculate monthly CPI & SPI*
12. *Every group leader is expected to prepare actual cost analysis for major items of works.*
13. *Every project manager/construction engineer/site engineer should be aware of project closing before the closing phase is approaching.*
14. *Every project manager/construction engineer/site engineer should prepare project closing report before he moved to other project.*
15. *Every group leaders expected to manage constructions in modern project management principles*

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1. Project; project manager and project management basic concepts

1.1. What is a project?

- *Defined start and end, specific scope, cost and duration*
- *A temporary endeavor undertaken to create a unique product, service or result*
- *A series of activities aimed at bringing about clearly specified objectives within a defined time period and with a defined budget*

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. Project; project manager and project management basic concepts

1.2. Who is Project Manager?

- *The Project Manager is an individual **responsible for delivering the project.***
- ***leads and manages the project team**, with the authority and responsibility to run the project on a **day-to-day basis**.*
- *Most of the time a project manager is a **project owner**.*
- *He is responsible for the leadership of the project from **site hand over to completion.***
- *The project manager leads the team and helps negotiate the **multiple relationships within any project***

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1. Project; project manager and project management basic concepts

1.3. What is the role of the Project Manager?

- ❑ *Activity and resource planning*
- ❑ *Organizing and motivating a project team*
- ❑ *Controlling time management*
- ❑ *Cost estimating and developing the budget*
- ❑ *Ensuring customer satisfaction*
- ❑ *Analyzing and managing project risk*
- ❑ *Monitoring progress*
- ❑ *Managing reports and necessary doc.*
- ❑ *Reports to senior management*
- ❑ *Communicates with users*
- ❑ *Obtains and allocates resources*
- ❑ *Coordinates*
- ❑ *Implements quality assurance*
- ❑ *Delivers results*

- ✓ *The project manager is responsible for **achieving the project objectives**.*
- ✓ *project managers have the responsibility to **satisfy** the needs: **task needs, team needs, and individual needs.***
- ✓ *A project manager becomes the link between the **PMO and the team**.*
- ✓ *Effective project managers require a balance of ethical, interpersonal, and conceptual skills that help them analyze situations and interact appropriately*

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1. Project; project manager and project management basic concepts

1.3. What is the role of the Project Manager?

Who is Qualified Project Manager?

- Helps subordinates whenever necessary.
- Sensitive to the effects of decision he makes.
- Accept the command of subordinates.
- Effective leadership skill.
- Interest in employee development.
- Successful in finding and retaining new talent.
- Don’t over pressure to the subordinates.
- Have a sense of ownership/leadership.
- Work collaboratively.
- Use both sides of the brain (Multi directional thinking)
- Be able to facilitate.
- Positive attitude.
- Interest in personal aspects of employees
- Cleary communicates the vision.

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1. Project; project manager and project management basic concepts

1.4. What is project management mean?

- ***Project management*** *is the art of directing and coordinating* ***human, equipment and material resources*** *throughout the life of a project by using* ***modern management techniques*** *to achieve* ***predetermined Quality, cost, time and satisfaction.***

- **Human Resource**
- **Equipment Resource**
- **Material Resources**

→ ***Modern Management Techniques*** →

Achieving predetermined Quality, cost, time, and satisfaction.

Modern Management Techniques →

- ***Well prepared schedule***
- ***Well defined crew formation with defined task***
- ***Knowledge of resource utilization and management***
- ***Well defined budget vs income tracking practice***
- ***Well Organized data collection system***
- ***Specification of project objectives***
- ***proper coordination and control***
- ***effective communications & Skill of conflict resolution***

1. Project; project manager and project management basic concepts

1.4. What is project management mean? (continued…)

- *Identifying all **requirements of stake holders and the work itself**;*
- *Addressing the various **needs, concerns, and expectations of the stakeholders** in **planning and executing** the project;*
- *Setting up, maintaining, and carrying out **communications** among stakeholders that are **active, effective, and collaborative in nature;***
- ***Managing stakeholders** towards meeting project requirements and creating project deliverables;*
- *Balancing the competing **project constraints**, which include,:*

○ *Scope*, ○ *Quality*, ○ *Schedule*, ○ *Budget*, ○ *Resources*, and ○ *Risks*.

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1.4. What is project management mean? (continued…)

What is Project Management Office (PMO)?

A project management office (PMO) is a management structure that standardizes the ***project-related governance processes and facilitates*** *the* ***sharing*** *of:*

- ***resources,***
- ***methodologies & system revision & developments***
- ***tools, and techniques ----→ to all projects***

The responsibilities of a PMO can range from providing ***project management support functions to actually being responsible for the direct management of one or more projects.***

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1. Project; project manager and project management basic concepts

1.4. What is project management mean? (continued…)

What is Project Management Office (PMO)?

A primary function of a PMO is to support project managers in a variety of ways which may include:

- ✓ • ***Managing shared resources*** *across all projects administered by the PMO;*
- ✓ • *Identifying and developing project management* ***methodology, best practices, and standards;***
- ✓ • *Coaching, mentoring, training, and oversight;*
- ✓ • *Monitoring compliance with project management* ***standards, policies, procedures, and templates by means of project audits****;*
- ✓ • *Developing and managing project* ***policies, procedures, templates, and other shared documentation*** *(organizational process assets); and*
- ✓ • *Coordinating communication across projects*

1. Project; project manager and project management basic concepts

1.5 How does modern project management benefit you??

- You will have goal clarity and measurement
- Your resources will be coordinated
- Your **risks** will be identified and managed
- You will increase the possibilities of time savings
- You will increase the possibilities of cost savings
- You will increase the possibilities of achieving the agreed outcome
- You will increase the possibilities to deliver projects successfully

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1. Project; project manager and project management basic concepts

1.6. What project management helps you to achieve?

- *Plan tasks in project*
- *Avoid dependencies problems*
- *Reduce risks*
- *Track progress accurately*
- *Organize project process and timeline*
- *Improve stakeholder - staff communication*
- *Improve management of stakeholders' expectations*
- *Complete within budget and on time*

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1. Project; project manager and project management basic concepts

Brain storming Questions

1. A project is:

A. A set of sequential activities performed in a process or system.

B. A revenue-generating activity that needs to be accomplished while achieving customer satisfaction.

C. An ongoing endeavor undertaken to meet customer or market requirements.

D. A temporary endeavor undertaken to create a unique product, service, or result.

2. Project management is:

A. The integration of the critical path method and the Earned Value Management system.

B. The application of knowledge, skills, tools, and techniques to project resources & activities to meet the project requirements.

C. The application of knowledge, skills, wisdom, science, and art to organizational activities to achieve operational excellence.

D. A subset of most engineering and other technical disciplines.

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Brain storming Questions

For a project to be successful, the project should generally achieve all of the following EXCEPT:

A. Achieving stakeholder satisfaction

B. Striving to obtain acceptable customer/end-user adoption.

C. Appling knowledge, skills, and processes within the Project Management Process Groups uniformly to meet the project objectives.

D. Fulfilling other agreed-upon success measures or criteria.

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1. Project; project manager and project management basic concepts

1.7. project management Knowledge Areas

*The Project Management Institute focuses on **TEN** distinct areas requiring project manager knowledge and attention:*

1. ***Project integration management*** *to ensure that the various project elements are effectively coordinated.*
2. ***Project scope management*** *to ensure that all the work required (and only the required work) is included.*
3. ***Project time management*** *to provide an effective project schedule.*
4. ***Project cost management*** *to identify needed resources and maintain budget control.*
5. ***Project quality management*** *to ensure functional requirements are met.*
6. ***Project resource management*** *to development and effectively utilization of human resource as well as all other resources.*
7. ***Project communications management*** *to ensure effective internal and external communications.*
8. ***Project risk management*** *to analyze and mitigate potential risks.*
9. ***Project procurement management*** *to obtain necessary resources from external sources.*
10. ***Stakeholder Management*** *to identify and engage stakeholders throughout the project*

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Project Management Process Groups

Knowledge Areas	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
Project Integration Management	Develop project charter	Develop project management plan	Direct and manage project work Manage project knowledge	Monitor and control project work Perform integrated change control	Close project or phase
Project Scope Management		Plan Scope Management Collect Requirements Define Scope Create WBS		Validate Scope Control Scope	
Project Schedule Management		Plan schedule management Define activities Sequence activities Estimate activity durations Develop Schedule		Control Schedule	
Project Cost Management		Plan cost management Estimate costs Determine budget		Control costs	
Project Quality Management		Plan quality management	Manage quality	Control quality	
Project Resource Management		Plan resource management Estimate activity resources	Acquire resources Develop team Manage team	Control resources	
Project Communications Management		Plan communications management	Manage communications	Monitor communications	
Project Risk Management		Plan risk management Identify risks Perform qualitative risk analysis Perform quantitative risk analysis Plan risk responses	Implement risk responses	Monitor risks	
Project Procurement Management		Plan procurement management	Conduct procurements	Control procurements	
Project Stakeholder Management	Identify stakeholders	Plan stakeholder engagement	Manage stakeholder engagement	Monitor stakeholder engagement	

1. Project; project manager and project management basic concepts

1.7. project management Knowledge Areas

Ethiopian Construction Project Management Institute Manuals

1. *MW01- Construction project **INTEGRATION** Management*
2. *WM02-Construction project **SCOPE** management*
3. *MWO3- Construction project **QUALITY** management*
4. *MWO4- Construction project **STAKEHOLDER** management*
5. *MWO5- Construction project **RISK** management*
6. *MWO6- Construction project **PROCURMENT** management*
7. *MWO7- Construction project **COMMUNICATION** management*
8. *MWO8- Construction project **TIME** management*
9. *MWO9- Construction project **HUMAN RESOURCE** management*
10. *MWO10- Construction project **MATERIAL** management*
11. *MWO11- Construction project **HEAVY EQUIPMENT** management*
12. *MWO12- Construction project **COST** management*
13. *MWO13- Construction project **FINANCIAL** management*
14. *MWO14- Construction project **SAFETY** management*
15. *MWO15- Construction project **ENVIRONMENTAL** management*
16. *MWO16- Construction project **CLAIM** management*

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1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

1. *crew forming based on the type of works and work methodology*
2. *Distribution of plans to Crews either quantitatively or qualitatively*
3. *setting objectives (target) and key parameters (productivity, output, time etc)*
4. *performing the work*
5. *performance Recording*
6. *Evaluation of Performance based on target set*
7. *Appreciation, Reward, Bench mark setting, JENBORO's standard development*

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1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling

S. No	Crew	Group Leader (Foreman)	Daily target (ETB)	Weekly Target (ETB)	Monthly Target (ETB)
I. Earthwork Crews					
1	Crew 1 - Site Engineer Name	Name of group Leader 1			
		Name of Group Leader 2			
		Total of Crew 1			
2	Crew 2 - Site Engineer Name	Name of group Leader 1			
		Name of Group Leader 2			
		Total of Crew 2			
3	Crew 3 - Site Engineer Name	Name of group Leader 1			
		Name of Group Leader 2			
		Total of Crew 3			
4	Crew 4 - Site Engineer Name	Name of group Leader 1			
		Name of group Leader 2			
		Total of Crew 4			
		Sub Total of Earthwork Crews			
II. Structural Crew					
5	Crew 5 - Structural Engineer Name	Name of group Leader 1			
		Name of group Leader 2			
		Total of Crew 5			
6	Crew 6 - Structural Engineer Name	Name of group Leader 1			
		Name of group Leader 2			
		Total of Crew 6			
		Sub Total of Structural Crews			
		Work to be executed by subcontractors			
		General Requirements and Provisions			
		Grand Total (Monthly Plan of the Project)			

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling

Daily Report Format

S.No.	Crew	Description of works	Unit	Quantity	Material Consumption		labor Deployed		Equipment deployed	
					Material type	Quantity	Labor by Trade	Quantity	Equipment Type	Quantity
1	Crew 1	20cm Hollow block work	m^2	150.00	HCB	1,875.00	Mason	5	Mixer	1
					Cement	10.50	DL	10		
					Sand	2.27				
2	Crew 2	Plastering work	m^2	80.00	Cement	5.60	Plasterer	4	Mixer	1
					Sand	1.21	DL	8		
3	Crew 3									
5	Crew 4									

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance on target set

Construction Project performance Evaluation Format

Project Name :_____ **Month _____**

S.No.	Activity to be performed	Maximum Mark	*Given Marks*
	I. Key Performance		
1	**work progress and action plan preparation (25 marks)**		
1.1	Todate executed vs plan Performance (>90 = 5, 80-89 = 3, 70-79 = 2, 60-69 = 1, and <60 = 0)	**5.00**	
1.2	Monthly executed vs plan Performance (>90=5, 80-89 = 4, 70-79 = 3, 60-69 = 1, and <60 =0)	**5.00**	
1.3	*Break down of the schedule up to the level of foreman.*	**5.00**	
1.4	*Action plan Preparation every three months with problems to be solved and responsible body*	**4.00**	
1.5	*Well defined team structure, which has its own leader and plan set up*	**3.00**	
1.6	*Evaluation of such action plan weekly by Project manager*	**3.00**	
	Sub Total	**25.00**	

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance on target set

2	**Payment and related issues(15 Mark)**	
2.1	*Work accomplishemnt vs payment certified (>95%=4, 90%-94%= 3, otherwise=0)*	**4.00**
2.2	*Monthly payment certification (monthly=4, delayed 15days=3, 30days=2, morethan30 days = 0)*	**4.00**
2.3	*Include price escalation and material on site in payment certificate.*	**4.00**
2.4	*Quality level of payment certificate preparation with no correction*	**3.00**
	Sub Total	**15.00**

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

3	**Resource utilization and cost minimization (13 Mark)**	
3.1	*Equipment utilization efficiencies (**>75=4, 65-75=3***, 50-65 = 2, <50 = 0)	**4.00**
3.2	*Fuel Utilization based on the standard (Within Range = 2, at margin = 1 and out of Range =0)*	**3.00**
3.3	*Equipment cost, material cost, labour cost, fuel cost and project overhead cost from expectation (Standard set)*	**3.00**
3.4	*Proper measure of labor and equipment productivity (equipment = 2, labour =1)*	**2.00**
3.5	Re-using of construction materials	**1.00**
	Sub Total	**13.00**

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

4	**Expenses and Cost Marigin (12 Mark)**	
4.1	*Cummulative Expected Profit Marigin (90%-100% attain=4; 80% - 90% attain=3; 70% -80% attain=2; <80% =0)*	**4.00**
4.2	*Todate Cost Performance Index (CPI) (If CPI is >1.0=3; If CPI is 0.90 -1.0= 2; If CPI <0.90 =0)*	**3.00**
4.3	*Monthly Cost Performance Index (CPI) (If CPI is >1.0=3; If CPI is 0.90 -1.0= 2; If CPI <0.90 =0)*	**3.00**
4.4	*Proper and accurate Monthly Earned Value Analysis*	**2.00**
	Sub Total	**12.00**
5	***Planning (10 Mark)***	
5.1	On time Plan Preparation and Revised Schedule Submission According to ISO 9001:2015 requirments	**5.00**
5.2	Completeness of the plan according to ISO 9001:2015 requirments	**3.00**
5.3	Quality and Acceptability the plan interms of amount and time	**2.00**
	Sub Total	**10.00**

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

6	***Claim Organizing & Requesting on time and risk management (10 Marks)***	
6.1	Contemporary record keeping in the month	**2.00**
6.2	Fulfilling Requirments for claims submitted in the month	**2.00**
6.3	Analysis Technique Application for claim submitted in the month	**3.00**
6.4	Approval status for claims responded in the month	**3.00**
	Sub Total	**10.00**
7	***Weekly and Monthly Report Preparation (10Mark)***	
7.1	*Before and On time arrival of the reports*	**3.00**
7.2	Completeness of the reports ISO 9001:2015 standard format	**2.00**
7.4	*Identified problems and affected activities in terms of Amount*	**2.00**
7.5	*Data Collection system and arrangement*	**1.00**
7.6	*Actual Cost Analysis of Major item of Works*	**2.00**
	Sub Total	**10.00**

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

8	***Communication (5 Mark)***	
8.1	*With in the project staffs*	***2.00***
8.2	*Good goovernace complaints inside the project raised in the month*	***1.00***
8.4	*Communication with Head office Departements*	***1.00***
8.5	*Communication with Consultants*	***1.00***
	Sub Total	**5.00**
	Grand of Key Performance Total	**100.00**

1. Project; project manager and project management basic concepts

1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

	II. Additional Marks (Bonus or Penality)	
1	**Health and safety**	
1.1	If there is no any accident in that particular month	**8.00**
1.2	If there is heavy accident in that particular month (Heavy Means life and property loss) (one Accident = (-3))	
1.3	If there is light accident in that particular month (One Accident = (-2))	
	Sub Total	**8.00**
2	**Administration of subcontract works (minus of the indicated mark)**	
2.1	*Site access/working place -ve 1 pt if there is complaints*	**(2.00)**
2.2	*On time payment transfer -ve 1 pt if there is complaints*	**(1.00)**
2.3	*Good govenance (complain from sub contractors)-ve 1 pt if there is complaints*	**(1.00)**
2.4	*Action on defualts on subcontractors work as per aggrement-ve 1 pt if there is no action on defualt*	**(1.00)**
	Sub Total	**(5.00)**

1. Project; project manager and project management basic concepts

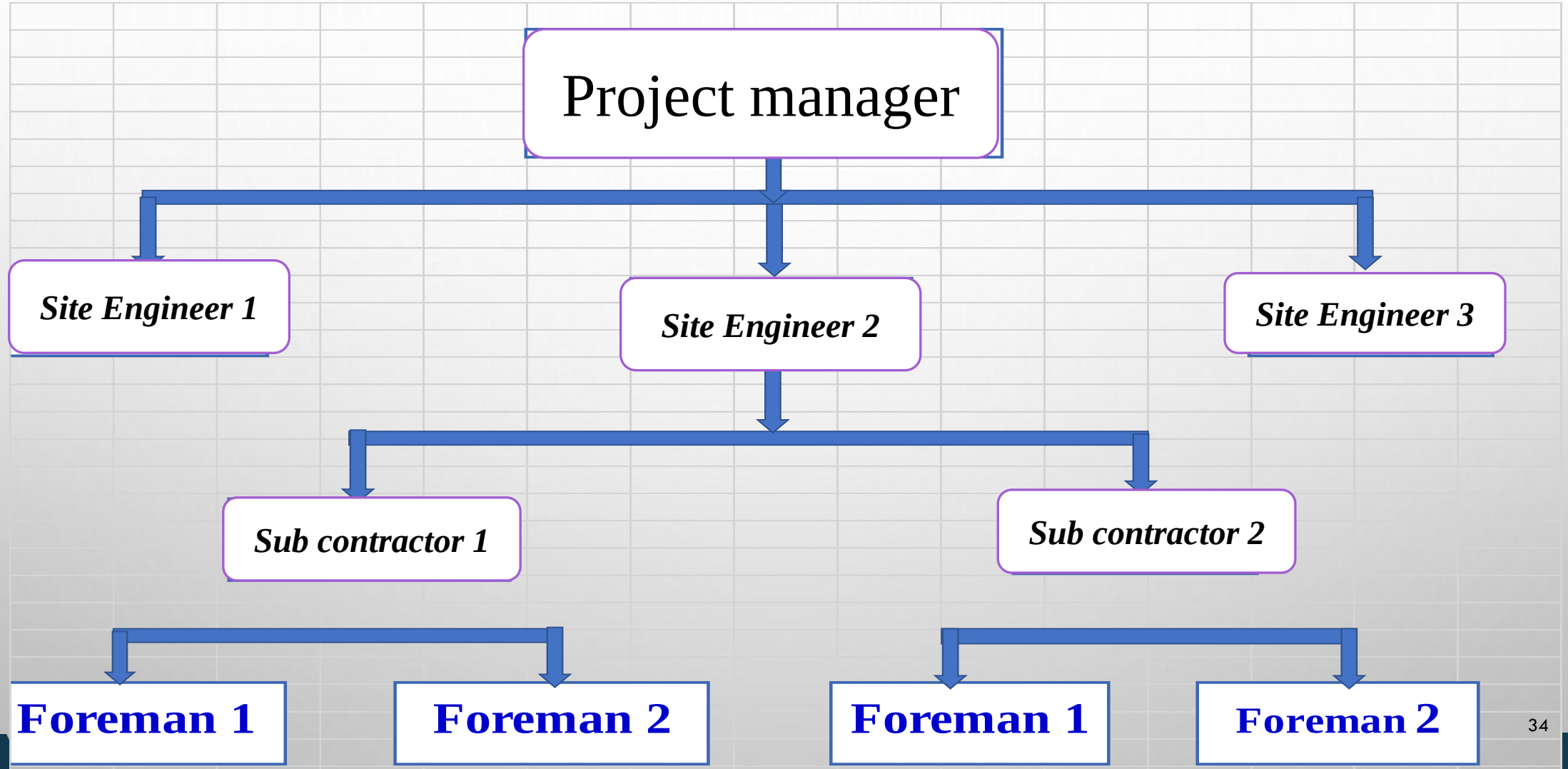
1.8. Project reporting, evaluation and controlling steps

Evaluation of Performance based on target set

3	**Conduct Quality Assurance (plus or minus of the indicated mark)**	
3.1	Perform the activity with the required quality (Complain from Supervisor)-ve 1 pt if there is complaints	**(1.00)**
3.2	Utilizing techniques, tests, inspections and quality related documentations to insure the quality	**2.00**
3.3	keeping the quality with the expected cost	**1.00**
	Sub Total	**2.00**
4	***Budget Utilization (plus or minus of the indicated mark)***	
4.1	*On time budget request and difference from plan*	**1.00**
4.2	*Proper Budget Requestion and Efficient Budget Utilization and Reporting*	**1.00**
	Sub Total	**2.00**
	Grand Total of Bonus or Penality	**7.00**
	Grand Total	**107.00**

1. Project; project manager and project management basic concepts

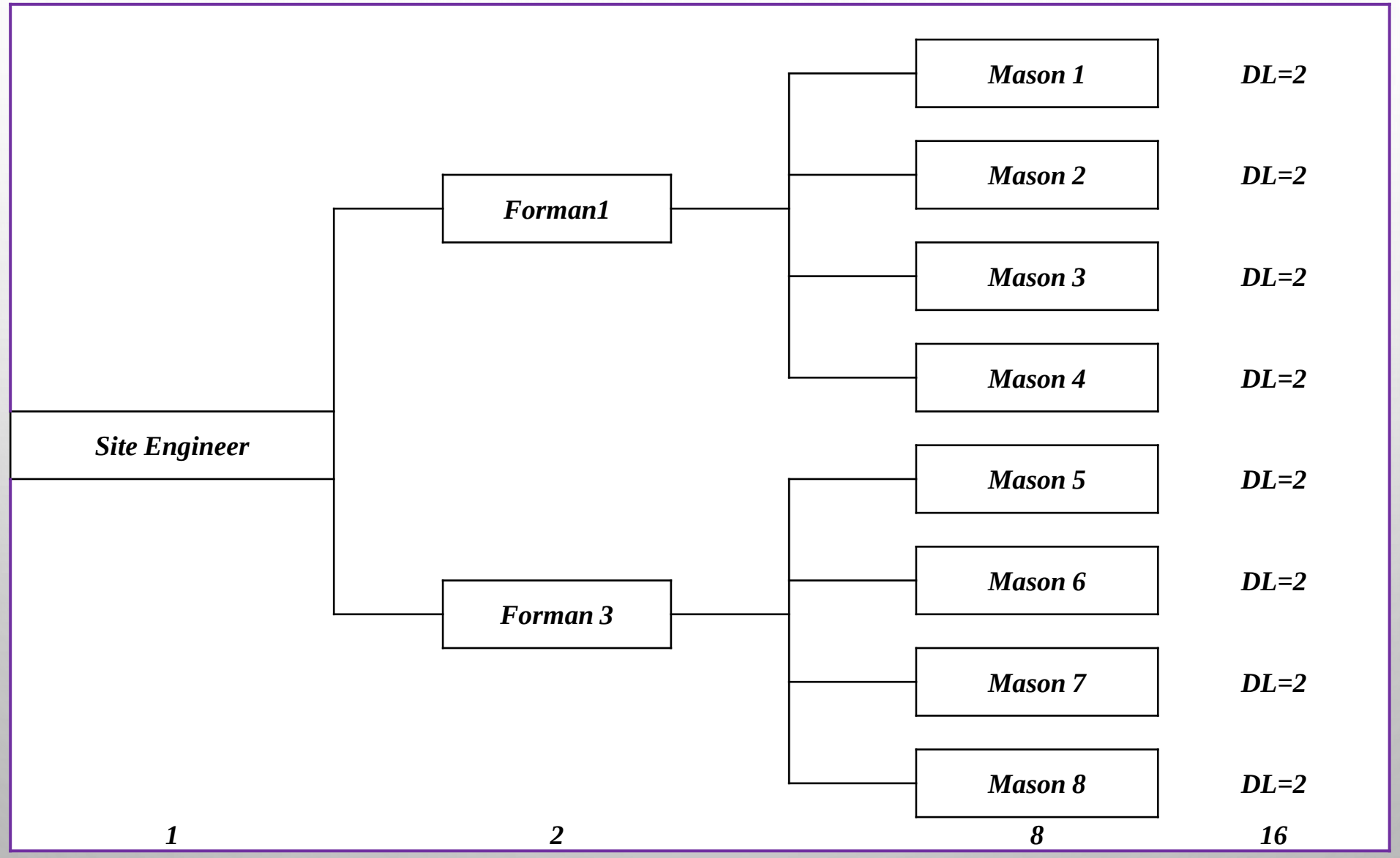
1.9. Typical project structure



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1. Project; project manager and project management basic concepts

1.9. Typical project crews (Team)



2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)

- ✓ *Initiating*
- ✓ *Planning*
- ✓ *Executing*
- ✓ *Monitoring & Controlling*
- ✓ *Closing*

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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)

1. Initiating

- ***Initiate the Project***
- ***Identify the Project Manager***
- ***Identify the Stakeholders***
- ***Define Planning Phase***

2. Planning

- *Prepare WBS*
- *Develop a Project Plan (work plan)*
- *Organize and staff the project*
- *Sign off on the Project Plan*

WORK-BREAKDOWN STRUCTURE

- *Break work into independent work packages that can be sequenced, assigned, scheduled and monitored*
- *Each task is broken into smaller tasks that can be managed and estimated*
- *Define task dependencies -Some tasks must begin at the same time, some must end at the same time and some cannot start until the other tasks have finished.*

2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)

1. Initiating

- ***Initiate the Project***
- ***Identify the Project Manager***
- ***Identify the Stakeholders***
- ***Define Planning Phase***

2. Planning

- *Prepare WBS*
- *Develop a Project Plan (work plan)*
- *Organize and staff the project*
- *Sign off on the Project Plan*

WORK-BREAKDOWN STRUCTURE

- *Present in a format easily communicated to people*
- *Verify that the work packages will meet the goals and objectives of the project*
- *Estimate task durations and cost*
- *May be inputted into project management software*
- *Final WBS plan is called baseline WBS*

2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

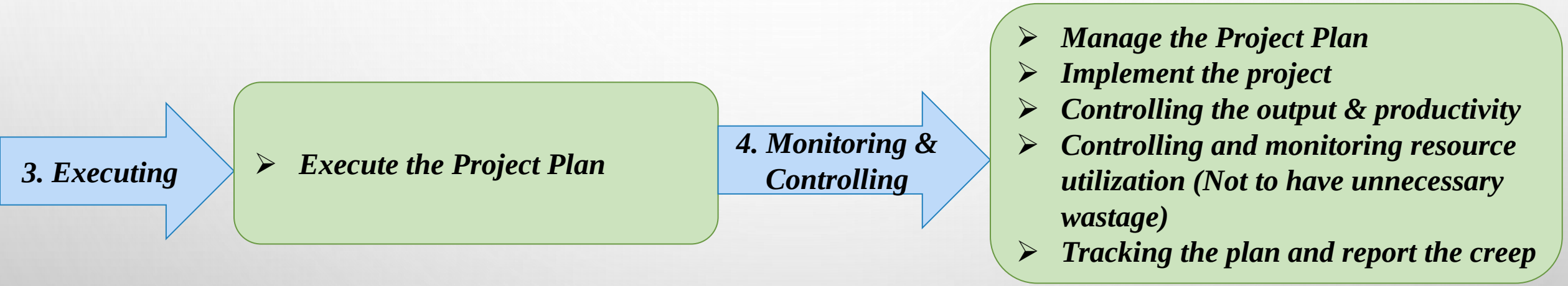
2.1. Project Life Cycle (Process groups)

WORK-BREAKDOWN STRUCTURE

1	Provide ,cut and fix in position plywood or bamboo veneer or steel panels equivalent formwork. The final concrete appearance should appear in smooth finish.		
	1.1	*To elevation column*	
		1.1.1	*On axis 1-1*
		1.1.2	*on axis 2-2*
		1.1.3	*on axis A_A*
		1.1.4	
	1.2	*To beams*	
		1.2.1	
		1.2.2	
	1.3	*To top tie beam*	
	1.4	*To stair case and landings*	
	1.5	*To 15 cm thick floor slab*	
	1.6	*To cantilever slab*	
	1.7	*To gutter*	
2	2.1		
		2.1.1	
		2.1.2	

2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)



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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)-Project Closure

5. Closing

- *Document the Lessons Learned during the project*
- *Post-implementation review*
- *Provide performance feedback*
- *Close-out contracts*
- *Cut off the documents*
- *Sort out surplus materials and return back to store*
- *Final Cost analysis of major item of works documentation*
- *Major item of works average productivity setting*
- *Complete administrative close-out*

By Asmare Walle:; PPECM/1563

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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.1. Project Life Cycle (Process groups)-Project Closure

5. Closing

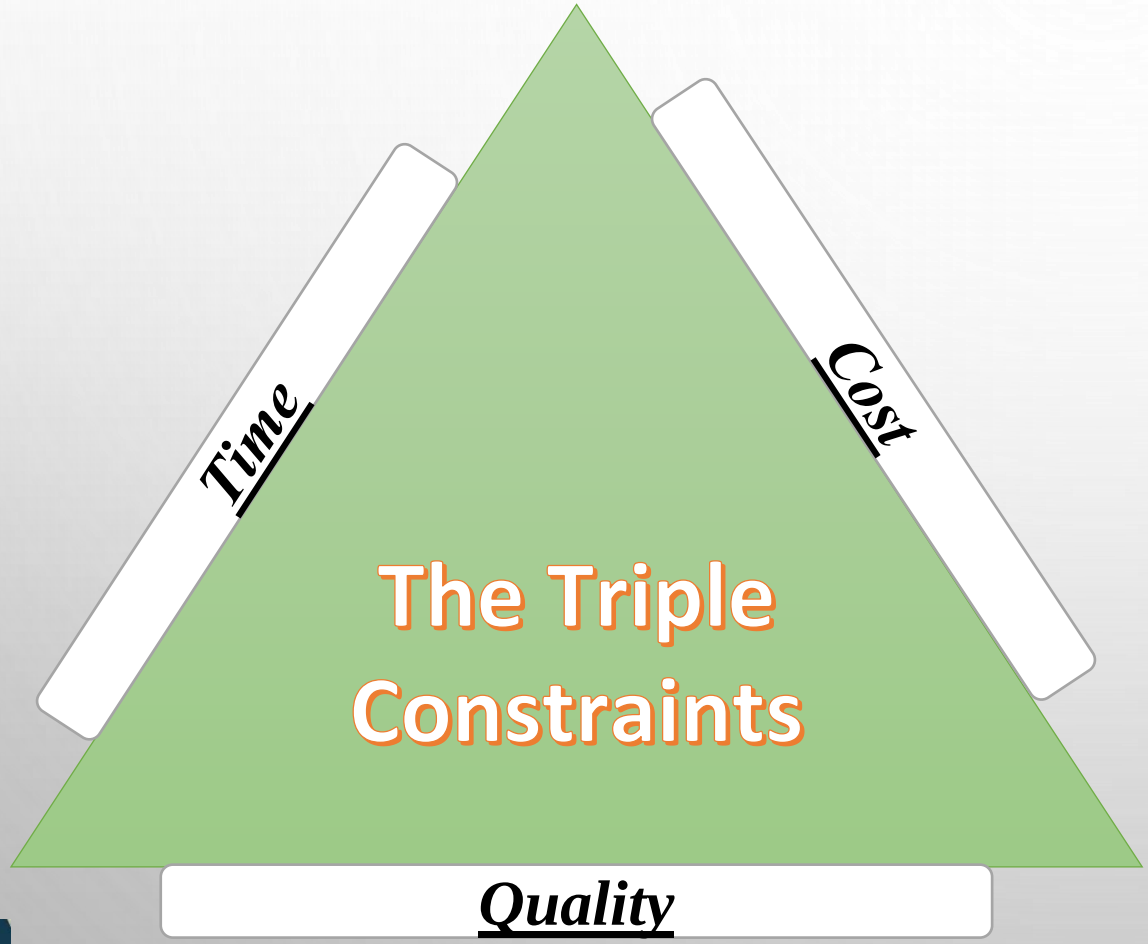
- ✓ *Contact list of all subcontractors*
- ✓ *All warranties for products required in the specifications (Materials & Equipment)*
- ✓ *The contract documents (Specifications, addenda, drawings)*
- ✓ *All approved submittals/shop Drawings*
- ✓ *All snag lists*
- ✓ *All change orders, RFIs, Field observations, photos, etc…*
- ✓ *All test reports*
- ✓ *As-Built Drawings with all changes*
- ✓ *Final project report*

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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.2. Project Constraints – Project Monitoring & controlling



Time

Project Time refers to any part of the project schedule, including the duration of individual tasks, milestones, and dead lines.

Cost

Project Cost or budget refers, to any or part of the project's materials, equipments, labors, Overhead costs and all external costs

Quality

Project performance refers specifications, quality, scope, standards or all the project is planned to achieve.

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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.3. Measuring Project success– Project Monitoring & controlling

We measure the success of a project using 4 major project constraints, specifically:

- ***Project Scope-*** *have all the project requirements (i.e., deliverables) been completed?*
- ***Project cost*** *– Is the cost of the project close to the Budgeted cost (BCWS)?*
- ***Schedule (Time)*** *– Was the project completed on time?*
- ***Customer satisfaction*** *– Is the customer happy with the quality of the project?*

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2. Construction projects' process groups (initiation; planning, executing, monitoring & controlling and closure

2.3. Measuring Project success– Project Monitoring & controlling

WHY PROJECT FAIL?

- *Overallocated Resources*
- *Poor Communications*
- *Bad Stakeholder Management*
- *Unreliable Estimates & planning*
- *Inadequate Risk Management*
- *Unsupported Project Culture*
- *Lack of Team building and lack of willing*
- *Lenient Monitoring and Controlling*
- *Project managers who lack experience and training*
- *No measures for evaluating the success of the project*
- *Placement of improper officials*
- *Conflict*
- *Poorly defined project scope*
- *Failure to identify key assumptions*
- *Key staff leaving the project and/or company*
- *Ineffective leadership*
- *Failure to track requirements*
- *Failure to track progress*

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3. Project Cost Management

3.1. What is Cost and Project Cost Management?

- ***Cost is a resource sacrificed or foregone to achieve a specific objective, or something given up in exchange.***
- ***Costs are usually measured in monetary units (ETB)***
- ***Project cost management includes the processes required to ensure that the project is completed within an approved budget.***

3.2. Project Cost Management Processes

- ***Cost estimating***: *Developing an approximation or estimate of the costs of the resources needed to complete a project.*
- ***Cost budgeting***: *Allocating the overall cost estimate to individual work items to establish a baseline for measuring performance.*
- ***Cost control***: *Controlling changes to the project budget.*

3. Project Cost Management

3.2. Construction Cost Components

Construction Cost Components are Categorized in two:

DIRECT COSTS & INDIRECT COSTS

DIRECT COSTS *– Direct construction costs are all costs that can be specifically booked with an activity in a project. These Includes:*

- ***Direct material costs***
- ***Direct labor costs***
- ***Direct equipment costs***
- ***Subcontract costs***

3. Project Cost Management

3.2. Construction Cost Components

Construction Cost Components are Categorized in two two:

DIRECT COSTS & INDIRECT COSTS

INDIRECT COSTS *– Indirect construction costs are all costs, which cannot be directly booked under a specific activity. Also called* ***overhead costs****, include* ***head office and site overhead costs.***

1. ***Head Office Overhead costs-***

- ***Senior management costs***
- ***Indirect labor costs***
- ***Head office building costs***
- ***Bidding Expenses***
- ***Office running expenses –***
- ***Workshops, garages and warehouses***
- ***Bank charges.***
- ***Insurance charges***
- ***Expertise service costs***
- ***Office furniture and equipments***

3. Project Cost Management

3.2. Construction Cost Components

Construction Cost Components are Categorized in two two:

DIRECT COSTS & INDIRECT COSTS

INDIRECT COSTS *– Indirect construction costs are all costs, which cannot be directly booked under a specific activity. Also called* ***overhead costs****, include* ***head office and site overhead costs.***

2. Site Overhead costs-

- ***Site management costs***
- ***Indirect labor costs***
- ***Mobilization and demobilization costs –***
- ***Tender Expenses.***
- ***Site offices***
- ***Expertise service costs***
- ***Office furniture and equipments***
- ***Office running expenses***
- ***phone communications*** *expenses*
- ***Camp facilities***
- ***Access roads***
- ***Water and power supply***
- ***Workshops, garages and warehouses***

3. Project Cost Management

3.3. Cost analysis; components and sample templates

- *A construction cost analysis is an analysis performed by a construction company or its workers to accurately identify **where the company or project is using or 'spending' its money and resources** - and whether or not this **money is being well spent**.*
- ***Cost analysis in construction is even more important than in many other industries.***
- ***The nature of construction projects and bidding for work makes understanding costs and margin critical to a sustainable business.***
- *The purpose of a cost analysis is to identify the parts of a project or parts of a business which **are not getting good return on investment.***
- *While companies and workers can rely on their gut and instincts to partially inform management and others as to how well components of projects are being managed, you will want to quantify as much of the process as possible - and you will want to know and understand exactly what you are trying to analyze and figure out before you go ahead and do any action.*

3. Project Cost Management

3.4. Cost breakdown components and sample templates

A – Sample 1: Concrete class C-25

Provision and placing of concrete class C-25 with minimum cement content of 360kg/m3

- *The contractor is free to choose the cement type as far as the strength and minimum cement content are maintained.*
- *Identify possible sources and suppliers for suitable coarse and fine aggregates.*
- *Depending on the volume of concrete works, construction schedule, quality of works and cost effectiveness, the contractor shall choose appropriate construction method for concrete works such as:*

3. Project Cost Management

3.4. Cost breakdown components and sample templates

A – Sample 1: Concrete class C-25

- ✓ *Mechanical mixer + Labor*
- ✓ *Mechanical mixer + dumper + Labor*
- ✓ *Mechanical mixer + mobile crane + Labor*
- ✓ *Truck mixer + Labor*
- ✓ *Truck mixer + mobile crane + Labor*
- ✓ *Concrete batching plant + Truck mixer + Labor*
- ✓ *Concrete batching plant + Truck mixer + Concrete pump + Labor*

3. Project Cost Management

3.4. Cost breakdown components and sample templates

A – Sample 2: Formwork

In estimating the unit price --should note the following points:

- *Identify the type of formwork material to be used such as wooden timbers, steel panels , plywood or a combination.*
- *Number of usages of formwork materials.*
- *Based on the construction method to be adopted identify the quantity of required materials, labor and equipment and* ***estimated crew productivity***.

3. Project Cost Management

3.4. Cost breakdown components and sample templates

ANALYSIS SHEET FOR DIRECT & INDIRECT UNIT COSTS

PROJECT: Residential building(G+1)
WORK :2.2.(a) C-25 Reinforced concrete in Foundation Footing
TOTAL QANTITY OF WORK ITEM: 1.00 m^3

LABOUR HOURLY OUTPUT: 1.50 m^3/hr.
Equipment:
RESULT: 7,984.20 Birr/m^3

Material Cost (1:01)					Labour Cost (1:02)					Equipment Cost (1:03)			
Type of Material	Unit	Qty *	Rate	Cost per Unit	Labour by Grade	No.	UF	** Indexed Hourly Cost	Hourly Cost	Type of Equipment	No.	Hourly Rental	Hourly Cost
Cement OPC (Dangote)	qtl	3.60	950.00	3420.00	Forman	1.00	0.50	48.08	24.04	Tools	3.00	3.50	10.50
Sand	m^3	0.52	2000.00	1040.00	Daily labour II	18.00	1.00	25.00	450.00	Mobile Mixer	1.00	865.38	865.38
Aggregate	m^3	0.78	1000.00	780.00	Plasterer	2.00	1.00	50.00	100.00	Vibrator	1.00	50.00	50.00
water	lit	1.80	15.00	27.00	Carpenter	1.00	1.00	50.00	50.00				
					Steel fixer	1.00	1.00	33.50	33.50				
					Mobile Mixer oper	1.00	1.00	72.12	72.12				
					Vibrator oper	1.00	1.00	25.00	25.00				
Total (1:-01)				5267.00	**Total (1:02)**				754.65	**Total (1:03)**			925.88

A= Materials Unit Cost 5267.00 Birr/m^3

B= Manpower Unit Cost 503.1 Birr/m^3
Total of (1:02) 754.65
Hourly Output: 1.50

C= Equipment Unit Cost 617.26 Birr/m^3
Total of (1:03) 925.88
Hourly output: _____ 1.50

Direct Cost of Work Item = A+B+C = 6,387.36 Birr/m^3
Overhead Cost: 15.00% 958.10 "
Profit Cost: 10.00% 638.74 "
Total Unit Cost : 7,984.20 Birr/m^3

Remark _____

UF: UTILIZATION FACTOR
*: INCLUSIVE OF WASTAGE
**: INCLUSIVE OF BENEFITS, TRAVEL SUBSIDES AND COST OF OVERTIME RELATED TO TARGETED OUTPUT.

3. Project Cost Management

3.5. Earned Value management- What is EVA

- ***It is a program management technique that uses "work in progress" to indicate what will happen to work in the future.***
- ***It is an enhancement over traditional accounting progress measures.***
- ***Traditional methods focus on planned accomplishment (expenditure) and actual costs.***
- ***Earned Value goes one step further and examines actual accomplishment.***
- ***This gives managers greater insight into potential risk areas.***
- ***With clearer picture, managers can create risk mitigation plans based on actual cost, schedule and technical progress of the work.***
- ***It is an "early warning" program/project management tool that enables managers to identify and control problems before they become impossible. It allows projects to be managed better – on time, on budget.***
- ***Earned Value Management System is not a specific system or tool set, but rather, a set of guidelines that guide a company's management control system.***

3. Project Cost Management

3.5. Earned Value management- What is EVA

What's Used for?

- Knowing where you are on ***schedule.***
- Knowing where you are on ***budget.***
- Knowing ***when*** can the work ***completed***.
- Knowing how much will the project ***deviate from budget and time.***
- Enable to take immediate correction measures before severe deviation from normal situation.

3. Project Cost Management

3.5. Earned Value management- What is EVA

EVM can provide answers to the following questions:

- ***How much have we spent?***
- ***How much did we get for our money?***
- ***How much more will be have to spend to complete the tasks we wanted to accomplish?***
- ***How much longer will it take?***
- ***How efficiently is the work being done?***
- ***What has happened? (Why are we off schedule/cost?)***
- ***What is happening? (What are the impacts?)***
- ***What is going to happen? (What are we doing to fix it?)***

3. Project Cost Management

3.5. Earned Value management- What is EVA

Five Basic Performance Data

- *BCWS* – *Budgeted Cost of Works Scheduled* – the baseline for the analysis, cumulated planned costs related to time of their incurrence; it is also called planned Value (PV)
- *BCWP* – *Budgeted Cost of Work Performed* – a measure of physical progress of works expressed by cumulated planned cost of works actually done related to time, it is also called Earned Value (EV)
- *ACWP* – *Actual Cost of Work Performed* – cumulated amount payable for works done related to time;
- *BAC* – *Budget at Completion* – total planned cost of the whole project, it equals *BCWS* at the planned finish;
- *EAC* – *Estimate at Completion* – is calculated at the date of reporting progress to serve as an estimate of the effect of deviations cumulated from the project's start on the total project cost.

3. Project Cost Management

3.5. Earned Value management- What is EVA

Formulas

Cost Performance Index (CPI) ***measure of cost efficiency***

$$CPI = \frac{\text{Value of Work Completed}}{\text{Cost of Work Completed}} = \frac{(BCWP)}{(ACWP)} = \frac{EV}{AC}$$

Schedule Performance Index (SPI) ***measure of schedule efficiency***

$$SPI = \frac{\text{Value of Work Completed}}{\text{Value of Work Planned}} = \frac{(BCWP)}{(BCWS)} = \frac{EV}{PV}$$

Closer to "1" is the better

Less than 1 = overrun (CPI); behind schedule (SPI)

Greater than 1 = underrun (CPI); ahead of schedule (SPI)

3. Project Cost Management

3.5. Earned Value management- What is EVA

Variance at Completion (VAC)

B AC = **BCWS**

E AC = **ACWP+ Budgeted Cost for remaining work**

BAC — **what the total job is supposed to cost**

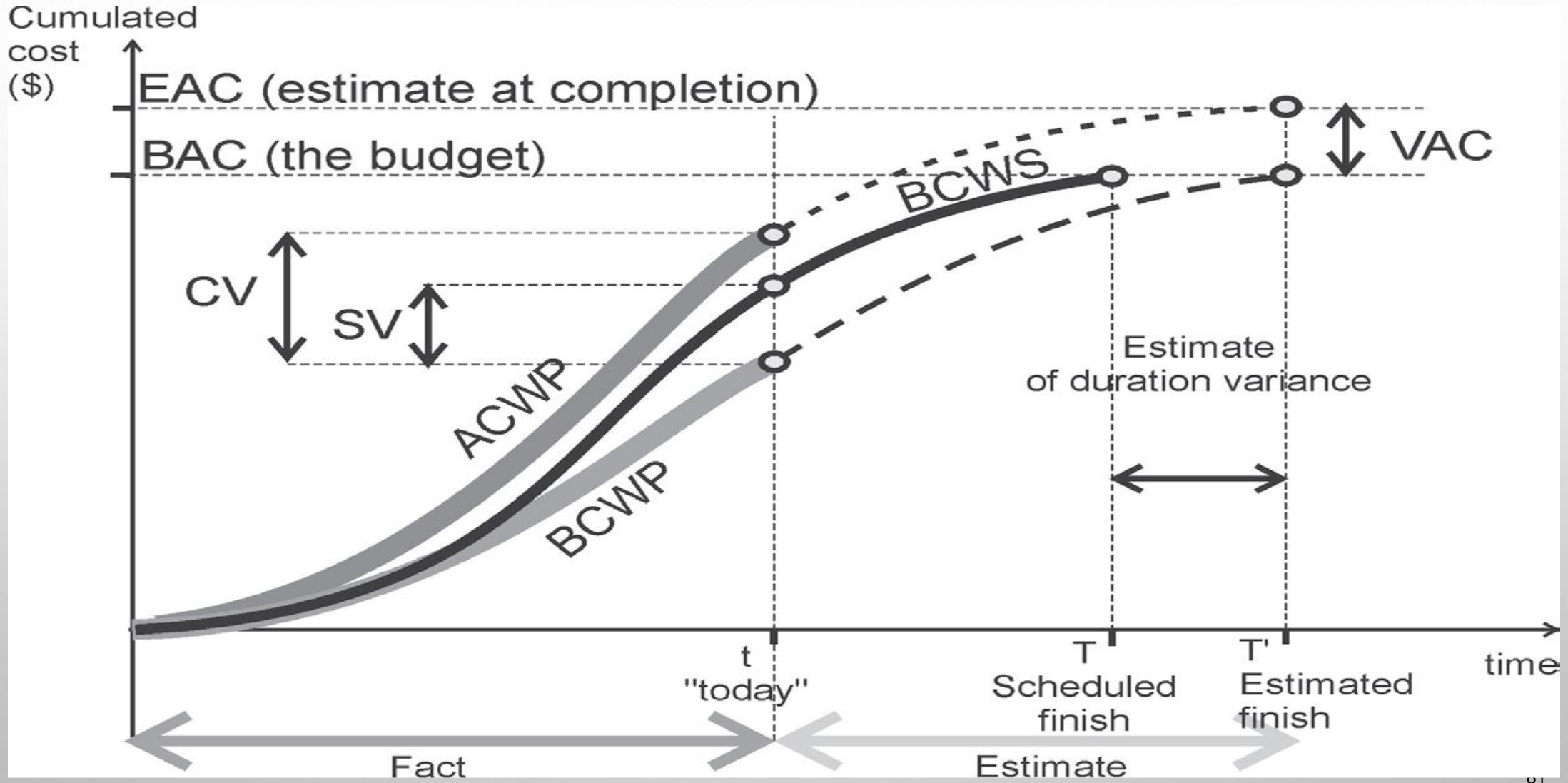
EAC — **what the total job is expected to cost**

VARIANCE AT COMPLETION is the difference between what the total job is supposed to cost and what the total job is now expected to cost.

VAC = BAC - EAC

3. Project Cost Management

3.5. Earned Value management- What is EVA



SPI= BCWP/BCWS = less than 1	→	behind schedule,
CPI= BCWP/ACWP = less than 1	→	over cost

3. Project Cost Management

3.5. Earned Value management- What is EVA

Brain storming Questions

You are managing a three years project. Your CPI=0.91 and SPI=1.15. That means you are earning 0.91 birr for every 1.0 ETB spent. While your are ahead of schedule by 15%. As a result you are held a meeting with the project team to resolve the budget over run. Who of the following would best address the budget over run issue?

A. ***Construction Engineer*** *recommends that fast tracking option; thus lowering the cost*
B. ***Office Engineer*** *Recommends that since most of the complex technical work has been completed, he suggested that the most experienced resources could be swapped out for less experienced resources, thus lowering costs*
C. ***Deputy Project manager*** *recommends that negotiate with the stake holders to reduce scope, thus lowering the costs.*
D. ***HR office*** *recommends that firing out of some daily laborers, thus lowering the costs.*

B – Swapping out expensive resources for less expensive resources would most directly impact your budget and is the simplest thing to do, especially if there is no technical impact on the project. Fast tracking may not reduce your costs, but they reduce schedule.

THE END

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THANK YOU