LECTURE 5
PROJECT MANAGEMENT
PART 1

CEEN 4812: Construction Management
Uzair (Sam) Shamsi, Ph.D., P.E.
Adjunct Professor
Department of Civil / Environmental & Chemical Engineering

1

OUTLINE

- Understanding Project Management
- Project Management Tasks
- The Role of Project Manager
- Good Project Management
- Project Management Tools
  - Project management portals
  - Corporate accounting software
  - Microsoft Project Software (Part 2)
- Critical Path Method

Acknowledgement: Some slides provided by Dr. Lawrence Owoputi.

2

WHAT IS PROJECT MANAGEMENT?

Coordinating resources to manage the people and workload to achieve predictable results.

3

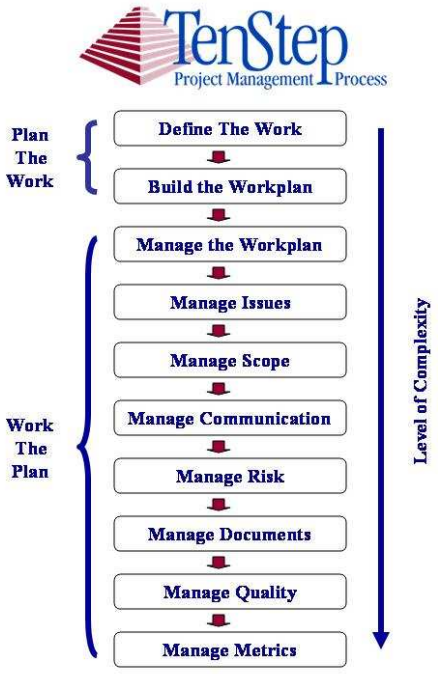
WHAT PROJECT MANAGEMENT IS NOT!

- Projects completed late
- Over-budget ☹
- Not Meeting owner's requirements
  - Always reactive, provides no value, poor quality, etc.
- Internal problems with staff
  - Other staff try to avoid project
- Projects eventually completed, but with:
  - Heavy stress, overtime, "military type operations"

4

PROJECT MANAGEMENT TASKS

- Planning
- Scheduling
- Estimating and budgeting
- Monitoring progress and performance
- Taking corrective actions



WHAT PROJECT MANAGEMENT NEEDS

- Clear leadership and direction
- Seamless integration of members into the team
- Ability to communicate clearly
- Ability to handle interpersonal conflicts
- Capability to plan and secure commitments

6

EFFECTIVE PROJECT MANAGEMENT CHARACTERISTICS

- Smooth running of a project
- Successful completion of a project
- Everyone involved is happy!
- Project manager gets a bonus/raise ☺

7

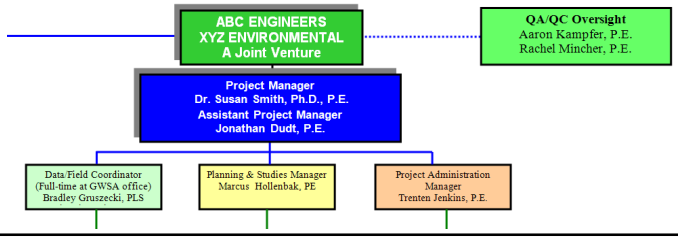
QUALITIES OF A GOOD PROJECT MANAGER

- Enjoy working with others (rather than alone)
- Able to put personal feelings aside
- Willing to take blame for other's mistakes
- Able to suppress ego for team recognition
- Able to put extra time & effort to assist team
- Willing to trust others & delegate authority
- Question: What are these qualities called?
  - Answer: Leadership qualities (Lecture 2)

8

“MUSTS” FOR A PROJECT MANAGER (PM)

- Obtain / establish the PM authority
  - ***PM needs sufficient level of authority to be successful***
- Plan the overall success of the project
- Understand overall objective, scope, risk, budget, etc.
- Develop sound approach and work plan
- Be accountable
- Identify team members: task leaders



9

GOALS OF GOOD PROJECT MANAGER

- **Define work to avoid confusion and rework**
- **Resolve problems more quickly**
- **Avoid out of scope activities**
- **Resolve future risks before they occur**
- **Communicate and manage expectations with clients, team members and stakeholders more effectively**
- **Build a higher quality product the first time**

10

GOOD PROJECT MANAGEMENT

- **Proactively** make happy:
  - The Client
  - The Boss
  - Team Members
  - Yourself (PM)

11

MAKE CLIENT HAPPY

- Five ways to make client happy:
  1. Create environment of support
     - "We are in it together" attitude
  2. Promptly address concerns
     - No excuses!
  3. Demonstrate knowledge of client's organization, key people, and sensitivities
  4. Produce quality products
  5. Meet deadlines!
     - Without sacrificing quality

12

MAKE BOSS HAPPY

- Five Ways to Make Boss Happy
  1. Proactively eliminate concerns or problems
  2. Occasionally get boss and clients together to talk about successes (make boss feel proud)
  3. Avoid over-run & make profit (show interest in company's progress)
  4. Collect and maintain cash flow
  5. Get MORE WORK – Repeat Business

13

MAKE TEAM MEMBERS HAPPY

- Five ways to make team members happy
  1. Available to listen (including personal problems)
  2. Provide and encourage training
  3. Look for solutions when there are problems
  4. Create environment of support (avoid feeling of abandonment)
  5. Meeting deadlines can be stressful (plan ahead and avoid unnecessary overtime)

14

MAKE YOURSELF (PM) HAPPY

- Five Ways to Make Yourself (PM) Happy
  1. Trust team members and delegate work
  2. Don't be a workaholic: manage time efficiently, work smarter not harder!
  3. Learn how to avoid stress and deal with stress
  4. Learn how to manage your own anger and other angry people
  5. Keep tab on the budget and make profit

15

TOP SINS OF PMS

- Letting the project get into trouble
  - Poor project management skills
- Not knowing the project is in trouble
  - Lack of project management skills
- Knowing it's in trouble but not asking for help
  - Ego problem
- Hiding the fact that the project is in trouble
  - Most serious and fatal

16

Words of Wisdom

- Sept 17, 2010: Lessons Learned From Tom George (67), Michael Baker Project Manager, on his retirement

1. Work hard and play hard.
2. Be prepared for meetings, phone calls, presentations.
3. Carefully review your own work before you send it on to others to review or use.
4. Learn how to write, learn how to speak, learn how to type fast, learn how to improve your memory, and learn how to play golf.
5. Don't let them see you sweat, and keep a smile on your face, excitement in your speech and a skip in your step.
6. Plan you time and projects very carefully. Be well organized.
7. Focus on what's important.
8. Don't be too much of a nice guy with the people who work for you. Sometimes you have to be the old SOB.
9. Dress for success.
10. Face problems head on. Know you own limits. Ask for help.

17

Words of Wisdom

11. Be active in professional societies, and publish.
12. Share information with your bosses and peers.
13. Make your boss and your client look good.
14. Always show professional courtesy to everyone.
15. Do not compromise your professional ethics.
16. Don't expect everyone to be as smart as you are or to accept all that you say.
17. Be proud of your own work without expecting any kudos from someone else.
18. Take care of your body. Where else would you live?
19. In a new situation, keep your eyes and ears open, you mouth shut until you find out what the hell's going on.
20. Remember when you are young – it's what you know. When you get older – it's who you know. And when you get even older – it's who knows you.

18

PROJECT MANAGEMENT TOOLS

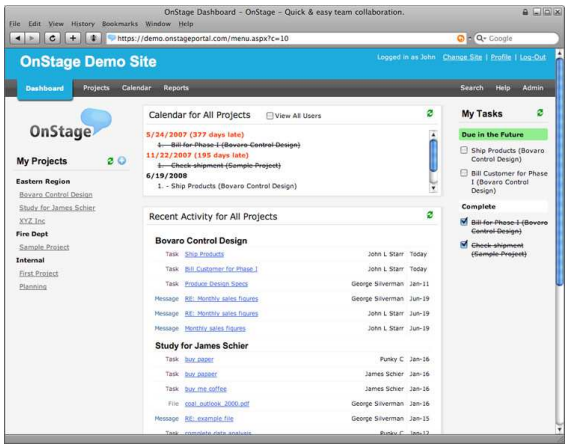
- Project management portals
- Corporate accounting software
- Project scheduling software
  - Microsoft Project® (Lecture 6)
  - Primavera®

19

PROJECT MANAGEMENT PORTALS

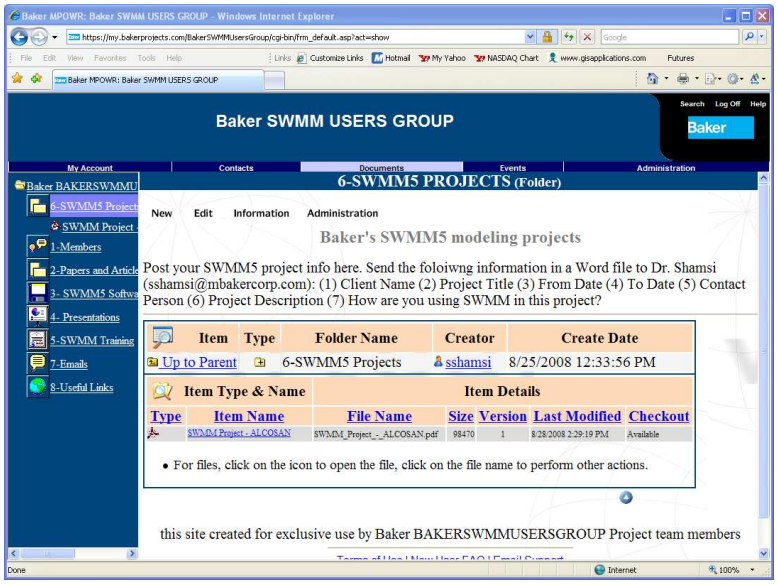
Portal Modules

- Home page
- Meeting Center
  - Meeting announcements
  - Meeting minutes
- Shared Files
  - Data
  - Documents
  - Maps and drawings
- Project Schedule
  - Gantt chart
  - Periodic progress reports from project manager
- Project Team
- Contacts
- Web Links
- Message board



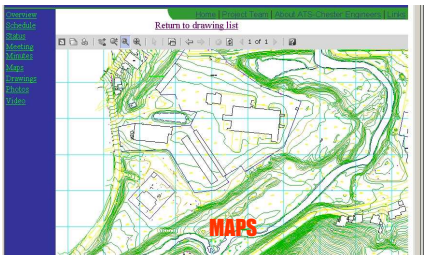
20

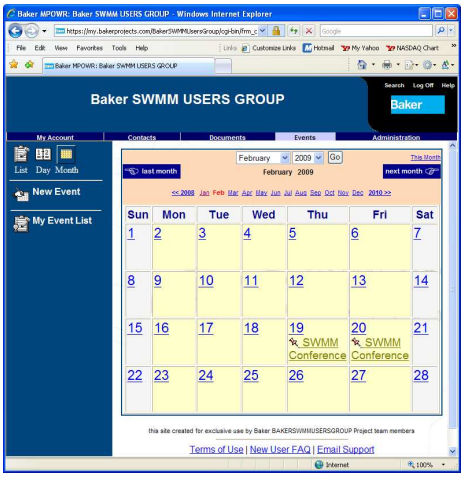
PROJECT MANAGEMENT PORTALS



21

PROJECT MANAGEMENT PORTALS

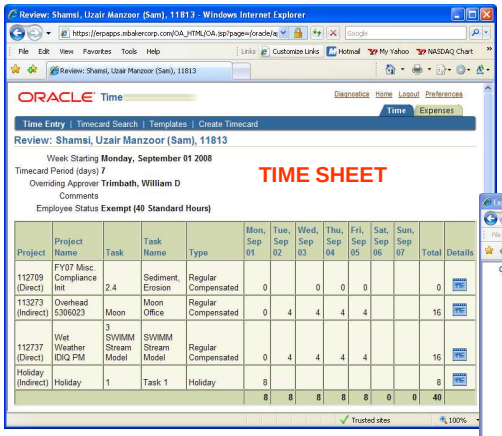




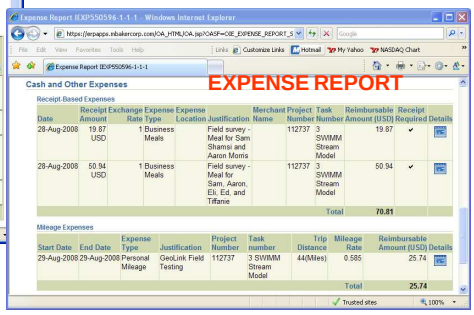
22

CORPORATE ACCOUNTING SOFTWARE

ORACLE
ENTERPRISE RESOURCE PLANNING (ERP) APPLICATION SOFTWARE



TIME SHEET



EXPENSE REPORT

23

CORPORATE ACCOUNTING SOFTWARE

PROJECT STATUS REPORT

Oracle Projects Weekly Status Report - Week January 14 to 18

	Project Name	On Target?	Tasks Completed this week	Tasks for next week	Critical Issues/Action Items (AI)/Assigned Resources
1	W2 Recon Statement	Yes	• Requirements clarification • Requirements verbal signoff • Design review & clarification 80% of report development complete	• Physical signoff of requirements • Physical signoff of design • Complete report development • Complete manual upload • Begin user testing	• None currently
2	Incorrect YTD	Yes	• Documentation of research & investigation findings • 100+ employees maybe impacted, issue appears to be related corrupt rows populated in the External Archiver tables • Logged a TAR with Oracle Support - 6669678.993 • OWC to review the issue with Oracle Support • Upload of requested report output to TAR	• Physical signoff of requirements • Physical signoff of design • Continue support of Oracle Support investigation requests	• Resolution dependent on Oracle Support
3	PO Requisition WF	Yes	• Requirements clarification • Requirements verbal signoff • Completed design document • Began development	• Physical signoff of requirements • Physical signoff of design • Complete WF development changes • Begin user testing	• None currently
4	Blanket Work Orders	Yes	• Project kickoff meeting & review of	• Physical signoff of project plan	• None currently

24

NETWORK DIAGRAM

REF.: CHAPTER 16 OF THE TEXT BOOK: PLANNING AND SCHEDULING

- **The Network Diagram: Graphically shows project tasks and their relationships**
- **Also called "Activity Graph"**
- **A scheduling technique that emphasizes dependencies**
- **Dummy activity: Used to impose logic constraints; do not represent any work, always have a zero duration (Ref: page 283, 8th Edition).**
  - **Dummy Activity 4-5 Constraint: Cannot start pump installation until excavation has been completed.**

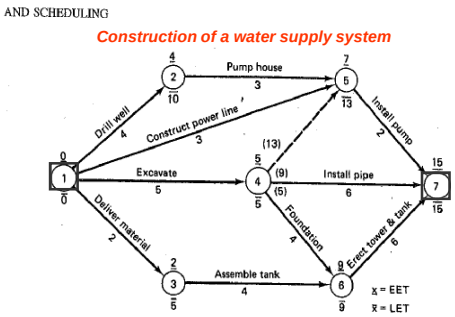


Figure 16-8 Example network—late event times.

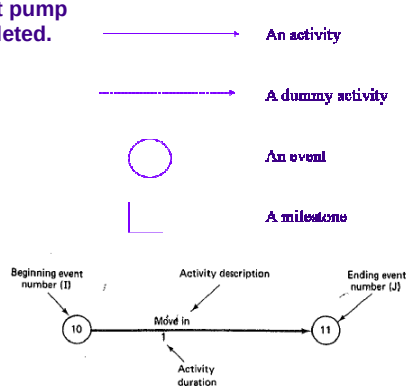


Figure 16-5 Activity-on-arrow notation.

25

PERT

PERT

- Program Evaluation and Review Technique introduced by the U.S. Navy in 1957 to support the development of its Polaris submarine missile program.

PERT/Time

- Activity graph with three time estimates (shortest, most probable, longest) on each activity to compute schedules.

PERT/Cost: Ref. Page 308 (8th Ed.) of text book

- Activity graph with scheduling of resources (e.g., facilities, skilled people, etc.)

26

CRITICAL PATH: DEFINITION

- The critical path is the series of tasks (or even a single task) that dictates the calculated finish date of the project.
  - That is, when the last task in the critical path is completed, the project is completed.
  - Any slippage along the critical path slips the whole project

27

CRITICAL PATH METHOD

- Uses Activity Graph with single time estimate for each activity to calculate:
  - Earliest start date or Early Event Time (EET): every activity begins at first possible time
  - Latest start date or Late Event Time (LET): every activity begins at the last possible time
- A standard method for managing large construction projects.
- On large projects, activity graphs with more than 10,000 activities are common.

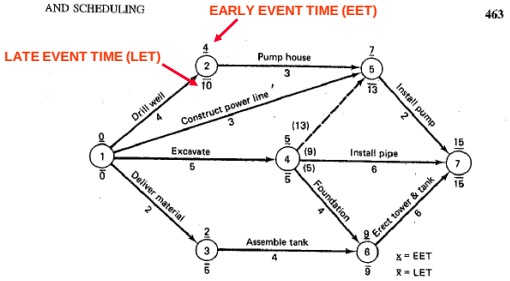


Figure 16-8 Example network—late event times.

28

CRITICAL PATH: CALCULATION

- Critical path: The path through the network which establishes the minimum project duration.
- Passes through all events whose EET=LET

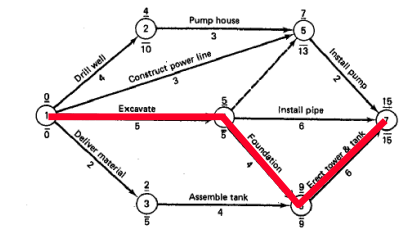
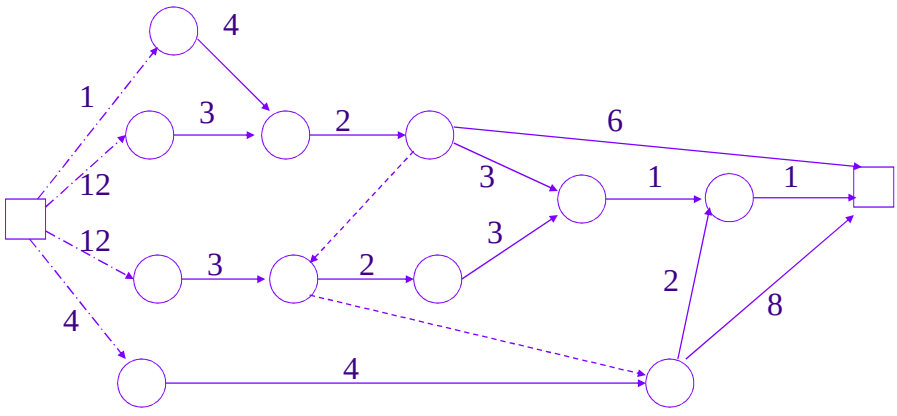


Figure 16-9 Example network—critical path.

29

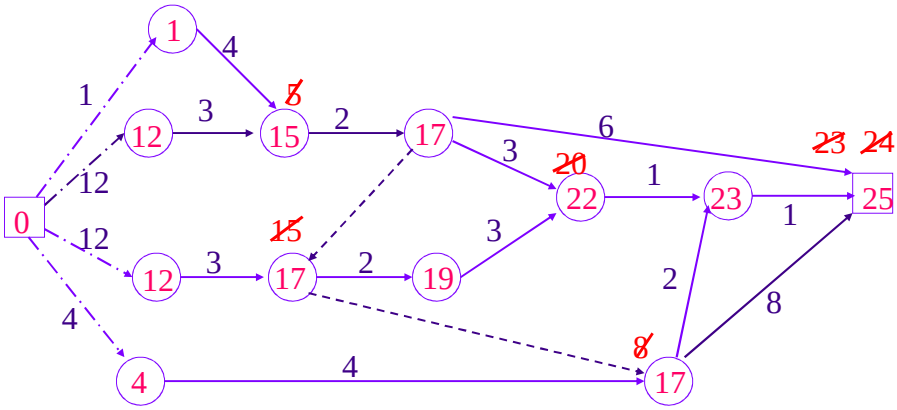
CPM EXAMPLE: TIME ESTIMATES FOR ACTIVITIES (WEEKS)



30

CPM EXAMPLE: EARLIEST START DATES

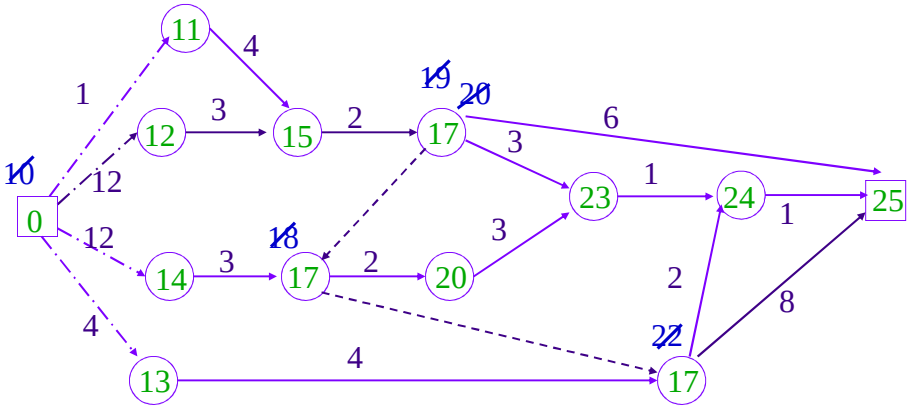
- ***All activities beginning at a given event have the same earliest start date.***
- ***Move <u>forward</u> and choose <u>larger</u> values***



31

CPM EXAMPLE: LATEST START DATES

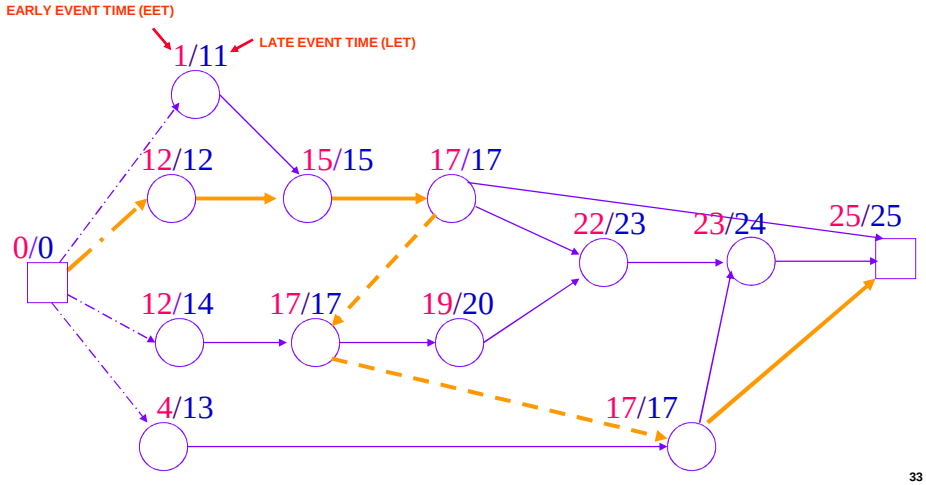
- ***Each event must be finished by the date shown or the final date will not be met.***
- ***Move <u>backward</u> and choose <u>smaller</u> values***



32

CPM EXAMPLE: CRITICAL PATH

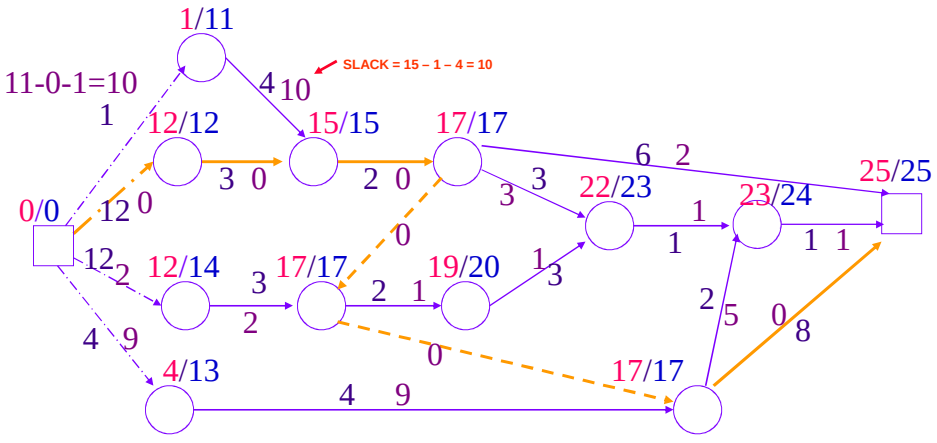
- ***Every activity on the critical path must begin on the earliest start date.***



33

CPM EXAMPLE: SLACK

Slack of activity = $(\text{latest start})_{\text{end}}$ - $(\text{earliest start})_{\text{begin}}$ - (time estimate)



34