Scheduling

Delivering On Your Promises

Why Schedule?

• “Don’t need to, I’ve done this before.”
• “I have the schedule in my head.”
• “Nobody will pay attention to it.”
• “Why bother, it just changes.”
• “I’m on the line if I show it to the trades.”
• “I’m on the line if I show it to the client.”

Scheduling will:

• Manage and hold the team accountable.
• Manage and hold the client accountable.
• Improve cash flow.
• Create an Even-Flow of Work.
• Improve profitability.
Why Schedule?

**Proper Planning Prevents Poor Performance**

- Builders are optimistic individuals; we tend to over-promise and then under-deliver.
- Tendency to leave out critical functions when schedules are unwritten.
- Proper scheduling involves examining all steps and their relationships.
- Scheduling will produce a document that can be used by the entire team.

Why Schedule?

**Scheduling is about setting goals.**

- Setting goals is the single most important factor leading to increased production.
- Individuals and groups work best when the goal is defined and attainable.
- Targets for performance will produce a vision for attainment which leads to superior results.

Why Schedule?

**Scheduling Develops Teamwork and Strengthens Relationships**

- The Schedule graphically illustrates the goals of the team.
- The Schedule shows the relationships of the team.
- The Schedule shows the dependencies of the tasks.
- Scheduling will help the team plan their workflow outside the current project.
Why Schedule?

Scheduling Helps Your Overall Business

• Integrating all your project schedules will lead to a more balanced workflow.
• Proper scheduling will lead to improved Cash Flow.
• Proper scheduling will result in improved profits.

What is a Schedule?

• Scheduling is unique to a Project.
• A Project has a definite beginning and an end.
• It is a set of tasks that lead to completion.
• It is not a set of daily, repetitive tasks.

The Schedule is critical to a Project’s 3 Processes

• **Planning**: Defining the Work, setting the costs, setting the time frame, allocating resources.
• **Controlling**: Staying on track, monitoring actual progress and costs, comparing to projections, working out deviations.
• **Managing**: Communication within the team, evaluation of success or failure, showing and illustrating relationships.
3 Types of Schedules

- Gantt Chart
- Critical Path Method (CPM)
- Program Evaluation Review Technique (PERT)

3 Types of Schedules:
Gantt

- Developed by Henry Gantt to graphically represent tasks on a timescale.
- Also known as Bar Chart Schedules.
3 Types of Schedules:
Critical Path Method (CPM)

- CPM is the fundamental Scheduling method.
- CPM is a mathematical model that calculates a project’s duration based on the individual tasks and their relationships.
- CPM was developed in the 1950’s by the DuPont Corp. as the first computer schedule program.

CPM Schedule

3 Types of Schedules:
PERT (Program Review Evaluation Technique)

- PERT Charts graphically show the relationship between tasks.
- PERT was developed by the U.S. Navy for the Polaris Missile Project.
Parts of the Schedule
Activities, Milestones, Durations

- Activities are *Tasks*.
- Represent one-of-a-kind type of action.
- Have a predictable time frame.
- Involve the same resources of personnel, equipment, or materials.
- Activities are unlikely to be interrupted.

- Milestones represent an activity that has no duration but is an active part of the Schedule.
- It is a significant event that needs to be completed before moving on to the next activity.
- Examples: Inspections, Client Decisions, Permits, Approvals, Selections.
Parts of the Schedule

Activities, Milestones, Durations

- The Duration is the length of time of each activity.
- Durations are used to calculate the length of the Project.
- Milestones do not have a Duration.

Parts of the Schedule

Critical Path

- The Critical Path is the ordered sequence of activities that leads to the project’s completion.
- The Critical Path is the network of activities that have direct relationship to each other for start and completion.
- Critical Path is represented by arrows.
- Activities outside the Critical Path are “non-essential” to the ordered sequence of completion.
Parts of the Schedule

Lead (or Lag) Times

- Normally, Lead Time is thought of as the lag between ordering and delivery.
- In Scheduling, Lead Time is the time relationship between Tasks.
- Negative Lead Time means that a task can start before the completion of its Predecessor.
- Positive Lead Time means that a task must wait for a specified time from the completion of its predecessor.
Parts of the Schedule

**Float Time**

- The Float Time is the time between the scheduled completion of a Task and a subsequent linked Task.
- It could be the “slack time” before the next linked task starts.
- It is not the same as Positive Lead Time. PLT is set and controls the Schedule; FT is controlled by the Schedule.
- The path of Tasks with zero or negative float becomes the Critical Path.
Parts of the Schedule

Constraints

• Constraints are limits imposed on the individual Task either manually or by the Schedule.

• Manual Constraints can be Early Start, Early or Late Completion, Date Constraint, or Float.
Working With Schedules

- Schedules will hold all parties accountable.
- Schedules will provide cash flow models.
- Schedules will even out the flow of work.
- Schedules will increase profitability.
Working with Schedules

**Accountability and Scheduling**

- Include all parties in the schedule.
- Describe the duties expected.
- Show links to associated tasks.
- Discuss responsibilities and implications on a regular basis.

**Trade Accountability**

- Update regularly.
- Provide multiple advance notification.
- Provide printed schedules at job meetings – pre-start and construction meetings.
- “Look-A-Heads”
Working with Schedules:

**Updating**

- Regular updates provide accurate Project status.
- Weekly Updates:
  * Project’s Weekly Report should have a section for Schedule review.
  * PM or Lead Carpenter should fill in “% Complete” and “Number of Days to Completion”.
  * This provides a “from the field” review of Project Status.
Working with Schedules:

“Look-A-Heads”

- Schedule can be used to look into the future.
- This is useful for:
  - Ordering Materials and Work.
  - Client Decisions.
  - Architect Approvals.
- The “Look-A-Head” can be specific to the user:
  - Weekly for the trades on site.
  - Monthly for the Project Managers.

Client Accountability

- Include the client responsibilities:
  - Decisions.
  - Selections.
  - Payments.
- Allow lead time for decisions and selections.
- Establish Baselines for performance.
Working with Schedules: Communication Tool

- Schedule can be used to manage client’s expectations.
- It is a graphic document of project’s progress (i.e.: no surprises!!).
- Use the Schedule at Site meetings.
- Provides communication and accountability for crews, trades, suppliers.
Working with Schedules:

**Baselines**

- Creating Target Dates will result in a Baseline for the Project.
- Target Dates can be for individual Tasks or for the Project as a whole.
- Target Date may be the completion date as established by the Schedule.
- Baselines are a useful tool for comparing progress to original forecast.

Baselines are useful for internal planning and review.
- Baselines are useful for documentation of the Project’s progress.
- The Actual vs. the Baseline will highlight where delays have occurred due to controllable and uncontrollable circumstances.
Working with Schedules

Communicate the Schedule with the Client

- Remember the client will probably not be as knowledgeable as you.
- Educate the client so as to set and manage expectations.
- Communicate frequently:
  - Make it written.
  - Include with monthly invoice package.
  - Include summary in cover letter.
- Be honest and realistic.

Working with Schedules

Documentation and Accountability

- When the Schedule becomes part of the Contract Documents, for both client and trades, it provides for documentation and accountability.
- Baselined Schedule can document delays.
  (Example: Milestones missed due to client indecision.)
- Critical Path deviation is documented.
  (Example: Results of CO or unforeseen conditions.)

Integrating Scheduling with Daily Operations

Project Specific Planning

- Use Look-A-Heads to monitor progress and schedule future work.
- Assign individual to be responsible, and accountable, for Look-A-Head activities.
- Use the Schedule as a communication document for the entire team.
Integrating Scheduling with Daily Operations

Project Specific Planning

The Schedule should integrate with other construction documents:
• Weekly Reports.
• RFI’s, RFP’s
• Budget.
• Scope of Work.

Multi-Project Planning

• “Stack” Projects to view all Projects within a company.
• Master Schedule is helpful for planning future work – even out Work Flow.
• Master Schedule is helpful for spotting crews or trades that are over committed.
Integrating Scheduling with Daily Operations

Resource Planning

- Resources of manpower, subcontractors, and equipment can be loaded into the Schedule.
- Then use the Schedule to view Resource conflicts.
- Resources can be Leveled (or balanced) across the Schedule, or Schedules.
- Costs associated with the Resources are allocated across the Schedule.
Integrating Scheduling with Daily Operations

Cash Flow and Financial Planning

- Allocating Costs will provide Cash Flow picture for the Project.
- A Billing Schedule can be developed from the Schedule.
- Weekly review of Schedule can be compared to the costs posted.
- Cash Flow projections lead to increased profits.
Scheduling In the Future

Current Scheduling programs provide the single most important Project Management tool.

- Stand Alone Programs
- Integrated Programs
- Web-based Programs

Scheduling programs will continue to become more integrated with other programs and within programs.
Successful Scheduling Means:

• Clear communication of your expectations.
• Setting guidelines for accountability.
• Anticipating problems.
• Creating solutions.
• Creating efficiency.
• Improving cash flow.
• Increasing Profitability.

The Goal of Scheduling Is:

More efficient projects over a given period of time, not, more jobs at one time!

Need More Information?

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