

Chapter 7 – Determining Durations

ARC 226 CONSTRUCTION SCHEDULING

General

- Network logic diagram has been created
 - Mgmt team has decided how the project will proceed
- Durations are added to the activities
 - Usually rounded to the nearest day
 - May use half-day designations
 - Some manufacturing or maintenance projects may schedule to the hour or even minute
- The durations must be realistic with respect to a real-world application

Duration with Respect to Cost

- Duration must
 - Meet the quality standards
 - Provide a safe work environment
 - Meet the budget
 - Finish on time
- The duration must represent the realistic costs
- Shortening or lengthening the duration from what is typical will increase the costs for the activity
- Use the duration that gives the lowest cost

Typical Approach

- Obtain the quantity of work to be done
 - From the estimate
- Obtain the productivity rates for the crew
 - Historical company records
- Sources other than company records
 - Means Estimating Handbook
 - Walker's Manual for Construction Cost Estimating
 - The company records are best
- In general:
 - $\text{Duration} = \text{Quantity} / \text{Productivity Rate}$

Durations from Subs

- Subs are often the best source of information regarding durations
 - Go to the contractor that will be completing the work
- The sub's duration may not meet the GC's
 - The sub and the GC should communicate the constraints of the schedule before the bid is due
 - Awarding to the lowest bidder may not be wise
- Pre-qualification
 - Validate the sub before the bid is due
 - Ask the sub for cost and time for completion

Sub Pre-qualification

- Communication with the subs before bidding and during construction is crucial
- Furnish the duration that meets the needs for the project before the bid is due
 - Agree to the duration early in the project
 - Work to eliminate disputes

Durations from Sups

- It is important to get input from all the team members
- The experienced superintendent can be the most valuable source of information regarding durations
 - Rely on the experience of the crew leaders

Weather Issues

- Time of year and weather conditions can have a drastic effect on activity duration
 - Some activities may not be possible during certain times of the year
- Schedule adjustments for weather
 - Increase the duration of the individual activities
 - Add on several days at the end of the schedule to account for non-work days due to weather
 - Insert weather contingency activities into the critical path
 - Input the weather delay days (prospective) into the calendar as non-work days
 - Combination of the above methods

Determining the Weather Contingency

- Check local weather data
- Decide what constitutes a rain or snow day
 - By comparing this to the local weather, an approximation can be made for rain/snow days
- Weather contingency days must be in the schedule
 - If the weather becomes less cooperative, the contractor may be entitled to more time
- Activities that will cause a large portion of the workforce to be absent should also be considered

Durations on the Logic Diagram

- The duration will be added to the logic diagram in the appropriate location of the activity box
- Durations are then added to each activity

Conclusion

- Durations are not a guess
 - Estimate the crew size
 - Assign the appropriate productivity level
 - You may need to make notes about the source of your productivity rates
 - Crew leaders, company data, Means or Walker's
 - Check quantities
- Take into consideration weather delays
- Involve the entire management team
 - Include the subs
- Manage the duration for an activity in the same manner as managing the costs for the activity