BOOK REVIEW by Ronald M. Winter, Copyright August 8, 2003

 "**Construction Scheduling with Primavera Project Planner**," Second Edition by Leslie Feigenbaum, Senior Lecturer, Texas A&M University, College of Architecture, Department of Construction. Published by Prentice Hall ISBM: 0-13-092201-3, hardbound, 340 pages.

Forward: The following was published in the Association for the Advancement of Cost Engineering's (AACEi) monthly journal, "Cost Engineering" in the October 2003 edition (Volume 47, No. 10).

Foreword

The AACE Planning and Scheduling Committee has been trying to establish a library of reference books for its member's use. Even with such a library, we would still need a synopsis to assist members in narrowing their reference search.   I thought that I would help the cause by purchasing one of the textbooks from the recommended list and reviewing it. I never intended to start a 'professional' free-for-all; it just worked out that way.

Overview

This is a handsome, well-illustrated textbook that can be re-read and referenced many times. Primavera promotes Mr Feigenbaum's book on their own website under "Project Management Resources," at http://www.primavera.com/search/pmsources.html. It is obvious that the author is very proficient in developing economical construction work plans.

This book is almost exclusively tailored toward the Contractor, and not the Owner's representative.   This focus gives the author the ability to stick to the subject and not wander all around, trying to hit every possible point. Items such as how to review a Baseline Schedule or schedule update are almost completely missing. With this in mind, I can say that I strongly recommend this book to its target audience, once we address the 'professional' free-for-all issue.

CPM Calculation Method

This review should have only taken a couple of days, at most to produce. Instead it consumed much of two weeks for me, Mr. Feigenbaum, and a large number of people on the AACE Planning and Scheduling Committee. The reason for this ruckus was the fact that we discovered that there exists two different, formalized methods for computing a Critical Path Method (CPM) schedule using Precedence Diagramming Method (PDM.)

No one in the three above-mention groups of people were aware of the fact that there are two methods. Mr. Feigenbaum thought that his method (what I call

"The Aggie Method") was correct and the AACE (myself included) thought that our method (what I call "the AACE Method") was correct. We both though that there were no 'methods,' just the right way and the wrong way to compute a CPM on a PDM network. For more on this, please refer to my 'sidebar' piece titled, "How to Befuddle a College Professor" by Ronald Winter.

The end result of this 'exercise' is our new belief that for a long time now, there has existed two distinct and different methods for computing the CPM and that both appear to be legitimate.

Mr. Feigenbaum does an excellent job of explaining and demonstrating the Aggie Method. The only problem with this approach is that the title of the book references Primavera Project Planner (P3.) Unfortunately (for this book,) P3 uses the AACE Method of calculation. The exercises shown in the book will not derive the work day numbers found in the software. The calendar dates derived from the exercises do appear to match those of the P3 software.

Minor Errors

The author makes a common mistake when trying to give a real-world example of the use a relationship lag. He lists the pouring and forming of concrete as the activity and the curing time for the concrete as the relationship lag. Unfortunately for this example, P3 uses the same calendar for the activity as it does for the successor lag. This means that curing of concrete only takes place on week days and not over the weekends or holidays.

A 'master schedule' is presented early-on to allow for CPM calculation practice and then to illustrate the points to be made. As this is a construction-oriented book, it would have been nice to show the NTP, Mobilization, and Substantial Completion in this sample schedule. In addition the author freely uses 1-day activities, problematic to use in real construction conditions.

Certain errors exist in the illustrations. The fragnets listed on page 27 through page 44 appear to be from the 1st Edition of the book. They do not match the master schedule presented earlier in many of the Activity IDs or descriptions.

The author lists 3 types of activity float and one type of relationship float. From its description, the 'relationship float' is what P3 and I call 'Free Float." Later, the author says that P3 only recognizes one type of float, Total Float. In actuality, P3 recognizes two types; Total Float and Free Float. To reduce confusion, I feel that the explanations should be in line with the software tool being discussed.

It appears from the various discussions in the book about critical path, that the author is unfamiliar with the P3 feature called "Longest Path." This important feature was introduced in P3 for Windows, Version 2.0b. Mr Feigenbaum

describes the critical path as the "longest path" but always uses this term with lower case letters and as a description, not a feature or measure.

The discussion and illustration of hammocks is incorrect in that the books says that P3 hammocks can summarize either the start or the end of any activity. The illustration shows a predecessor activity related to a hammock by a finish-to-start relationship. This treatment is true of the P3e/c software product but will only produce an error if tried with P3.

Showing his contractor-background, the author reiterates how useful P3 barcharts are and downplays P3's ability to produce time-scaled network diagrams. He says that time-scaled network diagrams are only fit for large plotters and frequently end up as a wall direction. The example of such a network diagram in the book is so poorly done that it almost proves his point.

Mr Feigenbaum states that you should update a schedule by inputting your estimates for each activity's percent complete. This is advice goes against AACE recommended practices. The only accurate method for establishing the progress of an activity is to estimate the remaining duration. And contrary to the examples shown, an update form should never contain late dates and total float. Besides confusing the Foreman, you are influencing the answer.

In Balance

Do not feel after reading about all of these minor errors that I did not appreciate the book being reviewed. Mr. Feigenbaum has a terrific grasp of properly managing contractor resources. The discussion began with how to make-up an intelligent bid, showed how to build a good schedule, how to add resources and costs, how to update the schedule, and finally how to track and forecast time and cost deviations. This book is written directly to construction contractors using real-world construction examples.

Mr, Feigenbaum tells you to not use the start-to-finish relationship. He explains the result of using start-to-start relationships between independent activities. The author warns against resource loading schedules if the work is being performed by sub-contractors. Practical exercises in exporting and importing data between P3 and spreadsheets for various situations are very helpful. There is a very nice section on ethics (the author is in favor of being ethical) when discussing cost loading schedules and the concept of 'front-loading.'

Final Note

There is another book currently out on the market with the exact same title by David A. Marchman. This book is also on the Primavera website reference list. This textbook was released in 1997 and based on P3 Version 2.0e. Customer

reviews were luke-warm, some saying that it offered "little practical construction value." I have not personally reviewed this other book.