

CE 4990 - Construction Scheduling

Week 5, Problem Set, Due 02/15

February 7, 2012

Problem 1¹

Draw the network diagram for the following project using information in Table 1. Compute the Early Start, Early Finish, Late Start, and Late Finish times. In addition, show the Total Float and Free Floats for each of the activities. Illustrate the critical path.

Table 1: Precedence information

No.	Activity	Duration	Depends on
1	Mobilize	1	-
2	Set up scaffolding	2	1
3	Construct security barricades	1	2 SS/1
4	Strip off old roofing	3	2,3
5	Repair damaged decking	2	4 SS/1
6	Repair damaged cant strip	1	4, 5
7	Replace sheetmetal	1	5 SS/1
8	Install felt roofing	1	6,7
9	Hot mop roof	2	8
10	Inspect roofing	1	9
11	Call for inspection	1	10 SF/3
12	Remove scaffolding	2	10
13	Haul off roofing materials	2	6,7
14	Demobilize	1	12 FF/1, 13 FF/1

where, $x/\#$: Activity x must finish $\#$ days before this activity can begin.

$xSS/\#$: The $\#$ of days after activity x starts that this activity can begin.

$xFF/\#$: This activity cannot finish until $\#$ days after x is completed.

$xSF/\#$: This activity must finish $\#$ days before x can start.

Problem 2

Part I: Using the abbreviated project information (5 activities only) develop a simple linear schedule. Let the X-axis represent time and the Y-axis represent percentage completion (0-100%). Use the production rate information to calculate project durations, assuming that the production rates are uniform through the entire length of the project.

Part II: Using the durations in the “More Detailed Activity Chart” on page 3, and the detailed project constraints on page 4, develop a linear schedule for the project. Let the X-axis represent time and the Y-axis represent stations (1078+05.29 to 1613+24.64), assuming that the production rates are uniform through the entire length of the project for all activities. Clearly show all time and space buffers.

¹Chapter 3, problem 11 in Hinze