

**PR1** – Posted by Dr. Tarek Hegazy, University of Waterloo, [tarek@uwaterloo.ca](mailto:tarek@uwaterloo.ca)

A General Contractor has the following resources stored in the company's resource list.

**Labor:**

Code	Basic \$/hr
L1	15
L4	25

**Equipment:**

Code	Basic \$/hr
E2	50
E3	20

**Materials:**

Code	Desc.	Unit	Basic \$/Unit
M12	Fresh Concrete delivered to site	m3	17

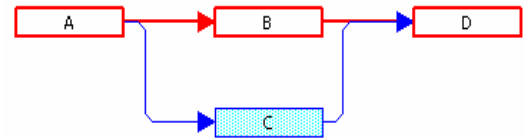
**Crews:**

Code	Composition
CR7	2L1 + 3L4 + 1E2 + 2E3

**New Bid:**

The contractor is now preparing a bid for a small job in a commercial project. Only four activities are involved as shown in the network below.

No.	Activity	Depends on
1	A. Pre-Concrete	----
2	B. Concrete 1	1
3	C. Concrete 2	1
4	D. Additional Work	2,3



- Deadline is 7 days. Late Penalty is \$5,000/day and early completion bonus is \$1,000/day.
- Supervisor reports every 2 days; interest=1%; Markup=5%; and Hold Back=10%.
- No mobilization payment or credit for suppliers is involved;
- For the project to be profitable, the contractor does not want to spend more than **70,000**.
- Part of the expenses is a supervisor who costs \$35 an hour and will be needed for the project duration.
- Also, due to his involvement in many other projects, the contractor has only four **L1** labors available.

**Activities' Estimates:**

- Activities **A** and **D** employ subcontractors. Each activity has two quotes for the duration and the subcontractor's basic cost, as follows: **Quote1** (4 days, \$10,000); and **Quote2** (2 days, \$12,000).
- Each of Activities **B** and **C** involves a quantity of **400 m3** and will involve the use of the contractor's own resources. Each activity has two construction **options** (normal work versus overtime work) as follows:

Option	Unit	Resources	Regular Production/8-hr
Normal work	m3	1 CR7 + M12 (Amount = Total Production)	100
Overtime - 6 hrs	m3	1 CR7 + M12 (Amount = Total Production)	100

**Requirements:**

Enter the resources data into EasyPlan's resource bank. Then, enter the project activities and use the "**Auto-Estimate**" option in the activities sheet to estimate activities' costs. Determine a plan that meets the contractor's constraints. **Check your solution**. Print the schedule, the Cash Flow, and the bid report.