

Homework Assignment #4 (Due 02/17/2017 @5:00PM)

Table 1 provides some information regarding the cost and schedule of a small project. In addition, you know that there is no advance payment, 11.5% job overhead (excluding tax and bonds), 4.5% tax, 6.5% office overhead, 14% profit, and 1.5% bonds. Also, as per the contract agreement, payments to the Contractor are made two months later with 10% retainage. Accordingly, you are required to draw the cash flow diagram (cost and payment curves), and determine the maximum cash-out-of-flow.

Notes and Hints:

- The Contractor commits the cost of bonds and mobilization at beginning of month 1.
- The Contractor bills the owner for the mobilization at end of month 1.
- For pricing (and consequently billing), the cost of bonds is spread over all items.
- Payment by Contractor is made to the Subcontractor on a back-to-back basis (i.e., the Contractor pays the Subcontractor once he/she is paid by the Owner) – without retainage.
- You already developed the CPM precedence diagram to determine the early start and finish dates of each activity, see Figure-1. You will use an early start schedule.
- You already developed the recap sheet to determine the costs and prices of activities, see Table-2.
- Soft copies of the tables are available on Blackboard

Table -1

Activity	Duration (months)	Depends On	Unit	Estimated Quantity	Labor Cost(\$)	Material Cost(\$)	Equipment Cost(\$)	Subcontract Cost(\$)	Direct Cost(\$)
Mobilization	0	-	LS	1					5,500.00
A	2	-	Cu.m.	2,000	2,800.00	0	740.00	0	
B	1	A	Cu.m.	1,240	4,900.00	0	630.00	0	
C	1	A	Cu.m.	580	7,520.00	0	1,960.00	0	
D	3	A	Cu.m.	338	7,110.00	0	2,150.00	0	
E	2	B	Sq.m.	1,200	2,510.00	5,860.00	680.00	0	
F	2	B	LS	1	0	0	0	11,800.00	
G	1	B,C	L.m.	820	2,050.00	10,140.00	1,270.00	0	
H	4	C	Sq.m.	1,450	2,140.00	6,520.00	0	0	
I	1	D	ea.	810	810.00	9,040.00	0	0	
J	3	E,F	Sq.m.	1,450	3,540.00	3,250.00	1,190.00	0	
K	2	H,I	LS	1	0	0	0	10,560.00	
L	2	G,J,K	Sq.m.	885	820.00	6,020.00	460.00	0	
M	1	K	Sq.m.	1,420	1,920.00	5,740.00	890.00	0	
N	1	L,M	Sq.m.	360	4,820.00	920.00	1,460.00	0	

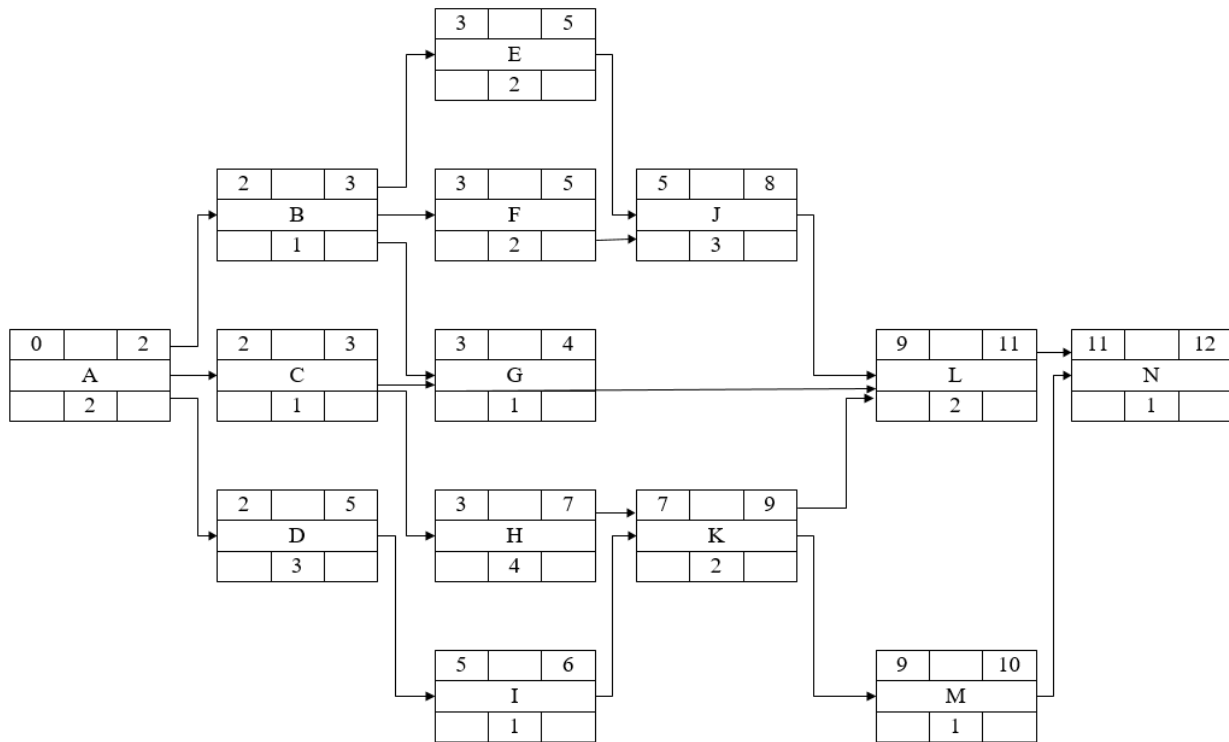


Figure -1

Table -2

Activity	Duration (month)	Depends On	Unit	Estimated Quantity	Labor Cost (\$)	Material Cost (\$)	Equipment Cost (\$)	Subcontract Cost (\$)	Direct Cost (\$)	Total Cost (\$ Excluding Bonds)	Total Price (\$)	Unit Price (\$)
Mobilization	0	-	LS	1					5,500.00	6,825.01	7,899.00	7,899.00
A	2	-	Cum.	2,000	2,800.00	0	740.00	0	3,540.00	4,392.83	5,084.08	2.54
B	1	A	Cum.	1,240	4,900.00	0	630.00	0	5,530.00	6,862.24	7,942.08	6.40
C	1	A	Cum.	580	7,520.00	0	1,960.00	0	9,480.00	11,763.84	13,615.00	23.47
D	3	A	Cum.	338	7,110.00	0	2,150.00	0	9,260.00	11,490.84	13,299.04	39.35
E	2	B	Sq.m.	1,200	2,510.00	5,860.00	680.00	0	9,050.00	11,230.25	12,997.44	10.83
F	2	B	LS	1	0	0	0	11,800.00	11,800.00	14,642.75	16,946.94	16,946.94
G	1	B,C	L.m.	820	2,050.00	10,140.00	1,270.00	0	13,460.00	16,702.67	19,331.01	23.57
H	4	C	Sq.m.	1,450	2,140.00	6,520.00	0	0	8,660.00	10,746.29	12,437.33	8.58
I	1	D	ea.	810	810.00	9,040.00	0	0	9,850.00	12,222.98	14,146.39	17.46
J	3	E,F	Sq.m.	1,450	3,540.00	3,250.00	1,190.00	0	7,980.00	9,902.47	11,460.73	7.90
K	2	H,I	LS	1	0	0	0	10,560.00	10,560.00	13,104.02	15,166.08	15,166.08
L	2	G,J,K	Sq.m.	885	820.00	6,020.00	460.00	0	7,300.00	9,058.65	10,484.13	11.85
M	1	K	Sq.m.	1,420	1,920.00	5,740.00	890.00	0	8,550.00	10,609.79	12,279.35	8.65
N	1	L,M	Sq.m.	360	4,820.00	920.00	1,460.00	0	7,200.00	8,934.56	10,340.51	28.72
Totals										127,720.00	158,489.19	183,429.11
Total Direct Cost										127,720.00		
Job Overhead excl Tax & Bonds(11.5%)										\$14,687.80		
Subtotal										\$142,407.80		
Tax (4.5%)										\$6,408.35		
Subtotal										\$148,816.15		
Office Overhead (6.5%)										\$9,673.05		
Subtotal										\$158,489.19		
Profit (14%)										\$22,188.48		
Subtotal										\$180,677.69		
Bonds (1.5%)										\$2,751.44		
Total Bid Price										\$183,429.11		

Cost Factor = Total Cost Excluding Bonds / Total Direct Cost = 1.24091
 Price Factor = Total Bid Price / Total Direct Cost = 1.43618

Total Cost (Excluding Bonds) = Total Direct Cost + Job Overhead excl tax & bonds + Tax + Office Overheads = **\$158,489.19**
Total Cost (Including Bonds) = Total Direct Cost + Job Overhead excl tax & bonds + Tax + Office Overheads + Bonds = **\$161,240.63**