CV4011 Project Planning & Management PYP 19/20 Semester 1

1 (a)(i)

The QP (Design) is the PE overseeing the design of the project. He must approve all drawings before construction of the relevant portion may proceed and will be held responsible for design faults.

The QP (Supervision) is the PE overseeing on-site construction. He may be assisted by other site staff (i.e. REs, RTOs) who report to him. He ensures that the construction follows the drawing specifications. His specific duties include:

- Supervising the carrying out of building works
- In the absence of a site supervisor, giving supervision
- Keeping and maintaining records on the premises
- Submitting reports and certificates to the Commissioner of Building Control (CBC)
- Notifying CBC if works are suspended for 5 months or more

1 (a)(ii)

On one hand, if QP(D) and QP(S) are performed by the same PE, the QP(S) would be very familiar with the design. This would make him more able to ensure adherence of on-site construction to the drawings and to make quick decisions regarding any proposed on-site adjustments. There is no conflict of interest as the main role of QP(S) is not to check the design approved by the QP(D).

On the other hand, having different PEs perform both roles gives an extra pair of eyes to check the designs for structural integrity. This extra layer of precaution may be helpful in spotting errors.

However, in my opinion, this role is already satisfactorily performed by the Accredited Checker, who must independently approve the QP(D)'s designs. Hence, I think that the potential benefits of engaging the same PE as both QP(D) and QP(S) outweigh any potential drawbacks.

(PYP author note: I think you can argue for either side as long as your reasons make sense)

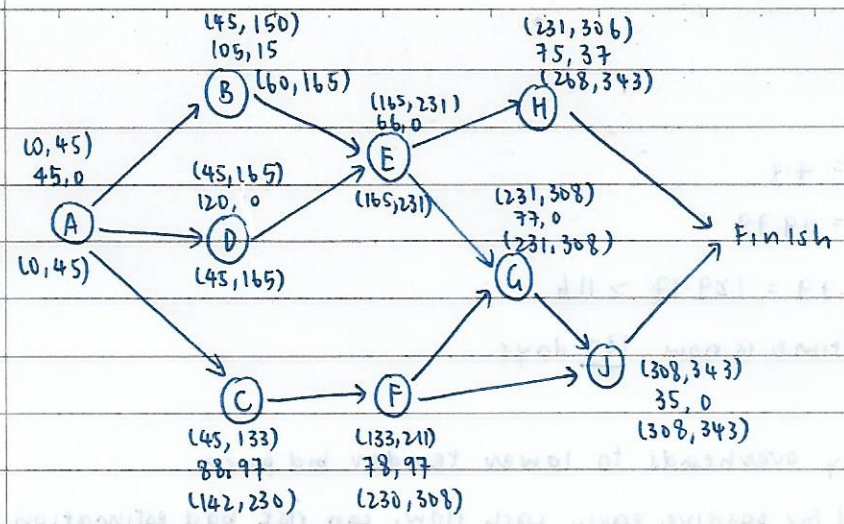
1 (b)(i)

Information to Request	**Impact on Tender Approach**
Contracting method (e.g. general contract, design-build)	Assess extent of engineering design responsibility
Type of contract (e.g. unit price, cost-plus)	Assess level of financial risk to be absorbed
Locations/sites and constraints, project time frame, specifications	Affects tender construction design and cost estimation
Estimated unit cost and quantity of materials	Balanced/unbalanced bid
Instructions on when and where to obtain and submit bid documents or make clarifications	Scheduling of preparation of tender documents, submission procedures

1 (b)(ii)

- Consult with key personnel, e.g.:
    - Project team members: to confirm if they are onboard and available and check for differences in understanding/expectation of the project with respect to project execution and work arrangement
    - Planner: to understand critical path and activities, other constraints, and assumptions made when drawing up schedule
    - Construction manager: to understand potential challenges during project
- Conduct site recce to better visualise the site and constraints due to surrounding developments
- Obtain site investigation documents from neighbouring plots of land to estimate scope of geotechnical works needed for basement and foundation

2(a)(i)



Critical path: A D E G J

Project duration: 343 days

(ii) Reduce E by 20 days

Reduce G by 24 days

Final project duration: 299 days

(b)(i) N = 116 units

R = 6 units / week

B = 3 days

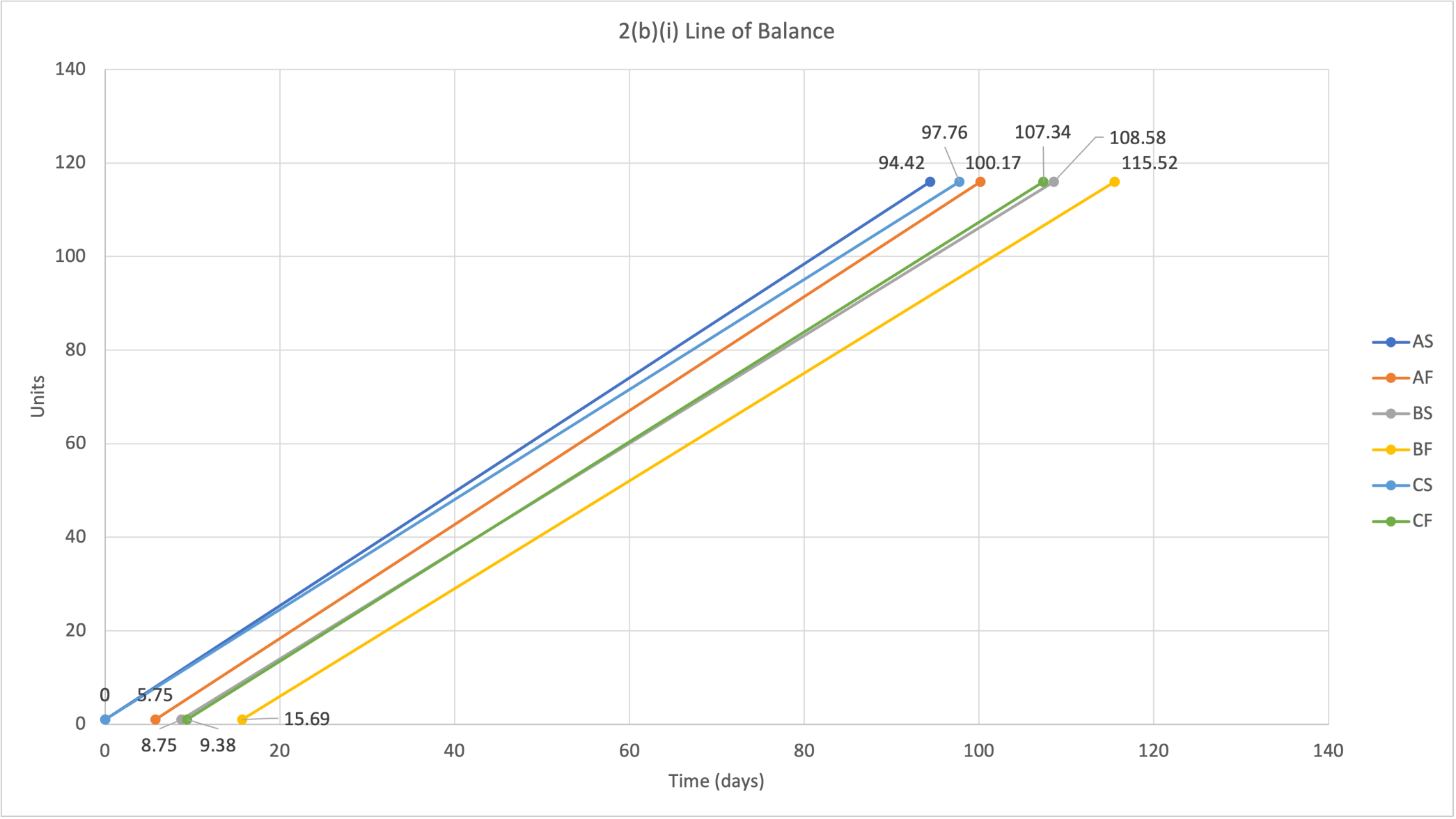
d = 5 days / week

h = 8h

Activity	M	Q	G	g	U	n	T	S
A	230	5	34.5	35	6.09	7	5.75	94.42
B	500	9	75	72	5.76	8	6.94	99.83
C	900	12	135	132	5.87	11	9.38	97.96

unit	A_S	A_F	B_S	B_F	C_S	C_F
1	0.0	5.75	8.75	15.69	0.0	9.38
116	94.42	100.17	108.58	115.52	97.76	107.34

Start with buffer	8.75
End without buffer	108.58
End with buffer	103.17
Start from back	3.34


2(b)(i) Line of Balance
Units
Time (days)
0
20
40
60
80
100
120
140
94.42
97.76
100.17
107.34
108.58
115.52
0
5.75
8.75
9.38
15.69
AS
AF
BS
BF
CS
CF

(ii) 116 days

(iii) New $U = \frac{qR}{Q} = \frac{108 \times 6}{135} = 4.8$

New $S = \frac{(N-1)d}{U} = \frac{115(5)}{4.8} = 119.79$

New $C_F = 0 + 9.38 + 119.79 = 129.17 > 116$

$\Rightarrow$ Project completion time is now 130 days.

3(a) Allocate less company overheads to lower tender bid price

Balance bid (no need for positive early cash flow, can risk bad estimation by owner)

Invest in improving safety in the long run

(b) (i)

Activity	BCWP($) A	B	C	D	Total	% complete
1	20300	20500	20250		61050	100
2	24000	21000	15000		60000	100
3	27500	32000	15000		74500	100
4	13440	11200	9920		34560	32
5	14354	19933	24375		58662	54.17
6	9900	12375	13750		36025	55
7	0	0	0		0	0
Total	109494	117008	98295	115500	440297	
ACWP ($)	125300	160000	95000	103500		
CV ($)	-15806	-42992	3295	12000		

(ii)

	A	B	C	D
CPI = $\frac{BCWP}{ACWP}$	0.87	0.73	1.03	1.12
EAC ($)	194884	245864	157777	172500

Original total direct cost = 170300 + 179800 + 163250 = $513350

Original total indirect cost = 70 x 2750 = $192500

Total cost = 513350 + 192500 = $705850

New total cost = 194884 + 245864 + 157777 + 172500 = $771025

Original value = 115% x 705850 = $811728

New gross profit = 811728 - 771025 = $40703

(iii) Advantages:

- Identify responsible parties early
- Observe current cost levels and progress
- Compare cost incurred with budgetary provision
- Provide information to take corrective action in time

Disadvantages:

- Lag in response time to obtain cost information
- Depending on when the cost information is obtained, may not be meaningful

4(c)

Item	Actual Quantity	Unit Price ($)	Payment ($)
Sand	4500	4	18000
Rock	6000	20	120000
Fill	3500	12	42000
Total			$180000

(d)

Item	Actual Quantity	Unit Price ($)	Payment ($)
Sand	4500	2	9000
Rock	6000	32	192000
Fill	3500	10	35000
Total			$236000

(e)

Item	Est. Qty	Actual Qty	Variation (%)	Payment ($)
Sand	8000	4500	-44	9000
Rock	2000	6000	200	32(2000) + 0.75(32)(4000) = 160000
Fill	4000	3500	-12.5	35000
Total				$204000

4 (a)

1. Offer and acceptance

An offer is considered to be made when one person (party) signifies to another person (party) a willingness to enter into a binding contract on certain specified terms. An acceptance creates the contract, provided that it is made in the manner and at the time specified in the offer.

2. Meeting of the minds

Contracting parties must agree on the basic meaning and legal implications of the contract.

3. Consideration

Consideration is something of value. It is the primary reason or main cause for a person (or party) to enter into a contract. It is something of value received by one of the parties in exchange for another item or action that is of value. Both parties to a contract must obtain consideration. Otherwise, the contract is not valid.

4. Lawful subject matter

The subject must be clearly defined in existence. It cannot violate any fundamental dictates of common law or public policy.

5. Competent parties

Anyone, with a few exceptions (infants or not mentally competent), acting in good faith may enter into a binding contract. If one of the two contracting parties is judged to be incompetent, the contract can be nullified.

4 (b)

- Direct expenditure
- Overhead
- Profit
- Missing items

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