

AMERICAN UNIVERSITY OF BEIRUT
FACULTY OF ENGINEERING AND
ARCHITECTURE

CIVE 580 / ENMG 502
CONSTRUCTION MANAGEMENT
PROF. M. ASEM ABDUL-MALAK

Additional Exam Questions 4
December 2009

Case Study (Questions 1-4)

A Client developing a mixed-use project of 500 apartments, commercial space, and underground parking is under a major constraint of starting construction on the ground in a matter of a few weeks from the appointment of the A/E. Once construction is started with excavation and shoring works, it is expected to proceed directly with concrete works for the sub-structure and progressing continuously with above-ground works, including concrete as well as other work trades. The Client has a project management (PM) firm acting on his behalf, which has already helped him appoint a reputable consulting firm (A/E) to provide design and construction supervision services. The Client has decided to work with a prominent contracting company, familiar with the locality of the project, to undertake all construction works. However, the Client does not foresee going for a cost-plus-a-fee arrangement to engage this preferred general contractor (GC). The PM and the A/E agreed to a methodology for delivering the design in packages (not necessary along trades, but rather along sections of the project), allowing construction to proceed as desired. It is also agreed that the GC shall propose unit rates for negotiation with the PM and the A/E. These rates will be offered against a hypothetical bill of quantities (BOQ) to be prepared by the A/E. Once the design is completed (while construction will still be underway), a revised BOQ with more definite quantities will be generated and a more definite overall contract price can be calculated for the Client to finalize his project financing plans. Payments to the contractor will be made using the agreed-upon unit rates and based on actual quantities of executed work as measured on site.

Construction Phasing

1. The described project delivery approach:
 - a) Can be viewed as one that involves fast-tracking.
 - b) Is likely to result in considerable cut-and-patch work.
 - c) Serves the principle of “enhancing constructability” through engaging the general contractor early on during the design phase.

Construction Contract

2. The type of adopted construction contract:
 - a) Offers reasonably competitive prices for construction works.
 - b) Can be best described as a negotiated two-step re-measured contract.
 - c) Can be viewed as more advantageous to the Client as opposed to opting for the cost-plus with a GMP type.

Measurement of Quantities

3. It is correct to deduce that:
 - a) Extensive quantities take-off will be done by the A/E prior to engaging the GC.
 - b) Detailed quantities take-off will be made by the A/E upon completing the design.
 - c) Periodical measurement of on-site quantities will be made by each of the PM and the GC during the construction phase.

Project's Achieved Quality

4. It is expected that the level of quality that may be achieved:
 - a) Is already being compromised on by having selected a GC through no competition.
 - b) Is more or less being assured by having appointed a reputable A/E firm based on the advice of the PM.
 - c) Will depend on the effort invested and due diligence exercised by the on-site teams of all three parties involved (GC, A/E, and PM).

Technical Controller's Role

5. Complete the following sentence:
- a) The technical controller _____ the work of the A/E, with respects to design aspects, including:
 - b) _____ and
 - c) _____.

The Defects Liability Period

6. During the defects liability period:
 - a) The testing and commissioning of all building systems will be performed.
 - b) The general contract's performance guarantee shall remain valid throughout.
 - c) The general contractor shall repair latent defects and continue to adjust and balance all functioning building systems at his own expense.

The Q&A Period

7. This period:

- a) represents an opportunity for the Client to get formal feedback on the quality of design documents from qualified construction professionals.
- b) May be administered by the PM with technical support provided by the A/E.
- c) Does not offer any indication as to the likelihood of facing claims during the construction stage.

Unbalancing

8. Bid unbalancing detected in a general contractor's lowest bid and deemed to be aimed at "front-loading" the construction contract:
 - a) May have been the result of speculating on quantity overrun for items of work falling in the earlier stages of the construction schedule.
 - b) Represents sufficient ground to consider the GC's bid as non-responsive.
 - c) Will automatically -and without further analysis- result in the second lowest bidder being selected.

Sub-Contracts/Trade Contracts

9. In shifting from the GC (traditional) to the phased project delivery approach, the administrative burden of sub-contract bidding shifts from the GC to the following participants according to the following order (3-Highest burden to 1-least burden):
- a) The Architect/Engineer.
 - b) The CM.
 - c) The Owner.

[Distribute the ranks of "3", "2", and "1" on a), b), and c) above]

Project Participants

10. You are building a new hospital in Beirut Central District, close to the Saifi Village. In addition to the owner, designer, and contractor, list three other possible major project participants that are likely to be part of the project organizational structure:

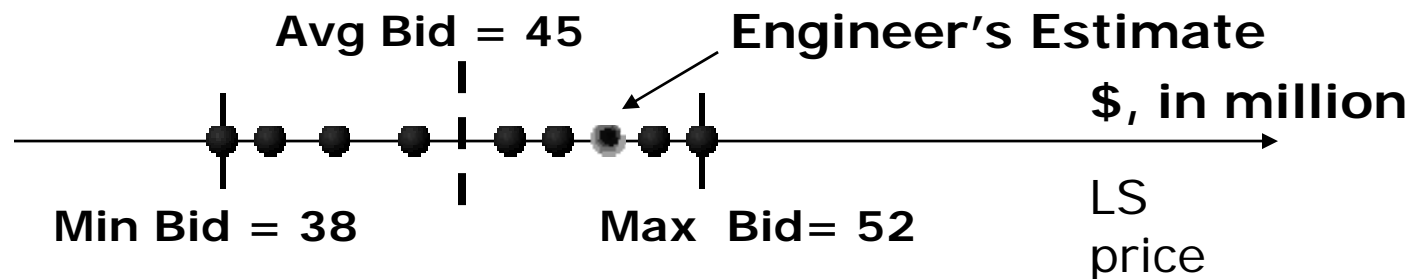
- a) _____.
- b) _____.
- c) _____.

Project Constraints

11. You are building a new hospital in Beirut Central District, close to the Saifi Village. List three important constraints, particular to this location, which you believe can have an effect on the construction process:

- a) _____.
- b) _____.
- c) _____.

Bidding



12. Given the distribution above:
- The successive bid spreads seem not to reveal any major clustering.
 - The difference between the highest and lowest bids seem to indicate that the specifications may be ambiguous.
 - The client should probably consider that the bidding results are inconclusive, particularly when the location of the EE is taken into consideration.

Human Resources

13. It is correct to say that:
- a) The fourth project parameter of safety is meant to emphasize the need to ensure a safe environment for the construction workforce.
 - b) The fourth project parameter of safety is meant to emphasize the need to ensure a safe environment for the construction site and its immediate surroundings.
 - c) The fourth project parameter of safety is meant to emphasize the need to ensure a safe environment for all groups involved in construction supervision.

Planning and Scheduling

14. It is correct to say that:
- a) Planning is a function exercised by the GC with the aim of translating the design into a physical object.
 - b) Planning is a general term that could mean a range of different functions.
 - c) Scheduling has a lot to do with calendar-based sequencing of tasks/activities and a further analysis of time-related calculations.

Design-Build

15. It is correct to say that under the DB approach:
- a) The Client is guaranteed the most economical fixed price for the project.
 - b) The Client will want to do away with having to have an A/E consultant and a technical controller.
 - c) The A/E enjoys a relatively higher leverage compared to that enjoyed by the A/E under the professional CM approach.

Construction Financing

16. Construction financing is concerned with:
- a) Ensuring that enough money is secured by the contractor to keep the construction wheel rolling.
 - b) Making sure that the appropriate financial instruments (such as letter of credits - LCs) are in place to allow the procurement of construction materials.
 - c) Making sure that bidders are paid for the administrative costs incurred in preparing their construction bid prices.