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Construction Management

Fifth Edition

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**Summary of Review
Questions and Exercises**

Solution to Selected Exercises

Chapter 1

Chapter 1 has no answered questions.

Chapter 2

Chapter 2 Questions

- 2.1: What are the three major types of construction bonds? Why are they required? Name three items that affect bonding capacity.
- 2.2: In what major section of the contract is the time duration of the project normally specified?
- 2.3: Who are the three basic parties involved in any construction bonding arrangement?
- 2.4: What type of bond guarantees that if a contractor goes bankrupt on a project the surety will pay the necessary amount to complete the job?
- 2.5: What is the purpose of the following documents in a construction contract?
- General conditions
 - Special conditions
 - Addenda
 - Technical specifications
- 2.6: Why is the contractor normally required to submit a bid bond when making a proposal to an owner on a competitively bid contract?
- 2.7: What is the Miller Act and what does it specify regarding government contracts?
- 2.8: What is the purpose of the notice to bidders?
- 2.9: List the various specialty groups that are normally involved in the design of a high-rise building project.
- 2.10: How much money is the contractor investing in an advertised project available for bid at the time of:
- Going to the A/E's office or checking the web to look at the plans and specifications?
 - Deciding to acquire a set of the drawings for further consideration?
 - Deciding to make initial quantity take-off?
 - Full preparation of bid for submittal?
- 2.11: What are the major parameters to be considered in the prequalification assessment of a contractor? Investigate the local criteria used in the prequalification of both small housing and general contractors.
- 2.12: Obtain sample specification clauses relating to the quality of finish of an item such as face brick, exterior concrete, or paint surfaces. Who has the major responsibility for the definition, achievement in the field, and paid acceptance?
- 2.13: Read those clauses of the general conditions of the contract for construction that refer to the owner, architect, contractor, and subcontractor. Then list the major responsibilities of these participants with respect to the following:
- The definition, or attention to, the scope of the project
 - The financial transactions on the project
 - The finished quality of the work
- 2.14: Look up the percentage of the total cost of a building that *RS Means Building Construction Costs*TM (a compendium of cost data, discussed in Chapter 8) estimates for its architectural design.

2.15: An architect asks \$100,000 for the architectural design of a new building. However, after the preliminary design is completed, the owner and the architect decide to stop the design process. How much of the \$100,000 would it be fair to pay to the architect? Why? Ask an experienced contractor to comment on your answer. Do not consider any legal aspects that would complicate your answer.

2.16: Visit the *Dodge Data & Analytics*TM website (<http://construction.com/dodge>) and find the three largest projects currently being bid in your state in the categories

2.17: Obtain copies of the American Institute of Architects (AIA) standard contract documents and compare them with other standard contracts (e.g. Engineers Joint Contract Documents Committee (EJCDC) published by the National Society of Professional Engineers (www.nspe.org)). What difference would you expect to find? Discuss at least three of the topics shown in Table 2.1.

Chapter 2 Solutions

2.1

1. Bid Bonds: Three party instrument that protects one party from default on the part of a second party.

2. Performance Bonds: Issued to a contractor to guarantee an owner that the contract work will be completed and that it will comply with project specifications.

3. Payment Bonds: Issued to guarantee the owner freedom from any liens against his completed project.

Three items that affect bonding capacity:

Status of costs, payments, and disputes associated with uncompleted work.

2.2

It is normally specified in the supplementary conditions.

2.3

1. Obligee (owner)

2. Principal (contractor)

3. Surety (bonding company)

2.4:

The performance bond is centered on these issues.

2.5

a. General conditions

b. Special conditions

c. Addenda

d. Technical specifications

a. General Conditions: All the stipulations regarding how a contract is to be administered and the relationships between the parties involved.

b. Special Conditions: To specify those aspects of the contractual relationships that are peculiar or unique to a given project (duration of the project, instructions on commencement of work, owner-procured materials, format to report progress, etc.)

- c. Addenda: To incorporate in a bid package changes in detail, additions, corrections, and contract conditions that arise before bids are opened and that are also basis for bidding.
- d. Technical Specifications: To provide a written description of the technical requirements of the work to be performed.

2.6

To ensure that the client is protected from default on the part of the contractor in formally entering into contract if given the contract award.

2.7

The Miller Act establishes the level of bonding required for federally funded projects. Performance bonds must cover 100% of the contract amount while payment bonds are required based on the following sliding scale: 50% if the contract is \$1,000,000 or less; 40% if the contract is between \$1,000,000 and \$5,000,000; and a fixed amount of \$2,500,000 if the contract is greater than \$5,000,000.

2.8

The notice to bidders is a solicitation on behalf of the client asking contractors to consider the project advertised for possible bid. It provides information regarding the procedure for submitting a bid for consideration and typically gives information as to where and how the plans and specifications are available for review.

2.9: List the various specialty groups that are normally involved in the design of a high-rise building project.

Main disciplines: Architectural, Civil and Structural, Mechanical, and Electrical

2.10

- a. Going to the A/E's office or checking the web to look at the plans and specifications?
- b. Deciding to acquire a set of the drawings for further consideration?
- c. Deciding to make initial quantity take-off?
- d. Full preparation of bid for submittal?
 - a. Cost of transportation to and from architect's office plus time involved in reviewing the plans and specifications.
 - b. Cost of purchasing or placing a refundable deposit on the plans and supporting documents for review.
 - c. Hourly cost for time and materials invested by estimating personnel to develop or check quantities of work to be performed.
 - d. The rule of thumb (which must be interpreted and modified up or down based on the type of project) is 1/4 of a percent of the bid amount (e.g. if \$10,000,000 is bid, the cost of bidding will be 0.0025 (10,000,000) or \$25,000.)

2.11

Among other factors:

- Firm's expertise and capability in accomplishing similar types of construction.
- Financial capacity of the firm.
- The quality and number of personnel available from the firm for the project of interest.

- 2.12 Individual responses.
- 2.13: Individual responses.
- 2.14 Individual responses.
- 2.15 Individual responses.
- 2.16 Individual responses.
- 2.17 Individual responses.

Chapter 3

Chapter 3 Questions

- 3.1 What is the difference between liquidated damages and a penalty for late completion of the contract?
- 3.2 What is the purpose of retainage?
- 3.3 During what period can a contractor withdraw the bid without penalty?
- 3.4 As a contractor you have built a 100-unit apartment complex that rents for \$450 per unit a month. For late completion, you were assessed \$2,000 per day. Would you qualify the assessment as liquidated damages or as a penalty? If the contract had included a bonus of \$500 per day for early completion, would you expect to gain any assessment from court action? Why?
- 3.5 Describe the procedures to be followed for the receiving and opening of bids. If possible attend a bid opening and determine the number of bids that were submitted. For several unsuccessful bids determine the dollar amounts by which they exceeded the winning bid. Then calculate (relative to the winning bid) the percentages by which they exceed the winning bid. What do these figures tell about the strength of the current estimating and market environments? How much did the winning bidder “leave on the table”?
- 3.6 Scan a typical stipulated sum contract and identify those clauses that prescribe, modify, or are related to time considerations. Then develop a chronological timeline (similar to Figure 3.1) for the contract that locates the times (or time zones) for which each of the clauses are relevant. Which clauses rigorously fix time constraints for the contract and which are dependent on acts of God or the owner for relevance?
- 3.7 Describe the procedure to be followed by the contractor who wishes to claim a time extension. What sort of documentation do you think is necessary to either refute or defend a time extension claim due to unusual weather? What sort of records do local contractors keep of weather conditions?

- 3.8 Must a contractor accept and perform all the work involved in each contract change order? Is there a limit to the number or magnitude of change orders that can be applied to a contract? When can a contractor refuse to accept a change order?
- 3.9 List the common causes of changed conditions in a building contract. What typical contract clauses bear on the problems caused by changed conditions? Suppose separate contracts are let for the building foundations and all remaining work. If you are the second contractor and you find that the foundations are incorrectly located, either in plan or elevation, would you be able to claim a changed condition?
- 3.10 Prepare a punch list of deficiencies or repairs that you consider necessary for your room, garage, or classroom. Can any of these items be related back to the original acceptance of the facility?
- 3.11 How would you go about either documenting a claim for a contractor's progress payment or its verification by the contract administrator for a typical building project in your locality?
- 3.12 Fudd Associates, Inc. submits a bid for \$20 million. Mr. Fudd discovers at bid opening that all other bids are over \$25 million. It is obvious that there is a mistake in his cost estimate. Could he withdraw his bid after all bids are opened, but no winner has been declared? Why? What circumstances would make you change your answer?
- 3.13 A contractor signs a contract for the construction of a \$150 million ship harbor expansion. Before the Notice to Proceed is issued, a hurricane passes near the area and substantially changes the shape of the sea floor. The contractor claims that different drilling and dragging equipment will be required for the changed shape and requests a bid price adjustment. The owner responds that the passing of a hurricane is common in the area, and therefore, the contractor should have included the event as a contingency cost in his bid. Who is right? How do you think that this real case was settled?
- 3.14 Alright Construction, Inc., signs a contract with Casa Del Monte, Inc., to build five new 20-room modules for a large tourist resort in a Caribbean country. Casa Del Monte establishes liquidated damages of \$30,000 for each day over the contractual deadline of December 1. The damages are considered reasonable, based on a net income of \$300 for each of the 100 new rooms. However, political instability in the country keeps tourists off the resort. It has an occupancy rate of just 20% during December. Alright Construction does have a delay of 15 days. Can this contractor claim that the liquidated damages should be limited to $20\% \times \$30,000 = \$6,000$ per day?

Chapter 3 Solutions

3.1

Liquidated damages are an estimation of the loss that the owner is incurring by not having the project in operation. The contractor has to pay this amount to the owner for every day the project is not operating. A penalty is an amount of money usually higher than the liquidated damages and estimated without any link to actual damages incurred by the owner. Legal precedent establishes that the same amount established in the penalty has to be paid to the contractor as a bonus if the contractor finishes the project earlier than the established date.

3.2

It is withheld from the progress payments (and only issued with the final payment) to incentive the contractor to complete the entire project including punch list. As such, it