

Test Bank

Question preview

Question

Which of the following influence the architect's design schedule? (Choose the four that apply.)

Answers

- (A) architect's available staff
- (B) client's decision-making and approval process
- (C) structural consultant's workload
- (D) size of the project
- (E) building code in effect in the project jurisdiction
- (F) owner's proposed construction timeframe

The answer is (A)(B)(D)(F).

Solution

The architect does not have direct control over the consultants' workload or ability to complete a given job at a specific time. The building code in effect at the location of the project would not affect the schedule for design or for construction.

The design schedule is impacted by the size and complexity of the project, the number of people available to work on the project, and how quickly the client can make required decisions and approve the architect's work during the various stages of the design. In addition, the abilities and design methodology of the architect's team can affect the time it takes to produce a job. The owner's proposed construction timeframe can suggest a deadline for the design work, but the architect must determine if the owner's projection is realistic.

QUESTION DATA

Vendor

0000000423

Solving Time

Difficulty

easy

Quantitative?

No

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OTHER VERSIONS

DISCIPLINES

FE Civil

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Civil)

FE Industrial and System

(/admin/questions/inde
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Industrial and Systems

PE Mechanical: Machi

Design and Materials
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Mechanical: Machine
Design and Materials)

PE Civil: Construction

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Civil: Construction)

Test Bank

Question preview

Question

Which of the following statements are true when the architect's compensation is calculated on a percentage basis according to AIA Document B101, *Standard Form of Agreement Between Owner and Architect*? (Choose all that apply.)

Answers



- (A) The owner is not required to pay the architect for design services if the project is not constructed.
- (B) The architect receives the greatest proportion of total compensation for services provided during the construction documents phase.
- (C) The architect may charge the owner for reimbursable expenses incurred for this project, plus a markup established in the agreement.
- (D) If change orders are authorized during construction, the owner may automatically deduct these amounts from the architect's compensation as reimbursement for the additional expense.
- (E) The architect may charge interest on payments not received within the number of days specified in the agreement.
- (F) The architect may request an initial payment when the agreement is signed, before providing any design services.

The answer is (C)(E)(F).

Solution

Article 11 of AIA Document B101, *Standard Form of Agreement Between Owner and Architect* defines the terms of the architect's compensation for providing services.

The architect may charge the owner for expenses incurred for this project, such as travel, reproductions, permit fees, and other items listed in the contract, plus a markup at the rate defined in Sec. 11.8. Section 11.10.2 allows the architect to charge interest on payments made after a specified number of days, at an interest rate defined in the agreement. The architect may receive an initial payment when the agreement is signed according to Sec. 11.10.1.

If the owner decides not to construct the project, he or she must still pay the architect for services provided according to Sec. 11.6.1. When payment is made on a percentage basis, the architect and owner define the proportion of the total fee that will be paid to the architect for each phase of the work. These percentages are not prescribed in the AIA document and should be determined by the parties and recorded in Sec. 11.5 of the agreement. The owner may not withhold payment from the architect for change orders paid to the contractor, unless the architect is determined to be liable for an error or omission. Section 11.10.2 requires this liability to be determined through a binding dispute resolution proceeding.

QUESTION DATA

Vendor

0000202979

Solving Time

Difficulty

easy

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OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index?sfield=discipline&stext=Civil)

PE Mechanical: Mach Design and Materials

(/admin/questions/index?sfield=discipline&stext=Mechanical: Machine Design and Materials)

PE Environmental

(/admin/questions/index?sfield=discipline&stext=Environmental)

ARE Project Manager

(/admin/questions/index)

Test Bank

Question preview

Question

The owner provides the architect with a program totaling 25,000 ft² and a budget of \$4 million. Similar projects generally cost about \$175 per square foot to construct. Which of the following statements are true? (Choose all that apply.)

Answers

- (A) The owner's budget is adequate for the proposed work.
- (B) The owner must increase the budget by \$375,000 to make this project feasible.
- (C) The owner must decrease the square footage of the project by more than 10% to make this project feasible.
- (D) The owner's budget will not allow this project to be constructed as programmed.
- (E) If the cost per square foot could be reduced by \$15, this project could be constructed as programmed within the given budget.

 The answer is (B)(D)(E).

Solution

Use the area method to determine if the project is feasible.

First, determine the cost to build the project as programmed:

$$(25,000 \text{ ft}^2) (\$175) = \$4,375,000$$

Then, compare the estimated cost to the owner's budget:

$$\$4,375,000 \text{ estimated cost} > \$4,000,000 \text{ budget}$$

This project is not feasible as described. The architect may advise the owner to increase the construction budget, or decrease the program.

The construction budget would have to be increased by \$375,000 to make this project feasible.

$$\begin{aligned} \$4,375,000 \text{ estimated cost} &> \$4,000,000 \text{ budget} \\ &= \$375,000 \text{ increase} \end{aligned}$$

Alternatively, the owner may choose to reduce the program to fit within the budget of \$4,000,000.

$$\frac{\$4,000,000}{\$175} = 22,857 \text{ ft}^2 \quad \begin{array}{l} \text{can be constructed} \\ \text{within the budget} \end{array}$$

If the owner wishes to build 25,000 ft², but can only afford to build 22,857 ft², the area of the building must be reduced by 2,143 ft².

QUESTION DATA

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OTHER VERSIONS

DISCIPLINES

FE Civil

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PE Mechanical: Mach

Design and Materials

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Mechanical: Machine

Design and Materials)

PE Environmental

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Environmental)

ARE Project Manager

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$$25,000 \text{ ft}^2 - 22,857 \text{ ft}^2 = 2143 \text{ ft}^2 \quad \text{reduction in building area required}$$

$$\frac{2143 \text{ ft}^2}{25,000 \text{ ft}^2} = 8.5\% \quad \text{reduction in building area required}$$

It may also be possible to reduce the cost per square foot by choosing less expensive methods of construction, finishes, systems, and other building elements. If the budget and program are fixed, reducing the cost per square foot may be the only option.

$$\frac{\$4,000,000}{25,000 \text{ ft}^2} = \$160/\text{ft}^2 \text{ maximum cost}$$

$$\$175 - \$160 - \$15/\text{ft}^2 \text{ reduction in cost}$$



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KNOWLEDGE AREAS

Construction Engineer
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Basic Engineering Practice
(/admin/questions/indexfield=area&stext=Basic Engineering Practice)

Applications - Associated Engineering Principles
(/admin/questions/indexfield=area&stext=Applications - Associated Engineering Principles)

Project Execution
(/admin/questions/indexfield=area&stext=Project Execution)

PRODUCTS USED IN AR5PJMQB

Test Bank

Question preview

Question

In order to build a commercial building in a residential neighborhood, what must be obtained first from the local zoning jurisdiction?

Answers

- (A) joint use easement
- (B) variance
- (C) conditional use permit
- (D) restrictive covenant

The answer is (C).

Solution

A joint use easement allows two or more property owners to share a common feature, such as a driveway. A variance is ~~a deviation from the zoning regulations~~. Restrictive covenants ~~are provisions that restrict the use of the property by the buyer~~. A conditional use permit (CUP) is a permit issued by the zoning jurisdiction for a proposed use that is not otherwise allowed in a particular zoning district. Of the options listed, only a CUP allows a commercial building to be built in a residential neighborhood.

QUESTION DATA

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Solving Time**Difficulty**

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OTHER VERSIONS**DISCIPLINES****FE Civil**

[\(/admin/questions/index?sfield=discipline&stext=Civil\)](/admin/questions/index?sfield=discipline&stext=Civil)

PE Mechanical: Mach

Design and Materials
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ARE Project Manager

[\(/admin/questions/index?sfield=discipline&stext=Project Management\)](/admin/questions/index?sfield=discipline&stext=Project Management)

KNOWLEDGE AREAS**Construction Engineer**

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Test Bank Question preview

Question

The construction of a large general hospital is being planned for a neighborhood that lies between an outer edge of a downtown area and a medium- to high-density housing area. There are already smaller clinics and doctors' offices in the area. The following concerns have been addressed in the design of the hospital building. In presenting the project to the city planning board, which concern should the architect emphasize?

Answers

- (A) The proposed street closure, planned in order to expand the building site, will not affect traffic.
- (B) Sufficient parking will be made available on the project site.
- (C) The bulk of the building design will not block sunlight from the housing.
- (D) Sewer and water services will not have to be expanded to serve the building.

The answer is (B).

Solution

All these issues are important, but the architect wants to tailor the presentation toward the key concerns of the planning board and the community at large. In this type of neighborhood, parking already would be in short supply considering the number of downtown workers, housing, and the high-traffic needs of clinics and doctors' offices. Therefore, parking likely would be the most important concern to the community.

This problem requires an understanding of all the major elements of planning a project and their effect on transportation services, traffic, utilities, ecology, drainage, and aesthetics. ~~You may be asked questions about what types of drawings or other documentation could best show a proposed project in its neighborhood context. In general, know how the surroundings affect the project and how the project affects the surrounding community.~~

~~The following terms are important to know.~~

~~*catchment area:* The area surrounding a land development site, encompassing the population base that the development is meant to serve.~~

~~*contextualism:* The belief that new buildings should be designed to harmonize with other buildings and elements in the vicinity.~~

~~*demographics:* The statistical data of a population, such as age, income, and so forth.~~

~~*personal space (personal distance):* The subjective distance or area surrounding a person's body into which a person feels comfortable allowing others to intrude, depending on the situation. Psychologist Robert Sommer developed a theory that there are four distances of personal space, including intimate distance, personal distance, social distance, and public distance—all of which vary by culture and specific situation.~~

~~*planned unit development (PUD):* A large parcel of land, typically with a mix of uses, that has been designed and laid out according to principles approved by the local planning authority and often with citizen input. A PUD is commonly used to develop land in a way that ordinarily would not be allowed based on normal planning and zoning restrictions of a jurisdiction.~~

~~*proxemics:* A term coined by anthropologist Edward T. Hall and now used to describe the study of the spatial requirements of humans and the effects of population density on behavior, communication, and social interaction.~~

~~*superblock:* A large parcel of land designed to minimize the impact of the automobile on residential development in which access to interior lots is provided by cul-de-sacs branching from surrounding streets and providing one or more open spaces.~~

~~*tax base:* The object on which a tax is calculated. For example, property is the tax base of a property tax.~~

QUESTION DATA

Vendor

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Solving Time

Difficulty

easy

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No

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OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index?sfield=discipline&stext=FE Civil)

PE Mechanical: Machine Design and Materials

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ARE Programming and Analysis

(/admin/questions/index?sfield=discipline&stext=AF Programming and Analysis)

ARE Project Planning and Design

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KNOWLEDGE AREAS

Construction Engineering

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Test Bank Question

preview

Question

A house is being designed for a new development in a suburban location. The nearest water main is one block away, about 300 ft, and the city currently has no plans to extend the line in the near future. City and county regulations do permit the drilling of wells. What action should the architect recommend to the client regarding the water supply?

Answers

- (A) Estimate the cost of extending the municipal line, since the water quality is known and it would ensure a long-term supply. Consult with nearby property owners who plan to build in the area to see if they would be willing to share the cost of extending the line.
- (B) Drill a test bore to determine the depth, potential yield, and water quality of a well, and compare this information with the cost of extending the municipal line.
- (C) Assist the owner in petitioning the city to accelerate its plans for extending the water line to serve new development.
- (D) Consult with nearby property owners who use wells and with well drillers to estimate the depth and yield of wells in the area. Compare the estimated cost and feasibility of drilling with the feasibility of extending the municipal line at the owner's cost.

The answer is (A).

Solution

Even though the nearest water line is 300 ft away, the best recommendation would be to use city water, where the quality and quantity are known and a long-term supply is assured. Although nearby property owners might or might not be willing to share the cost, the owner still would be best advised to extend the line.

Drilling a test bore could help determine the depth, potential yield, and water quality, but ~~would not be helpful as local regulations would not permit a well.~~

Petitioning the city to extend the line would be time-consuming and probably not successful if the city had already decided against it.

Asking nearby property owners who use wells about their experience would yield useful information, but even if the cost and water quality were acceptable, extending the municipal line would still be the preferred course of action.

QUESTION DATA

Vendor

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Solving Time

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easy

Quantitative?

No

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OTHER VERSIONS

DISCIPLINES

ARE Programming and Analysis

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KNOWLEDGE AREAS

Site Analysis and Programming
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PRODUCTS USED IN

AR5PAQB

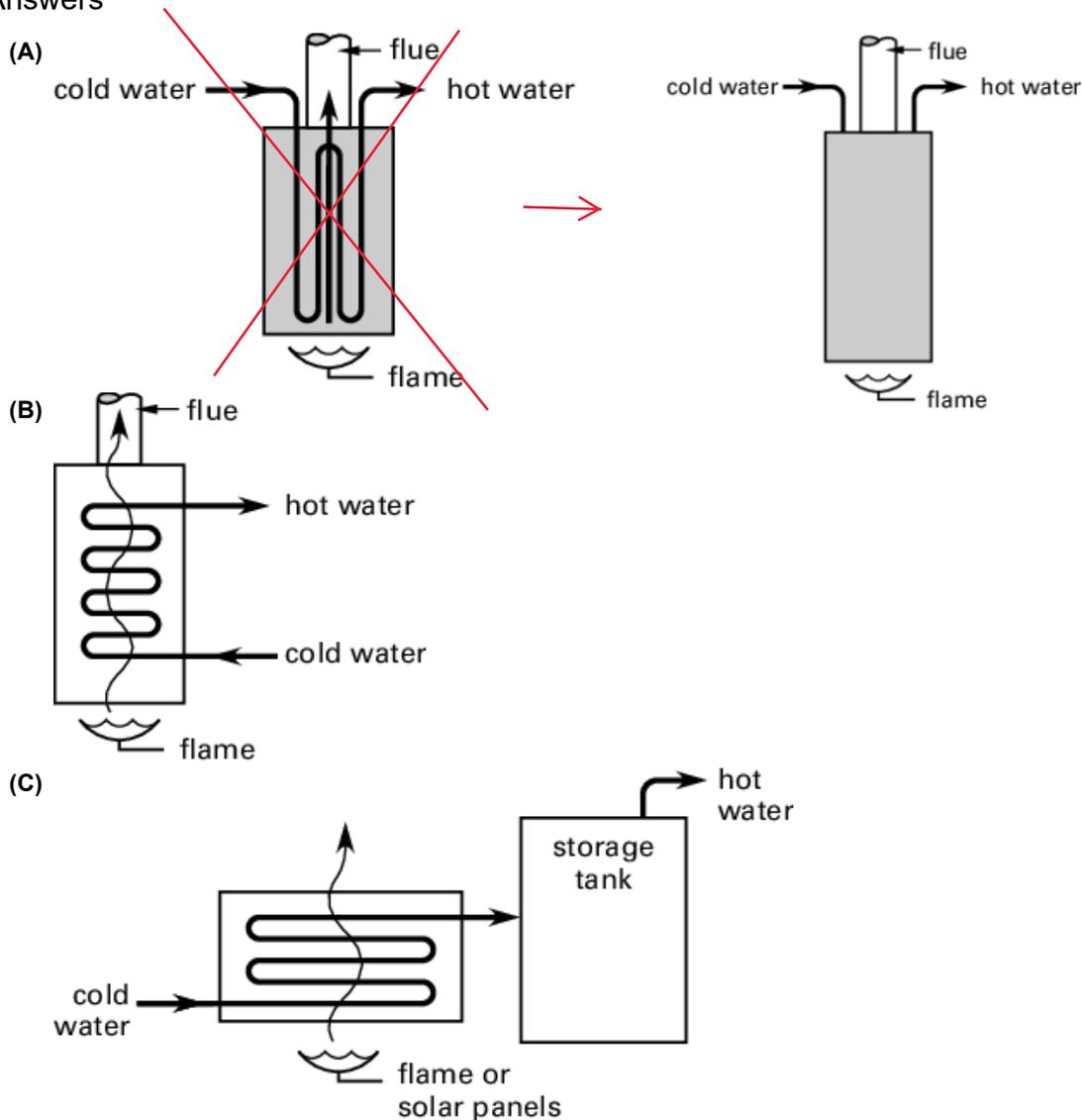
Test Bank

Question preview

Question

Which of the water heaters shown would be the least efficient for domestic use?

Answers



QUESTION DATA

Vendor

0000002164

Solving Time

Difficulty

easy

Quantitative?

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DISCIPLINES

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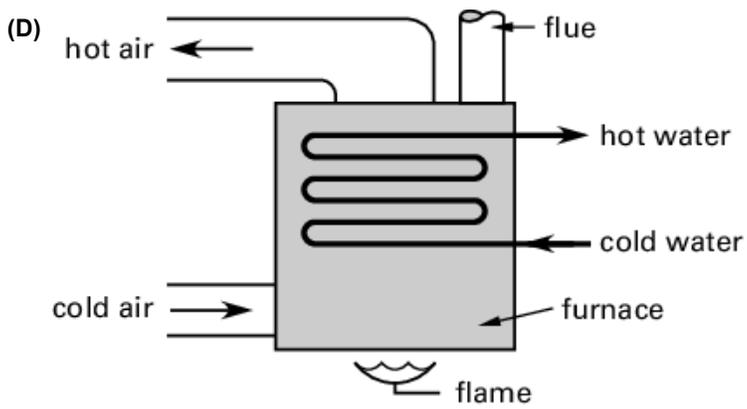
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The answer is (D).

Solution

Option (D) illustrates an indirect, tankless type of water heating system. Water is heated in a furnace or boiler whose primary purpose is to provide space heating for the building. Therefore, to maintain desired quantities of hot water at all times, the furnace would have to operate during warm periods when space heating is not required. Generally, this type of heating system is used in conjunction with another source of heating for the water only. The furnace only provides hot water when it is operating to heat the building.

Test Bank Question preview

Question

A small medical clinic is being planned for a suburban location on an open, level site. It is to include services of general practice, obstetrics/family planning, testing and laboratories and dental offices, along with medical offices and an administration area. All together the building will have a net area of about 70,000 ft². Access to the building is primarily by automobile. The group developing the project wants the facility to be a comfortable, friendly place that minimizes the anxiety of a visit to the doctor and that makes it as easy as possible to get around. It expects the venture to be successful and each department to grow as the catchment area grows.

In order to meet the goals of the client, which of the following design responses would be most appropriate? (Choose the four that apply.)

Answers

- (A) Group the waiting areas and the reception area together to encourage social interaction.
- (B) Specify furniture that is attached to the floor to maintain organized seating.
- (C) Base the size of the waiting rooms on a behavior setting where establishing territory should be encouraged.
- (D) Develop a different color scheme for each of the separate services.
- (E) Design a children's play area in one corner of waiting areas.
- (F) Arrange individual chair seating against walls and other objects so it faces room entries.

The answer is (C)(D)(E)(F).

Solution

Grouping the waiting areas and the reception area to encourage interaction would probably be the least desirable option for two reasons. People are usually a little nervous while waiting with strangers and prefer the option to avoid contact in sociofugal space. In addition, because there are different departments in a medium-sized facility, having everyone in one space would be inefficient as well as uncomfortable. One large waiting area would make people feel less at ease and therefore would be counterproductive to the client's goals. Seating that is attached to the floor would seem unfriendly and would not allow for a small amount of personalization or for two or more people waiting together to adjust positions to make the experience more comfortable.



QUESTION DATA

Vendor

0000000367

Solving Time

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DISCIPLINES

ARE Programming and Analysis
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KNOWLEDGE AREAS

Building Analysis and Programming
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PRODUCTS USED IN

AR5PAQB

Test Bank Question

preview

Question

A 50-year-old warehouse that shows no obvious signs of deterioration is to be remodeled as an office building. ~~Which of the following areas should be most carefully evaluated at the start to help determine the project's feasibility?~~ (Choose the four that apply.)

Answers

- (A) ceiling heights
- (B) fire protection systems
- (C) foundation
- (D) roof
- (E) structural framework
- (F) windows

The answer is (C)(D)(E)(F).

Solution

The foundation, roof, structural framework, and windows represent major components of a building. If they are inadequate or in poor condition, they could be too expensive to repair or replace while maintaining project feasibility.

~~The ceiling heights of a warehouse would be sufficient for an office. Fire protection systems would probably be nonexistent or would have to be upgraded in any event, so this would be less of an initial concern.~~

The ceiling heights required of a warehouse would be higher than those in an office and can be adjusted, if needed, without rendering the project infeasible. Fire protection systems in a 50-year-old warehouse are certain to be non-existent or not compliant with the new program, so it is a given that they would need to be updated for any project.

QUESTION DATA

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0000000379

Solving Time

Difficulty

easy

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OTHER VERSIONS

DISCIPLINES

ARE Programming and Analysis
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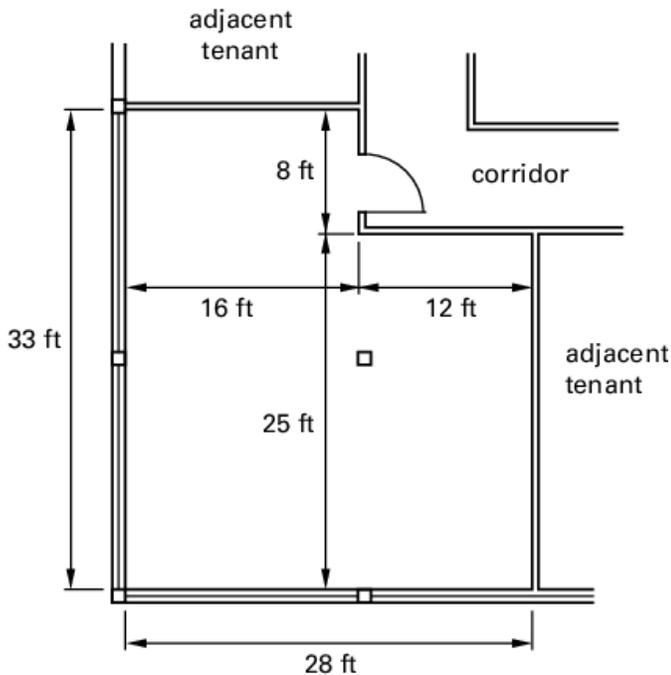
PRODUCTS USED IN

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Test Bank Question preview

Question

An architect is asked to calculate the rentable area of the following office space according to ANSI/BOMA Z65.1, *Office Buildings: Standard Methods of Measurement*. The columns are 1 ft by 1 ft. The exterior walls are 1 ft thick and the inside face of the glass is 6 in from the inside face of the interior wall. The corridor walls and demising walls are 4 in thick. Which of the measurement procedures would result in an undersized rentable area?



Answers

- (A) Take the width of the office as 28 ft 8 in.
- (B) Use 33 ft as the length of the office.
- (C) Include the area of the columns.
- (D) Include a portion of the common restrooms and corridors.

The answer is (B).

Solution

Calculations of the rentable area of an office follow different rules from calculations of the architectural area of a space. To calculate the rentable area of a space, use the following guidelines.

- When measuring from an exterior wall in which more than 50% of the wall is glass, measure from the inside face of the glass.
- ~~Measure to the inside face of walls between the office and the corridor.~~
- Measure to the centerline of demising walls, or walls between tenants.
- The rentable area would also include a share of common restrooms and corridors.
- No deductions are made for columns or projections necessary to the building.

~~The length of the office must include half of the demising partition and the distance to the inside face of the glass.~~

QUESTION DATA

Vendor
0000000406
Solving Time

Difficulty

easy
Quantitative?
Yes
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DISCIPLINES

ARE Programming and Analysis
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KNOWLEDGE AREAS

Building Analysis and Programming
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PRODUCTS USED IN
AR5PAQB

Test Bank Question

preview

Question

In lateral load resisting systems, a steel frame is often used in conjunction with concrete shear walls. What type of load does each component of this system carry?

Answers

- (A) The steel frame carries most of the vertical gravity load, and the concrete shear walls carry the lateral load.
- (B) The steel frame carries the lateral load, and the concrete shear walls carry most of the vertical gravity load.
- (C) Both components carry the vertical and lateral loads equally.
- (D) The steel frame carries most of the vertical and lateral loads.

The answer is (A).

Solution

The steel frame carries most of the vertical gravity load, and the concrete shear walls carry the lateral load. This system is commonly used, and the concrete shear walls are often placed around the building's mechanical core, enclosing elevators and stairways. ~~The shear walls transmit the lateral forces to the foundation and must be continuous.~~

QUESTION DATA

Vendor

0000001657

Solving Time**Difficulty**

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OTHER VERSIONS**DISCIPLINES**

ARE Programming and Analysis

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KNOWLEDGE AREAS

Building Analysis and Programming
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PRODUCTS USED IN

AR5PAQB

Test Bank

Question preview

Question

Which of the following would have the greatest impact on the size and configuration of an accessible restroom?

Answers

- (A) 5 ft clear circular turnaround space
- (B) maneuvering space on the outside of the entry door to the room
- (C) clear space at towel dispensers and full-height mirrors
- (D) minimum 36 in access route into and through the room

The answer is (A).

Solution

Providing for a 5 ft turning circle requires the most space of the four choices listed. If the turning circle is provided, it is very likely that a 36 in access space and clear space at the towel dispensers will also be available. The maneuvering space on the outside of the entry door is irrelevant to the interior dimensions of the restroom.

QUESTION DATA

Vendor

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OTHER VERSIONS**DISCIPLINES**

ARE Programming and
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ARE Project Planning
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KNOWLEDGE AREAS

Codes and Regulations
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PRODUCTS USED IN

Test Bank

Question preview

Question

The maximum allowable floor area of a building is primarily determined by the

Answers

- (A) city planning board
- (B) *International Building Code* (IBC)
- (C) *Life Safety Code*
- (D) zoning ordinance

The answer is (D).

Solution

 A local city planning board may have requirements for building sizes, but the requirements are not a primary determinant. The IBC limits the maximum allowable floor area of a building based on occupancy, building construction type, frontage, and whether the building is sprinklered, all of which may set a limit more or less than a zoning ordinance. For example, a zoning ordinance may set a maximum limit of 200,000 ft², but using a Type IIA construction with no frontage may limit the area to 150,000 ft². The *Life Safety Code* also places restrictions on building area; however, like the IBC, it is not the primary determinant until occupancy and building type are determined. A zoning ordinance sets limits on the floor area ratio based on lot size, setbacks, maximum height, and solar access, among other possible parameters. A combination of these factors will determine the maximum allowable floor area.

QUESTION DATA

Vendor

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Solving Time

Difficulty

easy

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OTHER VERSIONS

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ARE Programming ar
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PRODUCTS USED IN

Test Bank

Question preview

Question

A seven-story office building is to have a variable air volume system. The building will have 105,000 ft² of net space and an estimated 126,000 ft² of gross area. About how much space should be the minimum area allowed for heating, ventilating, and air conditioning (HVAC) systems?

Answers

- (A) 2500 ft²
- (B) 3800 ft²
- (C) ~~6300~~ ft²
- (D) ~~7600~~ ft²

The answer is (D).

Solution

For most midsize buildings, an all-air or air-water system needs about 3–9% of the gross area for HVAC system mechanical space. Office buildings fall somewhere near the midpoint of the range, so use 6% for this question. 6% of the estimated 126,000 ft² gross area is 7560 ft². This is rounded up to 7600 ft², so option (D) is correct as a minimum estimated area.

QUESTION DATA

Vendor

0000019194

Solving Time**Difficulty**

easy

Quantitative?

Yes

Status

Active

Created On

01/19/2018 10:21:49

PM

Published On

01/19/2018 10:21:49

PM

Modified On

07/31/2020 05:33:06

PM

OTHER VERSIONS**DISCIPLINES**

ARE Project Planning
Design

(/admin/questions/inc
sfield=discipline&stex
Project Planning and
Design)

KNOWLEDGE AREAS

Building Systems,
Materials, and Asser
(/admin/questions/inc
sfield=area&stext=Bu
Systems, Materials, a
Assemblies)

PRODUCTS USED IN

AR5PPDQB

Test Bank

Question preview

Question

Where should weep holes be located in a brick wall? (Choose the three that apply.)

Answers

- (A) at the lowest course of brick
- (B) above windows
- (C) above shelf angles
- (D) below window sills
- (E) under copings
- (F) every 15 ft vertically

The answer is (A)(B)(C).

Solution

Weep holes should be located at any location where water may accumulate within a multi-wythe, cavity, or veneer wall. The weep holes allow the water to drain or be wicked out of the wall cavity. Water tends to accumulate at the bottom of a wall or where any penetration through the wall creates a "shelf," such as above a window or at a steel angle. Both flashing and weep holes at 24 in on center, minimum, should be provided at each of the locations listed.

Weep holes are formed by placing short pieces of rope or plastic units in the mortar joint as it is being laid. The spacer is then removed after the mortar hardens, leaving a small hole. Alternatively, some masons choose to simply leave a portion of the bed joint unmortared. Either way, the opening gives water a way to escape from the wall assembly and helps to prevent condensation from accumulating within.

QUESTION DATA

Vendor

0000002419

Solving Time

Difficulty

easy

Quantitative?

No

Status

Active

Created On

01/19/2018 10:21:44
PM

Published On

01/19/2018 10:21:44
PM

Modified On

07/31/2020 05:33:06
PM

OTHER VERSIONS

DISCIPLINES

ARE Project Planning
Design
(/admin/questions/inc
sfield=discipline&stex
Project Planning and
Design)

KNOWLEDGE AREAS

Building Systems,
Materials, and Asser
(/admin/questions/inc
sfield=area&stext=Bu
Systems, Materials, a
Assemblies)

PRODUCTS USED IN

AR5PPDQB

Chapter 31,
Problem 13

[← Return to Questions \(/admin/questions/0?sfield=magento_id&stext=0000208894&sdka=&stype=&sdiff=\)](#)

Test Bank

Question preview

Question

A resistance of $40\ \Omega$ connected to a DC circuit with an electrical current of $3\ \text{A}$ is shown.



What is the power drawn by the resistance?

Answers

- (A) 120 W
- (B) 360 W
- (C) 1200 W
- (D) 4800 W

The answer is **(D)**.

Solution

The power drawn by a resistance and an electrical current in a DC circuit is

$$\begin{aligned}
 W &= IR^2 \\
 &= (3\ \text{A})(40\ \Omega)^2 \\
 &= 4800\ \text{W}
 \end{aligned}$$

QUESTION DATA

Vendor

0000208894

Solving Time

Difficulty

easy

Quantitative?

[]

Status

Active

Created On

07/27/2020 09:02:19

PM

Published On

07/27/2020 09:02:19

PM

Modified On

07/27/2020 09:02:19

PM

OTHER VERSIONS

07/27/2020 09:02:19 P

(/admin/questions/prev

DISCIPLINES

ARE Project Developpr
and Documentation

(/admin/questions/inde
sfield=discipline&stext:
Project Development a
Documentation)

KNOWLEDGE AREAS

Integration of Building
Materials and Systems
(/admin/questions/inde
sfield=area&stext=Inte
of Building Materials at
Systems)

PRODUCTS USED IN

AR5PDDQB

**Chapter 31,
Problem 16**

[◀ Return to Questions \(/admin/questions/0?sfield=magento_id&stext=0000002299&sdka=&stype=&sdiff=\)](/admin/questions/0?sfield=magento_id&stext=0000002299&sdka=&stype=&sdiff=)

Test Bank

Question preview

Question

Calculate the number of heating degree days during the following two-week period in March in Williamsburg, Virginia. The base temperature is 65°F.

date	high	low	average
3/1	51°F	31°F	41°F
3/2	79°F	39°F	59°F
3/3	51°F	35°F	43°F
3/4	53°F	31°F	42°F
3/5	54°F	34°F	44°F
3/6	46°F	36°F	41°F
3/7	51°F	27°F	39°F
3/8	58°F	23°F	40°F
3/9	72°F	49°F	60°F
3/10	78°F	63°F	70°F
3/11	70°F	52°F	61°F
3/12	69°F	55°F	62°F
3/13	75°F	55°F	65°F
3/14	70°F	54°F	62°F

Answers

- (A) 179 heating degree days (°F)
- (B) 186 heating degree days (°F)
- (C) 230 heating degree days (°F)
- (D) 316 heating degree days (°F)

The answer is (B).

Solution

QUESTION DATA

Vendor

0000002299

Solving Time

Difficulty

easy

Quantitative?

Yes

Status

Active

Created On

01/19/2018 10:13:40 PM

Published On

01/19/2018 10:13:40 PM

Modified On

07/27/2020 09:00:56 PM

OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index?sfield=discipline&stext=Civil)

PE Mechanical: Mach Design and Materials
(/admin/questions/index?sfield=discipline&stext=Mechanical: Machine Design and Materials)

ARE Project Development and Documentation
(/admin/questions/index?sfield=discipline&stext=Project Development : Documentation)

KNOWLEDGE AREAS

Degree days are calculated by comparing the base temperature—in this case, 65°F—to the average temperature on a specific date in a specific location. If the day's average temperature is less than 65°F, subtract the average temperature from the base temperature to determine the number of heating degree days; each degree of difference is equivalent to one degree day. If the temperature is at least 65°F, the quantity of heating degree days is 0; however, temperatures above 65°F are recorded as cooling degree days. If the temperature is 65°F, no degree days are recorded for that date. To determine the number of degree days in a specified period of time, simply add the number of degree days recorded for each date.

This problem asks specifically for heating degree days, which are calculated as follows.

date	heating degree days (°F)
3/1	$65 - 41 = 24$
3/2	$65 - 59 = 6$
3/3	$65 - 43 = 22$
3/4	$65 - 42 = 23$
3/5	$65 - 44 = 21$
3/6	$65 - 41 = 24$
3/7	$65 - 39 = 26$
3/8	$65 - 40 = 25$
3/9	$65 - 60 = 5$
3/10	$65 - 70 = 0$
3/11	$65 - 61 = 4$
3/12	$65 - 62 = 3$
3/13	$65 - 65 = 0$
3/14	<u> </u>
total	186

Construction Engineer
(/admin/questions/indexfield=area&stext=Construction Engineering)

Basic Engineering Practice
(/admin/questions/indexfield=area&stext=Basic Engineering Practice)

Project Manual and Specifications
(/admin/questions/indexfield=area&stext=Project Manual and Specifications)

PRODUCTS USED IN AR5PDDQB

Chapter 32,
Problem 11

[◀ Return to Questions \(/admin/questions/0?sfield=magento_id&stext=%090000208885&sdka=&stype=&sdiff=\)](/admin/questions/0?sfield=magento_id&stext=%090000208885&sdka=&stype=&sdiff=)

Test Bank

Question preview

Question

Which of the following statements about curtain walls in buildings are correct? (Choose the four that apply.)

Answers

- (A) The concept of curtain walls was first introduced in the steel-framed skyscrapers built in the late 19th century.
- (B) The earliest curtain walls were constructed using aluminum cladding.
- (C) A curtain wall does not support any vertical load.
- (D) A curtain wall does not have to resist any wind pressure.
- (E) A curtain wall is thin and light.
- (F) A curtain wall may be prefabricated or built in place.

The answer is (A)(C)(E)(F).

Solution

Curtain walls were first introduced in steel-framed skyscrapers built in the late 19th century. Curtain walls resist some wind pressure, are thin and light, and may be prefabricated or built in place.

~~The earliest curtain walls were built using masonry, not aluminum.~~ A curtain wall does not support any vertical load; however, building codes and engineering standards require that curtain walls be able to resist some wind pressure. There are some specific calculations that must be performed to determine the wind pressures on components and cladding.

QUESTION DATA

Vendor

0000208885

Solving Time

Difficulty

easy

Quantitative?

[]

Status

Active

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05/27/2020 08:00:28 PM

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05/27/2020 08:00:28 PM

Modified On

07/27/2020 09:02:19 PM

OTHER VERSIONS

DISCIPLINES

ARE Project Development and Documentation
(/admin/questions/ind?sfield=discipline&stext=Project Development Documentation)

KNOWLEDGE AREAS

Integration of Building Materials and System
(/admin/questions/ind?sfield=area&stext=Int of Building Materials & Systems)

PRODUCTS USED IN

AR5PDDQB

Chapter 37,
Problem 5

[◀ Return to Questions \(/admin/questions/0?sfield=magento_id&stext=0000208897&sdka=&stype=&sdiff=\)](/admin/questions/0?sfield=magento_id&stext=0000208897&sdka=&stype=&sdiff=)

Test Bank

Question preview

Question

Which of the following statements about soil bearing capacity are correct? (Choose the three that apply.)

Answers

- (A) Soil bearing capacity is used in the design of foundations and footings.
- (B) Soil bearing capacity decreases with depth.
- (C) Soil bearing capacities are not specified by codes, so soil tests must be performed.
- (D) Coarse-grained soils have a larger soil bearing capacity than fine-grained soils.
- (E) ~~Silt has a higher soil bearing capacity than clay.~~
- (F) The design value of the soil bearing capacity is often given on project drawings.

The answer is (A)(D)(F).

Solution

The soil bearing capacity increases with depth, so option B is incorrect. Soil bearing capacities are specified by codes, so option C is incorrect, although soil tests can yield higher values, which are then used for design. ~~Clay has larger particles than silt, so clay has a higher soil bearing capacity than silt,~~ and option E is incorrect. The other three options are correct.

QUESTION DATA

Vendor

0000208897

Solving Time

Difficulty

easy

Quantitative?

[]

Status

Active

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05/27/2020 08:00:29
PM

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05/27/2020 08:00:29
PM

Modified On

07/27/2020 09:02:20
PM

OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index
sfield=discipline&stext
Civil)

FE Electrical and Computer

(/admin/questions/index
sfield=discipline&stext
Electrical and Comput

FE Environmental

(/admin/questions/index
sfield=discipline&stext
Environmental)

FE Mechanical

(/admin/questions/index
sfield=discipline&stext
Mechanical)

Chapter 46,
Problem 10

[← Return to Questions \(/admin/questions/0?sfield=magento_id&stext=0000001876&sdka=&stype=&sdiff=\)](/admin/questions/0?sfield=magento_id&stext=0000001876&sdka=&stype=&sdiff=)

Test Bank

Question preview

Question

In a full set of construction drawings, the mechanical engineering drawings are typically placed

Answers

- (A) after the civil engineering drawings and before the architectural drawings
- (B) immediately after the architectural drawings
- (C) after the structural engineering drawings and before the electrical drawings
- (D) after the electrical drawings

The answer is (C).

Solution

The normal sequence of drawings in a full set of drawings is as follows: site drawings, then civil engineering drawings, followed by ~~architectural, structural,~~ plumbing ~~(if not included in mechanical),~~ mechanical, and electrical drawings.

QUESTION DATA

Vendor

0000001876

Solving Time

Difficulty

easy

Quantitative?

No

Status

Active

Created On

01/19/2018 10:13:37

PM

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01/19/2018 10:13:37

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10/02/2020 09:20:52

PM

OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index?sfield=discipline&stext=Civil)

ARE Project Development and Documentation

(/admin/questions/index?sfield=discipline&stext=Project Development : Documentation)

KNOWLEDGE AREAS

Construction Engineer

(/admin/questions/index?sfield=area&stext=Construction Engineering)

Construction Document

(/admin/questions/index)

Test Bank

Question preview

Question

Which of the following statements about bidding is correct?

Answers

- (A) Bidding procedures ~~vary widely~~ from project to project.
- (B) Bidding is not required for federally funded projects.
- (C) Open bidding may allow an inexperienced contractor to be awarded a job if the firm submits the lowest price.
- (D) Competitive bidding takes less time than negotiation and can result in a lower construction cost.

The answer is (A).

Solution

Bidding procedures are fairly well established in the construction industry, but each project has unique legal, insurance, and administrative requirements that should be shared with all bidders.

Government-funded projects at the federal, state, or local level are generally required to bid.

The bid process can lengthen total project time due to the time allotted for review of the construction documents and contract negotiation, but the competitive nature of bidding allows the owner to compare prices before hiring a contractor. Open bidding means that nearly anyone can bid, regardless of experience. This encourages a variety of contractors to participate, but when bidding is open, it can be difficult to evaluate qualified bidders. In addition, the cost and complexity of advertising and administering the bidding process may increase.

QUESTION DATA

Vendor

0000001923

Solving Time

Difficulty

easy

Quantitative?

No

Status

Active

Created On

01/19/2018 07:54:43

PM

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01/19/2018 07:54:43

PM

Modified On

07/31/2020 09:32:17

PM

OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/indexfield=discipline&stext:Civil)

PE Civil: Construction

(/admin/questions/indexfield=discipline&stext:Civil: Construction)

PE Civil: Geotechnical

(/admin/questions/indexfield=discipline&stext:Civil: Geotechnical)

PE Civil: Structural

(/admin/questions/indexfield=discipline&stext:Civil: Structural)

Test Bank

Question preview

Question

Which of the following variables has the greatest impact on a bid?

Answers

- (A) contractor's profit margin
- (B) influences of the construction marketplace
- (C) ~~prices received from subcontractors~~
- (D) ~~subcontract bids~~

The answer is (C).

Solution

Labor and materials, by far, have the biggest influence on the cost of a job because they represent about 80% of the cost. Labor and materials costs influence the amount of subcontractors' bids. Profit tends to be based on a percentage of the total project construction cost, and market influences do not have as great an effect on overall costs as the raw costs of the labor and materials required to construct the project.

QUESTION DATA

Vendor

0000001940

Solving Time**Difficulty**

easy

Quantitative?

No

Status

Active

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PM

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07/31/2020 09:32:17

PM

OTHER VERSIONS

07/31/2020 09:32:17 P

(/admin/questions/prev

DISCIPLINES

FE Civil

(/admin/questions/inde
sfield=discipline&stext:
Civil)

PE Civil: Construction

(/admin/questions/inde
sfield=discipline&stext:
Civil: Construction)

PE Civil: Geotechnical

(/admin/questions/inde
sfield=discipline&stext:
Civil: Geotechnical)

PE Civil: Structural

(/admin/questions/inde

Test Bank

Question preview

Question

During construction, the contractor asks the architect to allow the installation of a different floor tile than originally specified because the proposed new tile can be delivered faster. According to American Institute of Architects (AIA) Document A201, *General Conditions of the Contract for Construction*, which of the following statements are true about this request? (Choose the four that apply.)

Answers

- (A) The owner's consent is required to allow this change to be made.
- (B) The tile, if approved, will not be covered by warranty.
- (C) The substitution must be made with a change order.
- (D) The architect must evaluate the request and determine that the material is equal to that originally specified.
- (E) A change order would be issued if the cost of the new tile is greater than the cost of the specified tile.
- (F) The contractor is responsible for any additional cost associated with the change.

The answer is (A)(C)(D)(F).

Solution

AIA Document A201, Sec. 3.4.2, states that the contractor may make substitutions only with the owner's consent, after evaluation by the architect and in accordance with a change order or construction change directive. The substitution will be covered by warranty. In this case, the substitution is being made for the contractor's convenience, so a change to the contract sum is not warranted, and the contractor is responsible for any increase in cost. If an adjustment to the contract sum were necessary, it must be made by change order.

QUESTION DATA

Vendor

0000001942

Solving Time**Difficulty**

easy

Quantitative?

No

Status**Active****Created On**

01/19/2018 07:54:43

PM

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01/19/2018 07:54:43

PM

Modified On

08/05/2020 09:33:16

PM

OTHER VERSIONS**DISCIPLINES****FE Civil**

(/admin/questions/index?sfield=discipline&stext=Civil)

PE Civil: Construction

(/admin/questions/index?sfield=discipline&stext=Civil: Construction)

PE Civil: Geotechnical

(/admin/questions/index?sfield=discipline&stext=Civil: Geotechnical)

PE Civil: Structural

(/admin/questions/index?sfield=discipline&stext=Civil: Structural)

Chapter 51,
Problem 6

[← Return to Questions \(/admin/questions/0?sfield=magento_id&stext=0000001987&sdka=&styp=&sdiff=\)](/admin/questions/0?sfield=magento_id&stext=0000001987&sdka=&styp=&sdiff=)

Test Bank

Question preview

Question

According to American Institute of Architects (AIA) Document B101, *Standard Form of Agreement between Owner and Architect*, which of the following ~~services is~~ included in the architect's basic services ~~for project closeout?~~ (Choose the four that apply.)

Answers

- (A) forwarding written warranties to the owner
- (B) ~~sending a consent of surety to the owner~~
- (C) commissioning
- (D) meeting with the owner to ~~determine the need for facility operation services~~
- (E) ~~post-occupancy walk-through within one year~~
- (F) ~~transfer project insurance from the contractor to the owner~~

The answer is (A)(B)(D)(E).

Solution

American Institute of Architects (AIA) Document B101, *Standard Form of Agreement Between Owner and Architect*, Article 4, addresses ~~supplemental and additional services that the architect will provide only if specifically designated or approved in advance by the owner~~. Commissioning is one of these services, among others, such as programming, geotechnical services, existing facilities surveys, site analysis, landscape design, interior design, detailed cost estimating, on-site project representation, record drawings, and ~~post-contract evaluation beyond one meeting with the owner to review the facility's performance, within one year of substantial completion~~.

QUESTION DATA

Vendor

0000001987

Solving Time

Difficulty

easy

Quantitative?

No

Status

Active

Created On

01/19/2018 07:54:45

PM

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01/19/2018 07:54:45

PM

Modified On

03/26/2020 10:50:59

PM

OTHER VERSIONS

DISCIPLINES

FE Civil

(/admin/questions/index?sfield=discipline&stext=Civil)

PE Mechanical: Mach

Design and Materials

(/admin/questions/index?sfield=discipline&stext=

Mechanical: Machine

Design and Materials)

ARE Construction and

Evaluation

(/admin/questions/index?sfield=discipline&stext=

Construction and

Evaluation)

KNOWLEDGE AREAS