North Carolina General Contractors Practice Exam (Sample)

Study Guide

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Questions

1. Who is required to sign the erosion and sedimentation plan?

A. The project manager

B. A licensed engineer

C. The person financially responsible for the land disturbing activity

D. The local government official

2. What is the recommended overlap for welded wire fabric?

A. 1 inch

B. 2 inches

C. Size of the grid plus 2 inches

D. Size of the grid plus 4 inches

3. Why is clear communication important in construction projects?

A. It prevents delays and ensures project goals are met

B. It allows contractors to charge higher fees

C. It focuses solely on building relationships

D. It eliminates the need for contracts

4. How can you increase the compressive strength of mortar?

A. By adding sand

B. By using more water

C. By adding cement

D. By changing the lime type

5. For a dozer on a positive 40% slope, how are blade capacity and production affected?

A. Stays the same, cut in half, cut in half

B. Cut in half, cut in half, double

C. Doubles, doubles, cut in half

D. Increases by 10%, remains constant, decreases by 20%

6. What is the primary purpose of a general contractor in North Carolina?

- **A. To oversee construction projects and manage subcontractors**
- **B. To work directly with homeowners only**
- **C. To focus solely on project designing**
- **D. To provide financial investment for construction**

7. What is the height of 3 courses of brick?

- **A. 6"**
- **B. 7"**
- **C. 8"**
- **D. 9"**

8. Which dozer blade is considered the most efficient and why?

- **A. The "S" blade because it moves more material**
- **B. The "A" blade because it side casts material effectively**
- **C. The "U" blade due to its weight**
- **D. The "C" blade because it has a wider surface**

9. What is air entrainment in concrete?

- **A. Adding small bubbles to improve freeze expansion**
- **B. Reducing water content for a denser mix**
- **C. Incorporating fibers for added strength**
- **D. Using high temperatures to accelerate setting**

10. By how much can a superplasticizer typically increase the slump?

- **A. 1-3 inches**
- **B. 2-4 inches**
- **C. 5-7 inches**
- **D. 7-9 inches**

Answers

1. C
2. C
3. A
4. C
5. B
6. A
7. C
8. B
9. A
10. D

Explanations

1. Who is required to sign the erosion and sedimentation plan?

A. The project manager

B. A licensed engineer

C. The person financially responsible for the land disturbing activity

D. The local government official

The requirement for the person financially responsible for the land disturbing activity to sign the erosion and sedimentation plan stems from regulatory frameworks aimed at ensuring that those who have a financial stake in a project are also accountable for its environmental impacts. This rule promotes responsible land management and ensures that the party most likely to influence the practices and controls in place for managing erosion and sediment runoff takes ownership of the plan. Since the individual or entity financially backing the project has the most to gain or lose from its success or failure, involving them in the signing process emphasizes the importance of their commitment to adhering to best practices for environmental protection. Additionally, this requirement ensures that there's a clear point of responsibility for complying with regulatory standards and for the implementation of the erosion and sedimentation control measures detailed within the plan.

2. What is the recommended overlap for welded wire fabric?

A. 1 inch

B. 2 inches

C. Size of the grid plus 2 inches

D. Size of the grid plus 4 inches

The recommended overlap for welded wire fabric is the size of the grid plus 2 inches. This guideline ensures that the laps between sections of the fabric create a strong and continuous reinforcement across the areas being covered. By overlapping the fabric correctly, it enhances the load distribution and structural integrity of the concrete, preventing potential weaknesses or failures in the material. Overlapping by the size of the grid plus 2 inches allows designers and contractors to accommodate any variations in the installation process, ensuring the integrity of the welded wire fabric is maintained. This practice not only meets industry standards but also optimizes the performance of the concrete structure. The other choices may suggest insufficient overlap or excessive requirements that do not align with industry practices. Therefore, using the size of the grid plus 2 inches provides a balanced approach to ensure proper reinforcement without unnecessary waste or complication in the installation.

3. Why is clear communication important in construction projects?

A. It prevents delays and ensures project goals are met

B. It allows contractors to charge higher fees

C. It focuses solely on building relationships

D. It eliminates the need for contracts

Clear communication is vital in construction projects because it helps to establish a mutual understanding among all stakeholders, including contractors, subcontractors, clients, and suppliers. By ensuring that everyone is on the same page regarding project goals, timelines, and responsibilities, effective communication prevents misunderstandings that can lead to delays and complications. This clarity allows for more accurate planning and execution of tasks, which is crucial for keeping the project on schedule and within budget. Furthermore, when communication is transparent and consistent, it fosters an environment of trust and collaboration, which is essential for addressing issues as they arise. This proactive approach enables teams to adapt and respond to challenges swiftly, ultimately ensuring that the project's objectives are met. Thus, clear communication serves as a foundational element in achieving successful project outcomes in the construction industry.

4. How can you increase the compressive strength of mortar?

A. By adding sand

B. By using more water

C. By adding cement

D. By changing the lime type

Increasing the compressive strength of mortar can be effectively achieved by adding more cement to the mix. Cement is the primary binder in mortar, and its main role is to provide structural integrity and strength. When the quantity of cement is increased, the resulting chemical reactions—specifically, the hydration process—produce more calcium silicate hydrates, which contribute significantly to the material's strength. In contrast, the other choices do not contribute positively to compressive strength. Adding more sand dilutes the cement content and can reduce the overall strength. Increasing the water content, while sometimes necessary for workability, can lead to a weaker mix due to higher porosity if not managed properly. Changing the type of lime may affect flexibility and workability, but it does not inherently increase compressive strength as effectively as increasing the cement quantity does.

5. For a dozer on a positive 40% slope, how are blade capacity and production affected?

A. Stays the same, cut in half, cut in half

B. Cut in half, cut in half, double

C. Doubles, doubles, cut in half

D. Increases by 10%, remains constant, decreases by 20%

In the context of operating a dozer on a positive 40% slope, the dynamics of blade capacity and production are affected by the slope's steepness. When working on a slope, the effective capacity of the blade is reduced because a portion of the dozer's power is diverted to maintaining stability and balance rather than purely moving material. The answer indicates that blade capacity is cut in half, which reflects the reality of how slope affects machinery capability. As the slope increases, the ability to push material efficiently decreases because the machine must contend with gravity pulling the load down the slope, making it harder to move the same volume of material. Production taking a hit means the amount of material that can be moved in a given time frame is also reduced, which aligns with the assessment that production is cut in half. The mention of production potentially doubling is a misunderstanding because while the blade capacity may seem temporarily aided by efficiency in certain flat conditions, on a slope, the operational challenges outweigh those benefits. Overall, the understanding that both blade capacity and production diminish significantly on such a steep slope stems from practical machine operation considerations and the mechanics of working on inclines.

6. What is the primary purpose of a general contractor in North Carolina?

A. To oversee construction projects and manage subcontractors

B. To work directly with homeowners only

C. To focus solely on project designing

D. To provide financial investment for construction

The primary purpose of a general contractor in North Carolina is to oversee construction projects and manage subcontractors. This role is crucial because general contractors coordinate all aspects of construction, ensuring that projects are completed on time, within budget, and to the required standards. They act as the central point of communication among various stakeholders, including clients, subcontractors, suppliers, and inspectors. In performing these duties, general contractors are responsible for hiring, scheduling, and supervising subcontractors who carry out specialized work, such as electrical, plumbing, or carpentry tasks. This oversight not only provides efficient project management but also ensures that safety regulations and building codes are followed. While working directly with homeowners is part of their responsibilities, the role encompasses much more and isn't limited to that relationship. Similarly, while design decisions may be involved, a general contractor is not solely focused on project designing, as this aspect often falls under the purview of architects or designers. Lastly, providing financial investment for construction is typically the role of the property owner or investors rather than that of the general contractor, who is mainly tasked with executing the construction process rather than financing it.

7. What is the height of 3 courses of brick?

A. 6"

B. 7"

C. 8"

D. 9"

The height of 3 courses of brick is determined by the standard size of a single brick. In general, a standard modular brick measures approximately 7.5 inches long, 3.5 inches wide, and 2.25 inches tall. When factoring in mortar joints that typically add about 0.5 inches between each course, the calculation for the height of 3 courses of brick would look like this: - The height of one course of brick alone is about 2.25 inches. - For three courses of brick, we multiply 2.25 inches by 3, which equals 6.75 inches. - Additionally, there are typically 2 mortar joints in a stack of 3 courses, each adding about 0.5 inches, leading to 1 inch due to the two joints (0.5 inches x 2). - Therefore, the total height is approximately 6.75 + 1 = 7.75 inches total. Rounding this number typically results in 8 inches for practical applications, making 8 inches the accepted height when discussing courses of brickwork. This is why the answer is determined as 8 inches.

8. Which dozer blade is considered the most efficient and why?

A. The "S" blade because it moves more material

B. The "A" blade because it side casts material effectively

C. The "U" blade due to its weight

D. The "C" blade because it has a wider surface

The "A" blade is regarded as the most efficient dozer blade primarily due to its design that allows for effective side-casting of material. The angled edges of an "A" blade enable the operator to move dirt and debris not only forward but also off to the sides, which is particularly useful in trenching or when grading an area that requires materials to be moved laterally. This capability enhances the versatility of the dozer, allowing for different types of work without the need to reposition significantly. Utilizing the "A" blade can improve productivity in tasks that involve creating ditches, leveling ground, or managing surface water flow, where rapid and efficient side displacement of material is often necessary. The ability to cast material effectively reduces time spent on subsequent passes and enhances overall job efficiency, supporting a wide variety of applications in construction and earth-moving operations.

9. What is air entrainment in concrete?

A. Adding small bubbles to improve freeze expansion

B. Reducing water content for a denser mix

C. Incorporating fibers for added strength

D. Using high temperatures to accelerate setting

Air entrainment in concrete refers to the intentional inclusion of tiny air bubbles in the mix. This process is crucial because it enhances the concrete's resistance to freeze-thaw cycles, which can otherwise lead to cracking and deterioration. The small air bubbles created through air-entraining agents provide space for water within the concrete to expand when it freezes, minimizing internal stress and allowing the material to perform better in harsh conditions. By improving freeze expansion capabilities, air-entraining concrete significantly prolongs the lifespan and structural integrity of concrete in environments subject to temperature fluctuations. This is particularly beneficial in northern climates where freezing and thawing cycles are common. The other options discuss different enhancements or techniques related to concrete but do not pertain to air entrainment. Reducing water content leads to a denser mix but doesn't specifically add air bubbles; incorporating fibers indeed adds strength but is unrelated to air entrainment; and using high temperatures addresses setting times rather than the bubble inclusion aspect that defines air entrainment.

10. By how much can a superplasticizer typically increase the slump?

A. 1-3 inches

B. 2-4 inches

C. 5-7 inches

D. 7-9 inches

Superplasticizers are chemical admixtures used in concrete to enhance workability without the addition of extra water. These additives are particularly effective for increasing the slump of concrete, which refers to the consistency and fluidity of the mixture. In practice, superplasticizers can significantly increase the slump, often allowing for a considerable flowability that benefits applications requiring high workability, such as in congested reinforcement areas or when placing concrete under challenging conditions. The range provided, 7-9 inches, aligns with typical scenarios where superplasticizers are employed; they can substantially increase the slump of a concrete mix beyond traditional water-reducing admixtures. The other ranges listed do not reflect the typical potential of superplasticizers. While lesser increases in slump can be achieved with other types of admixtures or additives, the unique nature of superplasticizers allows them to achieve the higher slump increases indicated by the correct choice. This is particularly useful for high-performance concrete applications, where workability is crucial without compromising strength or durability.