

**\*\*\* EXAMINATION \*\*\***

**MICROPILE DESIGN AND CONSTRUCTION GUIDELINES**

1. **The first conception of micropiles was in**
  - a) Italy in the early 1950's
  - b) Germany in the early 1960's
  - c) United Kingdom in the early 1970's
  - d) Switzerland in the early 1980's
  
2. **Micropile applications for structural support include**
  - a) foundations for new structures
  - b) underpinning of existing structures
  - c) seismic retrofitting of existing structures
  - d) All of the above
  
3. **Structural movements can be caused by**
  - a) groundwater elevation fluctuations
  - b) deterioration of existing foundations
  - c) adjacent deep excavations
  - d) All of the above
  
4. **A drill rod with suitable drill bit is placed inside the**
  - a) drill casing for the double head duplex technique
  - b) drill casing for the rotary duplex technique
  - c) drill casing for the hollow-stem auger technique
  - d) drill casing for the percussive duplex technique
  
5. **For non-production and sacrificial micropiles**
  - a) the ultimate test is performed
  - b) the verification test is performed
  - c) the proof test is performed
  - d) the creep test is performed
  
6. **The deflected shape of the pile during lateral load testing**
  - a) can be measured by the dial gauges
  - b) can be measured by the strain gauges
  - c) can be measured by the inclinometer
  - d) can be measured by the telltales

7. **The level of stress in the reinforcement at various levels in**
  - a) pile is measured by the dial gauges
  - b) pile is measured by the strain gauges
  - c) pile is measured by the inclinometer
  - d) pile is measured by the telltales
8. **Pile top displacement may be determined using**
  - a) an inclinometer
  - b) a wire with mirror and scale
  - c) a dial gauges
  - d) a strain gauges
9. **The additional backup method of measuring the load applied to**
  - a) to the pile is the load cell
  - b) to the pile is the survey method
  - c) to the pile is the inclinometer
  - d) to the pile is the wire with mirror and scale
10. **The vertical and lateral displacement is usually measured**
  - a) with an inclinometer
  - b) with a strain gauge
  - c) with a dial gauge
  - d) with a telltales
11. **High quality grouts starts with proper**
  - a) parameter survey
  - b) chemical mixing
  - c) personnel assignment
  - d) material storage
12. **Inspection of all associated reinforcing elements should**
  - a) include checking proper corrosion protection
  - b) include checking for corrosion of steel
  - c) include checking proper size
  - d) All of the above
13. **Quality assurance and control begins with the verification**
  - a) of pile load testing
  - b) of production piles
  - c) of installation of reinforcement
  - d) of the grout program
14. **Micropile costs are the product of many factors such as**
  - a) physical access and environmental conditions
  - b) pile quantity, pile length, and pile inclination
  - c) pile testing requirements and pile installation schedule
  - d) All of the above

15. **The recoverable movement measured during micropile test**
- a) elastic movement
  - b) elastic ration
  - c) creep movement
  - d) corrosion-inhibiting compound
16. **The steel component of the micropile that accepts and resist**
- a) applied loading is the sheathing
  - b) applied loading is the reinforcement
  - c) applied loading is the spacer
  - d) applied loading is the coupler
17. **A sleeve placed over the steel reinforcement to prevent load**
- a) transfer is called a centralizer
  - b) transfer is called a reinforcement
  - c) transfer is called a bond-breaker
  - d) transfer is called a sheathing
18. **A corrugated or deformed tube protecting the reinforcing steel**
- a) against a corrosion is the sheathing
  - b) against a corrosion is the centralizer
  - c) against a corrosion is the coupler
  - d) against a corrosion is the encapsulation
19. **The micropile contractor specifies the**
- a) micropile construction process
  - b) micropile type and quantity
  - c) pile top footing connection design
  - d) All of the above
20. **The micropile price constraints may include**
- a) no physical, environmental or access restrictions
  - b) no unusual subsurface conditions
  - c) continuous pile drilling operation
  - d) All of the above

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