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Continuing Education Course #131
Concrete Pavement Construction
An Introduction

1. In the past construction projects may have offered a concrete pavement design over an asphalt pavement for:
 - a. Lower initial construction cost
 - b. More readily available materials and contractors
 - c. Ease of design for vehicle load requirements
 - d. Longer durability and lesser maintenance requirements

2. Which factor will not affect a designer's choice for specifying the concrete strength of the pavement?
 - a. Vehicle types and loading footprint
 - b. Type of construction equipment used for paving
 - c. Pavement thickness
 - d. Joint and reinforcing types

3. When verifying flexural strength of concrete pavement with concrete beams, owners may "weed out" errant results by:
 - a. Using historical data to correlate the compressive strength of concrete cylinders to an anticipated flexural strength
 - b. Remove sections of the pavement and have them tested separately
 - c. Allow for simultaneous compression testing of concrete cylinders made from the same test batch discarding any results that aren't consistent
 - d. Flexural test results are very consistent and reliable and never need verification testing

4. To manufacture a cost effective mix that meets the specified requirements, trial batches are made by testing various mix designs and comparing the results. Factors that can affect the choices for trial mixes are:
 - a. Availability and properties of local materials
 - b. Intended paving equipment
 - c. Seasonal conditions for paving
 - d. All of the above

5. A contractor may decide to use type III cement if
 - a. He needed Sulfate Resistance
 - b. General purpose pavement was being constructed
 - c. He needed to develop strength quickly
 - d. The heat of hydration needed to be minimized

6. Rideability is an important factor for highway pavement, which item is least likely to improve the quality of a specified concrete pavement's rideability?
 - a. 100% diamond grinding to a longitudinal profile
 - b. Appropriate joint design and accurate placement

- c. Width of paving lanes
 - d. Utilization of slipform paving equipment
7. Airport runways are excellent candidates for slipform paving because
- a. Lane widths vary greatly and have irregular shapes
 - b. There are many obstructions like drainage structures projecting through the pavement
 - c. Short lengths for quick paving lanes
 - d. None of the above
8. Roller Compacted concrete is?
- a. A very specialized style of pavement with few practical applications
 - b. A cost effective alternative to traditional paving methods
 - c. Historical favorite for DOTs pavement choice
 - d. Not sensitive to subgrade issues and can be paved over most surfaces
9. Slipform paving lines and grade are usually controlled automatically by:
- a. String lines held by steel pins set by surveyors
 - b. Skis that ride the subgrade surface which compensate for minor variances
 - c. GPS sensors built into the equipment
 - d. Steel forms held in place to hold the concrete shape until it has sufficiently cured
10. What is true regarding hand formed concrete placements
- a. Transit mix trucks must be used to deliver the concrete material to placement
 - b. It is only used in reinforced concrete pavement
 - c. It is versatile to accommodate pavement with varying dimensions including depth
 - d. None of the above
11. What is true about the use of a concrete distributor
- a. A distributor is never used with slipformed pavement because trucks can back down the lane and dump directly in front of the paver
 - b. A distributor conveys the concrete across the surface to be paved providing better consolidation with less labor
 - c. Distributors are rubber tired so they do not damage already paved surfaces
 - d. All of the above
12. Which statement concerning paving equipment is untrue
- a. Spray cure compound is applied from the concrete paver immediately after finishing the surface.
 - b. Slipform concrete pavers utilize grade control and a stiff concrete mix to extrude the concrete into its final shape.
 - c. Air screeds or roller screeds are used in handformed concrete pavement and set the final grade by riding the side forms of the placement
 - d. Static or agitory dump trucks are usually used to transport concrete to slipformed concrete pavement
13. For large concrete pavement projects a portable concrete plant is desirable because
- a. Most local concrete suppliers cannot receive the special admixtures necessary to make the concrete
 - b. Local DOT's won't allow concrete to be hauled in dump trucks across local roads
 - c. Large concrete paving projects have large open areas suitable for storing aggregate and other concrete ingredients
 - d. The paving contractor can better control the production rate and quality of the mix being delivered
14. Concrete Pavements today most likely will have longer life spans than older pavements due to
- a. DOT restrictions and permitting requirements for hauling heavy weight loads
 - b. Improved joint interfaces from better grade control and profile grinding

- c. Improved sources of natural stone and sand aggregates
 - d. Surface chemical sprayed to harden the contact area to resist abrasion
15. Which method is not an economical way of rehabilitating old pavements?
- a. Unbonded and bonded “white-topping” concrete overlays
 - b. Coloring and texturing of paved surfaces
 - c. Profile grinding existing pavements
 - d. Pavement reclamation with cement stabilization
16. Enhanced technology has made slipform paving more economical by
- a. Improving reliability of dowel bar inserters
 - b. Making side forms unnecessary for hand pours
 - c. Integrated conveyors to eliminate the need of distributor machines
 - d. Integrated vibrators to improve consolidation
17. LEED stands for
- a. Least of Environmental Endangerment Design
 - b. Lowest in Economical Engineered Design
 - c. Limited in Engineering and Environmental Development
 - d. Leadership in Energy and Environmental Design
18. Concrete paving offers better environmental benefits to asphalt paving by
- a. Absorbing less atmospheric heat providing a heat sink
 - b. Reflecting light to reduce electric needs for street and parking lot lights
 - c. Reduces automobile emissions by reacting chemically with exhausts
 - d. All of the above
19. Which is not a benefit of porous concrete pavement?
- a. More economical than traditional pavement
 - b. Reduces storm water run-off
 - c. Reduces chemical pollutants from surface transport
 - d. Provides an irrigation source for plant root systems
20. The oldest known concrete paved roads are believed to be
- a. The Egyptian roads leading to the pyramids
 - b. Chinese pavements at Buddhist temples
 - c. A U.S. highway in Pine Bluff Arkansas
 - d. Roman highways built for the legions

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