



Final Exam

Continuing Education Course #396 Concrete Slabs-on-Grade Warehouses I – Background & Loading

1. When it comes to warehouses, Distribution logistics and Materials handling logistics refers to:
 - ☐ a. Moving goods from one address to another and moving goods within an individual facility
 - ☐ b. Mail delivery
 - ☐ c. Kitchen serving methods
2. In the warehouse industry, among the following choices, what is the best definition “distribution centers”?
 - ☐ a. Retail outlets where buyers can walk in off the street, browse the facility, and buy goods directly
 - ☐ b. Buildings that hold bulk quantities of goods until they are released to downstream users
 - ☐ c. Drive up sales outlet for pharmacy goods
3. What is traditionally the most common means of transporting goods within a warehouse?
 - ☐ a. Large cardboard boxes
 - ☐ b. 5 gallon buckets
 - ☐ c. Wood pallets
4. What are the most traditional ways of moving goods within a distribution center?
 - ☐ a. hand carts
 - ☐ b. forklifts and pallet jacks
 - ☐ c. wagons
5. The front tires of a forklift see _____ portion of the load distribution as a result of the load being picked up by the forks.
 - ☐ a. an amplified
 - ☐ b. a reduced
 - ☐ c. an equal
6. Pallet jacks typically have _____ tires.
 - ☐ a. Huge and bouncy
 - ☐ b. Extremely soft and cushioned
 - ☐ c. Smaller radius and hard rubber
7. Slabs in typical buildings are different from those in warehouses in the following manner:
 - ☐ a. Typical buildings do not generally need a vapor barrier, especially with glued vinyl floor tile
 - ☐ b. Floor finishes in office buildings are almost always exposed concrete
 - ☐ c. Warehouses can experience a high volume of heavy wheeled traffic that will degrade slab joints over time
8. What is the most critical item on the following list for efficient materials handling operations?
 - ☐ a. Performance of the slab
 - ☐ b. Good music in a facility

☐ c. Skylights

9. Cracks or joints have a finite opening width, and if large enough, are gradually worn down by the _____, which hit the opening (Choose the best answer):

- ☐ a. Continual action of wheeled lift and pallet jack traffic
- ☐ b. Occasional well-heeled traffic of a tour group
- ☐ c. Soft golf cart wheels that are used in these large facilities

10. True or false? The construction and condition of the concrete slab has a great impact on the wear and tear of the materials handling equipment.

- ☐ a. True
- ☐ b. False

11. . What are the shrinkage amounts expected in slabs as a percentage of the amount that the slab will see in its lifetime (more than one answer possible)?

- ☐ a. 90% at 7 days and 100% at 14 days
- ☐ b. 10% at 6 months and 20% at 12 months
- ☐ c. 44% at 28 days and 91% at 365 days

12. Shrinkage is sensitive to many factors. Which of the following matter?

- ☐ a. Dirt mixed in with the aggregate that is used in the concrete mix
- ☐ b. Cement with high shrinkage tendencies
- ☐ c. Aggregates that adversely affect shrinkage (increase it)
- ☐ d. All of the above

13. Choose the best answer - Higher concrete strength means more shrinkage, a stiffer slab, and less creep over time. The result is _____ curling.

- ☐ a. less
- ☐ b. more
- ☐ c. not likely to affect

14. Choose the best answer - Softer subgrade means length of cantilevered edge of curled slab is _____ due to more ready compatibility with soil deformation.

- ☐ a. shorter
- ☐ b. longer

15. Some of the desirable traits of a good site for a distribution center / warehouse include (more than one answer possible):

- ☐ a. Stable, solid, and stiff natural soils
- ☐ b. Close to highways and with good and well-maintained access roads
- ☐ c. Close to a population center for a reliable workforce pool
- ☐ d. All of the above

16. Choose the best answer - Expansive soils are generally a fat clay that _____ with increases in moisture content.

- ☐ a. shrinks
- ☐ b. undergoes no volume changes
- ☐ c. expands

17. Choose the best pair of words to complete the following statement: If site soils are very dry, and classified as desiccant or collapsible soils, meaning that the natural compacted state of the deeper soils was fairly loose, they would _____ and therefore _____ when substantial water is introduced.

- ☐ a. compact, settle
- ☐ b. loosen, expand
- ☐ c. not change in density, remain the same in volume

18. True or false? If building loads (specifically those that support building components or their lateral systems, not including storage rack loading) are required to be supported by the slab, those slabs would fall under the American Concrete Institute (ACI) design code, ACI 318, for building foundations.

- ☐ a. True
- ☐ b. False

19. Choose the best answer – Example of a uniform load:

- ☐ a. Groups of pallets stacked in open slab areas
- ☐ b. Storage rack legs supported on base plates
- ☐ c. Continuous concrete block partition walls

20. Choose the best answer – Example of a point load:

- ☐ a. Groups of pallets stacked in open slab areas
- ☐ b. Storage rack legs supported on base plates
- ☐ c. Continuous concrete block partition walls

21. Choose the best answer – Example of a line load:

- ☐ a. Groups of pallets stacked in open slab areas
- ☐ b. Storage rack legs supported on base plates
- ☐ c. Continuous concrete block partition walls

22. Choose the best answer: Besides typical rack and equipment loading, another load demand on a warehouse slab might be:

- ☐ a. Uplift from exposure to violent negative wind pressure
- ☐ b. The base attachment of bollards designed to stop wayward forklifts
- ☐ c. High snow drift loading

23. Choose the best answer: Useful data for slab design from warehouse operations might include:

- ☐ a. Load info for forklifts and pallet jacks; magnitude of different types of loading, and number of cycles
- ☐ b. Necessary level of brightness from the lights in a facility
- ☐ c. Speed of rotation of an automated plastic film wrapping machine for pallets ready to ship on a truck.

24. True or false? The appetite of operations for repairs, both to slab and equipment, matters when considering how decisions in slab design will be made.

- ☐ a. True
- ☐ b. False

25. True or false? An increase in the cement content has no affect on shrinkage.

- ☐ a. True
- ☐ b. False