



## BOULDER COUNTY PUBLIC HEALTH OWS INSTALLER EXAM #1

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APPLICANT NAME \_\_\_\_\_

REPRESENTING (CONTRACTOR) \_\_\_\_\_

Directions: The answers to this exam can be found in the Boulder County Onsite Wastewater System Regulations. The exam will be graded at Boulder County Public Health Office (3450 Broadway). When you pass, a \$60.00 fee will need to be paid to receive your license. If it is necessary, this test may be taken again. Licenses are renewed on an annual basis.

1. A valid OWS permit is required to:
  - a. install or replace a septic tank
  - b. install or replace an aeration unit
  - c. replace a disposal line or distribution box
  - d. repair or replace a building sewer line
  - e. all of the above
  
2. It is extremely important to read the installation instructions on the permit because:
  - a. instructions may contain approved modifications to an engineer design
  - b. these instructions may include requirements specific to the site
  - c. these instructions list any waiver or variance granted for the installation
  - d. all of the above
  
3. All systems which require an engineer design must be installed by:
  - a. the home owner, if assisted by an experienced installer
  - b. any systems contractor with 5 years experience
  - c. a systems contractor licensed by Boulder County Public Health
  
4. Final inspection for a standard system is arranged by notifying Boulder County Public Health. For systems requiring an engineer design, final inspections must be made by:
  - a. only the design engineer
  - b. only Boulder County Public Health
  - c. either Boulder County Public Health or the design engineer
  - d. both Boulder County Public Health and the design engineer
  
5. How long from the permit date is an OWS permit valid?
  - a. five years

- b. six months
  - c. one year
  - d. indefinitely
6. A valid Boulder County Systems Contractor License is required for:
- a. any person installing plumbing for hire
  - b. any person installing an OWS
  - c. any contractor installing an OWS for hire
  - d. any person installing five OWS per year
7. Which of the following conditions render a site suitable for a standard absorption system?
- a. lack of sufficient suitable soil
  - b. slope in excess of 30%
  - c. percolation rates between 5 and 60 minutes per inch
  - d. location within the 100-year floodplain
  - e. seasonally high ground water or bedrock within 6 feet of ground surface
8. The maximum allowable width credited for an absorption field having 3 distribution lines is:
- a. 12 feet
  - b. 18 feet
  - c. 6 feet
  - d. 24 feet
9. What is meant by the following statement on an OWS permit: "System must be installed no deeper than 2 feet"?
- a. there must be no more than a 2 foot cut above the top of the gravel
  - b. average depth to the bottom of the gravel is to be no more than 2 feet
  - c. the bottom of the gravel must be no deeper than 2 feet below the original grade
  - d. all of the above
10. When installing an OWS the following items must be level:
- a. the bottom of the trench or bed
  - b. the distribution pipes
  - c. the distribution box
  - d. the sewer line
  - e. a, b and c
  - f. all of the above
11. Which of the following site conditions would require a Registered Professional Engineer designed OWS:
- a. where the system requires an open hole inspection or replacement fill soils
  - b. where the system is installed in a trench configuration
  - c. where the system is installed 50 feet from the 100-year floodplain boundary
  - d. where the system will serve one single-family residence and a garage
  - e. all of the above
12. Which of the following are acceptable methods of leveling a distribution box?
- a. Use a carpenter's spirit level that is long enough to touch both sides of the distribution box.

- b. Eyeball the level of the distribution box, it only has to be approximately level.
- c. Pour water into the distribution box and verify that the water reaches all outlet pipes at the same time.

13. All sewage pumping systems/lift stations must be designed by a \_\_\_\_\_.

14. Septic tanks must be a minimum of \_\_\_\_\_ compartments, with at least \_\_\_\_\_ of the capacity in the first (inlet) compartment.

15. The building sewer line leading to the septic tank and effluent line exiting the septic tank must be installed with a minimum fall of \_\_\_\_\_ inch per foot for pipe 4 inches or larger in diameter.

16. The sewer line carrying sewage from the building to the septic tank cannot contain bends greater than \_\_\_\_\_.

17. Unless otherwise specified on the permit or the open hole inspection result form, the maximum depth from the existing grade on the uphill side to the bottom of the gravel in an absorption system is \_\_\_\_\_ feet.

18. In an absorption system, the minimum distance from the bottom of the aggregate to either bedrock or maximum seasonal groundwater is \_\_\_\_\_ feet.

19. Distribution lines in a soil absorption system, shall be installed \_\_\_\_\_ with all perforations equally offset from the \_\_\_\_\_ of the pipe.

20. Adjacent absorption trenches shall be at least \_\_\_\_\_ feet apart.

21. Distribution lines in an absorption field can extend to within \_\_\_\_\_ feet, but not further than \_\_\_\_\_ feet, from the sidewall (or edge) of the field.

22. Adjacent lines in an absorption field must be no more than \_\_\_\_\_ feet apart.

23. A minimum of \_\_\_\_\_ inches of aggregate is required in an absorption bed or trench.

24. The correct size of bed aggregate is between \_\_\_\_\_ and \_\_\_\_\_ inches.

25. The aggregate in an absorption bed must be \_\_\_\_\_ distributed over lines from at least \_\_\_\_\_ inches above the distribution pipe to at least \_\_\_\_\_ inches below.

26. The minimum horizontal width of the supporting berm for any portion of an absorption trench or field installed above the level of the existing ground is \_\_\_\_\_ feet.
27. When installing alternating absorption fields, each field must be designed and constructed to provide at least \_\_\_\_\_.
28. Adjacent lines in an evapotranspiration field must be no more than \_\_\_\_\_ feet apart.
29. The liner for an evapotranspiration field shall be \_\_\_\_\_ at all openings. \_\_\_\_\_ shall be bonded at tightly and imperviously.
30. The surface of an evapotranspiration field shall be \_\_\_\_\_, so as to permit runoff of rainwater and to increase the air turbulence over it.
31. Unless otherwise specified on the permit, the minimum setback between an absorption field and a well is \_\_\_\_\_ feet.
32. Which components of an OWS can be covered with soil prior to final inspection by Boulder County Public Health?
33. Which components of a system must be left uncovered for a house connect inspection?
34. When is blasting allowed to excavate for an OWS absorption area in Boulder County?
35. For a ripped base bed installation where the excavation was measured to be 7' deep to bedrock on the uphill side, what is the maximum depth of the system (i.e., the bottom of the dispersal gravel or distribution chambers)? Hint: This question relates to the minimum required amount of suitable soil under a system.
36. How many cleanouts are required on a building sewer line that is 100' from the dwelling to the septic tank?
37. What is the maximum length of an effluent distribution line in an absorption field as measured from the distribution box?
38. Following final inspection, what materials are acceptable for placement on the aggregate prior to backfilling?
39. Under what conditions would a distribution box not be required in Boulder County?
40. T F A person who constructs, alters, installs, repairs or uses an OWS without a valid permit has committed a class 1 petty offense.

41. T F It is required that an absorption system be installed in the same area as the percolation tests.
42. T F Systems utilizing mechanical apparatus (i.e. effluent pumps) must be equipped with either an audio or visual device to indicate system or component failure or malfunction.
43. T F The field or trench excavation under the gravel in an absorption field does not need to be level as long as the distribution pipes are level.
44. T F Mounding of aggregate over pipes in an absorption field is acceptable.
45. T F Drainage diversion away from an absorption field or evapotranspiration field is a necessary part of a system.
46. T F Risers must extend to at least 8" of finished grade on septic tank inlet and outlet access ports. The risers must be on site at the time of final inspection.
47. T F The lid of the septic tank must be sealed watertight to the tank for all OWS installations.
48. T F The building sewer line piping entering, and the effluent line piping exiting the tank must be laid on a firm bed throughout its entire length at the time of the final inspection.
49. T F The installation of a composting toilet does not require a permit or inspection from Boulder County Building Division.
50. T F The installation of a lift station in Boulder County requires a permit or inspection from the Boulder County Building Division to determine compliance with electrical code.
51. T F When installing a ripped-base bed, the design engineer must conduct a percolation test of the replacement soils prior to the installation of the distribution pipes or chambers.
52. T F It is the responsibility of the systems contractor to assure that all bed and trench excavations are level before installing the distribution pipes or chambers.
53. T F It is acceptable to begin excavation for an OWS absorption field prior to obtaining the permit.