Instructions to complete this course: **Fee: $55.00**

1. Down load the AT-GRADE USING PRESSURE DISTRIBUTION COMPONENT MANUAL FOR PRIVATE ONSITE WASTEWATER TREATMENT SYSTEMS (Version 2.0) At Grade Manual
2. Answer the questions using the above manual.
3. Page down to the last page for mailing instructions.

6 hours of credit approved for the following categories:
1. Master plumber
2. Master plumber restricted service
3. Journeyman plumber
4. Journeyman plumber restricted service
5. POWTS Inspector
6. POWTS Maintainer
7. Soil Tester
8. Commercial plumbing inspector

AT-GRADE USING PRESSURE DISTRIBUTION COMPONENT QUIZ

I. INTRODUCTION AND SPECIFICATIONS:

1. The at grade component must receive influent flows and loads less than or equal to those specified in Table _____
    a. 1
    b. 2
    c. 3
    d. 4
2. When designed, installed and maintained in accordance with this manual, the at-grade component provides treatment and dispersal of domestic wastewater in conformance with _____ of the Wis. Adm. Code.
    a. 381
    b. 382
    c. 383
    d. 384
3. Detailed plans and specifications must be developed and submitted for review and approval to the governing unit having authority over the plan review. In addition, a state Sanitary Permit must be obtained from the _____ unit having jurisdiction.
    a. department
    b. governmental
    c. neither a or b
    d. both a & b

Table 1
INFLUENT FLOWS AND LOADS

4. Distribution orifice spacing (use table 1 for answer)
    a. In accordance with 383.43(2), (3), (4) and (5),Wis. Adm. Code
    b. ≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or 383.43(6),

Wis. Adm. Code.
c. ≤ 4.5 gal/ft
d. ≤ 1/8 inch
e. ≥ 1 orifice for every 2 linear feet of distribution cell

5. Wastewater particle size (use table 1 for answer)
a. In accordance with 383.43(2), (3), (4) and (5),Wis. Adm. Code
b. ≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or 383.43(6),
Wis. Adm. Code.
c. ≤ 4.5 gal/ft
d. ≤ 1/8 inch
e. ≥ 1 orifice for every 2 linear feet of distribution cell

6. Linear loading rate for components with in situ soils having a soil application rate of ≤ 0.3 gal/ft2/day within 12 inches of distribution cell (use table 1 for answer)
a. In accordance with 383.43(2), (3), (4) and (5),Wis. Adm. Code
b. ≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or 383.43(6),
Wis. Adm. Code.
c. ≤ 4.5 gal/ft
d. ≤ 1/8 inch
e. ≥ 1 orifice for every 2 linear feet of distribution cell

7. Design wastewater flow (DWF) from public facilities (use table 1 for answer)
a. In accordance with 383.43(2), (3), (4) and (5),Wis. Adm. Code
b. ≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or 383.43(6), Wis. Adm. Code.
c. ≤ 4.5 gal/ft
d. ≤ 1/8 inch
e. ≥ 1 orifice for every 2 linear feet of distribution cell

8. Design wastewater flow (DWF) from one- and two-family dwellings (use table 1 for answer)
a. In accordance with s. Comm 83.43(2), (3), (4) and (5),Wis. Adm. Code
b. ≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or 383.43(6),
Wis. Adm. Code.
c. ≤ 4.5 gal/ft
d. ≤ 1/8 inch
e. ≥ 1 orifice for every 2 linear feet of distribution cell

9. Volume of a single dose (use table 1 for answer)
a. ≤ 5000 gal/day
b. In accordance with 383.44(2)(a), Wis. Adm. Code
c. ≥ 5 times the void volume of distribution lateral(s) and <20% of the design wastewater flow
d. In accordance with 383.43(2), (3), (4) and (5), Wis. Adm. Code

10. Monthly average value of Total Suspended Solids (TSS) (use table 1 for answer)
a. ≤ 5000 gal/day
b. In accordance with 383.44(2)(a), Wis. Adm. Code
c. ≥ 5 times the void volume of distribution lateral(s) and <20% of the design wastewater flow
d. In accordance with 383.43(2), (3), (4) and (5), Wis. Adm. Code

11. Monthly average value of five day Biochemical Oxygen Demand (BOD5) a. ≤ 5000 gal/day (use table 1 for answer)
    b. In accordance with 383.44(2)(a), Wis. Adm. Code
    c. ≥ 5 times the void volume of distribution lateral(s) and <20% of the design wastewater flow
    d. In accordance with 383.43(2), (3), (4) and (5), Wis. Adm. Code
12. Monthly average value of Fats, Oil and Grease (FOG) (use table 1 for answer)
    a. ≤ 5000 gal/day
    b. In accordance with 383.44(2)(a), Wis. Adm. Code
    c. ≥ 5 times the void volume of distribution lateral(s) and <20% of the design wastewater flow
    d. In accordance with 383.43(2), (3), (4) and (5), Wis. Adm. Code
13. Design Wastewater flow (DWF) (use table 1 for answer)
    a. ≤ 5000 gal/day
    b. In accordance with 383.44(2)(a), Wis. Adm. Code
    c. ≥ 5 times the void volume of distribution lateral(s) and <20% of the design wastewater flow
    d. In accordance with 383.43(2), (3), (4) and (5), Wis. Adm. Code

Table 2
SIZE AND ORIENTATION

14. Depth of aggregate distribution cell at edge (use table 2 for the answer)
    a. ≥ 6 inches
    b. ≥ 12 inches
    c. Longest dimension parallel to surface grade contours on sloping sites.
    d. < 10%
15. Depth of soil cover over distribution cell (use table 2 for the answer)
    a. ≥ 6 inches
    b. ≥ 12 inches
    c. Longest dimension parallel to surface grade contours on sloping sites.
    d. < 10%
16. Orientation (use table 2 for the answer)
    a. ≥ 6 inches
    b. ≥ 12 inches
    c. Longest dimension parallel to surface grade contours on sloping sites.
    d. < 10%
17. Deflection of distribution cell on concave slopes (use table 2 for the answer)
    a. ≥ 6 inches
    b. ≥ 12 inches
    c. Longest dimension parallel to surface grade contours on sloping sites.
    d. < 10%
18. Width of component area (W) (use table 2 for the answer)
    a. ≥ Effective distribution cell width + 10 ft
    b. ≥ Design wastewater flow (DWF) ÷ Design soil application rate (DAR) ÷ Distribution cell width (A)
    c. ≥ Effective distribution cell length + 10 ft
    d. ≥ 8 inches + nominal diameter of distribution pipe
19. Effective distribution cell length (B) (use table 2 for the answer)

a. ≥ Effective distribution cell width + 10 ft
b. ≥ Design wastewater flow (DWF) ÷ Design soil application rate (DAR) ÷ Distribution cell width (A)
c. ≥ Effective distribution cell length + 10 ft
d. ≥ 8 inches + nominal diameter of distribution pipe

20. Length of component area (L) (use table 2 for the answer)
a. ≥ Effective distribution cell width + 10 ft
b. ≥ Design wastewater flow (DWF) ÷ Design soil application rate (DAR) ÷ Distribution cell width (A)
c. ≥ Effective distribution cell length + 10 ft
d. ≥ 8 inches + nominal diameter of distribution pipe

21. Depth of aggregate distribution cell at distribution pipe (use table 2 for the answer)
a. ≥ Effective distribution cell width + 10 ft
b. ≥ Design wastewater flow (DWF) ÷ Design soil application rate (DAR) ÷ Distribution cell width (A)
c. ≥ Effective distribution cell length + 10 ft
d. ≥ 8 inches + nominal diameter of distribution pipe

22. Width of aggregate for sloping sites (use table 2 for the answer)
a. ≥ Effective distribution cell width + 2 ft
b. ≥ Effective distribution cell width
c. 10 ft or width of distribution cell, whichever is less
d. ≥ Design wastewater flow ÷ soil application rate for the most restrictive soil horizon that may affect treatment and dispersal. Soil application rates are listed in 383 383.44-1 or -2, Wis. Adm.
Code.23. Width of aggregate for level sites

23. Blank no question

24. Effective distribution cell credit width (A) (use table 2 for the answer)
a. ≥ Effective distribution cell width + 2 ft
b. ≥ Effective distribution cell width
c. 10 ft or width of distribution cell, whichever is less
d. ≥ Design wastewater flow ÷ soil application rate for the most restrictive soil horizon that may affect treatment and dispersal. Soil application rates are listed in 383 Table 383.44-1 or -2, Wis. Adm.
Code.23. Width of aggregate for level sites

25. Width of aggregate for level sites (use table 2 for the answer)
a. ≥ Effective distribution cell width + 2 ft
b. ≥ Effective distribution cell width
c. 10 ft or width of distribution cell, whichever is less
d. ≥ Design wastewater flow ÷ soil application rate for the most restrictive soil horizon that may affect treatment and dispersal. Soil application rates are listed in 383 Table 383.44-1 or -2, Wis. Adm.
Code.23. Width of aggregate for level sites

26. Total effective distribution cell area (use table 2 for the answer)
a. ≥ Effective distribution cell width + 2 ft
b. ≥ Effective distribution cell width
c. 10 ft or width of distribution cell, whichever is less
d. ≥ Design wastewater flow ÷ soil application rate for the most restrictive soil horizon that may affect treatment and dispersal. Soil application rates are listed in 383 Table 383.44-1 or
- 2, Wis. Adm. Code.23. Width of aggregate for level sites

Table 3
OTHER SPECIFICATIONS

27. Location of observation pipes for components on a slope (use table 3 for the answers)
    a. Along the downslope toe at opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    b. Along opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    c. ≥ Two extending from distribution cell infiltrative surface to finished grade.
    d. Most up slope lateral at 2 feet from up slope edge of distribution cell. If more than one, no lateral may be installed in the lower half of distribution cell.
28. Location of observation pipes for level components (use table 3 for the answers)
    a. Along the downslope toe at opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    b. Along opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    c. ≥ Two extending from distribution cell infiltrative surface to finished grade.
    d. Most up slope lateral at 2 feet from up slope edge of distribution cell. If more than one, no lateral may be installed in the lower half of distribution cell.
29. Number of observation pipes per distribution cell (use table 3 for the answers)
    a. Along the downslope toe at opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    b. Along opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    c. ≥ Two extending from distribution cell infiltrative surface to finished grade.
    d. Most up slope lateral at 2 feet from up slope edge of distribution cell. If more than one, no lateral may be installed in the lower half of distribution cell.
30. Location of distribution lateral(s) (for sloping sites) (use table 3 for the answers)
    a. Along the downslope toe at opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    b. Along opposite ends of distribution cell. Each at a distance equal of 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
    c. ≥ Two extending from distribution cell infiltrative surface to finished grade.
    d. Most up slope lateral at 2 feet from up slope edge of distribution cell. If more than one, no lateral may be installed in the lower half of distribution cell.
31. Location of distribution lateral(s) (for level sites)
    a. Equally spaced from the center of the distribution cell.
    b. Geotextile fabric meeting 384.30(6)(g), Wis. Adm. Code.
    c. Meets requirements of 384.30(6)(i) & (k), Wis. Adm. Code.
    d. Meets requirements of 384.30, Table 384.30-1 Wis. Adm. Code.
32. Fabric cover of distribution cell when aggregate is used (use table 3 for the answers)
    a. Equally spaced from the center of the distribution cell.
    b. Geotextile fabric meeting 384.30(6)(g), Wis. Adm. Code.
    c. Meets requirements of 384.30(6)(i) & (k), Wis. Adm. Code.
    d. Meets requirements of 384.30, Table 384.30-1 Wis. Adm. Code.
33. Distribution cell aggregate material (use table 3 for the answers)
    a. Equally spaced from the center of the distribution cell.
    b. Geotextile fabric meeting s. Comm 84.30(6)(g), Wis. Adm. Code.

c. Meets requirements of 384.30(6)(i) & (k), Wis. Adm. Code.
d. Meets requirements of 384.30, Table 384.30-1 Wis. Adm. Code.

34. Piping material for observation and vent pipes (use table 3 for the answers)
a. Equally spaced from the center of the distribution cell.
b. Geotextile fabric meeting 384.30(6)(g), Wis. Adm. Code.
c. Meets requirements of 384.30(6)(i) & (k), Wis. Adm. Code.
d. Meets requirements of 384.30, Table 384.30-1 Wis. Adm. Code.

35. Piping Material in the distribution system (use table 3 for the answers)
a. Meets requirements of 384.30(2), Wis. Adm. Code for its intended use.
b. ≥ To depth required by 383 Table 383.44-3, Wis. Adm. Code.
c. By use of a pressure distribution network conforming to Department of Commerce publications SBD-10573-P or SBD-10706-P, entitled “Pressure Distribution Component Manual for Private Onsite Wastewater Treatment Systems” and based on pipe sizing methods contained in Small Scale Waste Management Project publication 9.6 entitled “Design of Pressure Distribution Networks for Septic Tank – Soil Absorption Systems”.
d. ≤ 25% within the component area.

36. Effluent application (use table 3 for the answers)
a. Meets requirements of 384.30(2), Wis. Adm. Code for its intended use.
b. ≥ To depth required by 383 Table 383.44-3, Wis. Adm. Code.
c. By use of a pressure distribution network conforming to Department of Commerce publications SBD-10573-P or SBD-10706-P, entitled “Pressure Distribution Component Manual for Private Onsite Wastewater Treatment Systems” and based on pipe sizing methods contained in Small Scale Waste Management Project publication 9.6 entitled “Design of Pressure Distribution Networks for Septic Tank – Soil Absorption Systems”.
d. ≤ 25% within the component area.

37. Vertical depth of in situ soil between bottom of distribution cell and seasonal saturation defined by redoximorphic features, groundwater, or bedrock (use table 3 for the answers)
a. Meets requirements of 384.30(2), Wis. Adm. Code for its intended use.
b. ≥ To depth required by 383 Table 383.44-3, Wis. Adm. Code.
c. By use of a pressure distribution network conforming to Department of Commerce publications SBD-10573-P or SBD-10706-P, entitled “Pressure Distribution Component Manual for Private Onsite Wastewater Treatment Systems” and based on pipe sizing methods contained in Small Scale Waste Management Project publication 9.6 entitled “Design of Pressure Distribution Networks for Septic Tank – Soil Absorption Systems”.
d. ≤ 25% within the component area.

38. Slope of original grade (use table 3 for the answers)
a. Meets requirements of 384.30(2), Wis. Adm. Code for its intended use.
b. ≥ To depth required by 383 Table 383.44-3, Wis. Adm. Code.
c. By use of a pressure distribution network conforming to Department of Commerce publications SBD-10573-P or SBD-10706-P, entitled “Pressure Distribution Component Manual for Private Onsite Wastewater Treatment Systems” and based on pipe sizing methods contained in Small Scale Waste Management Project publication 9.6 entitled “Design of Pressure Distribution Networks for Septic Tank – Soil Absorption Systems”.
d. ≤ 25% within the component area.

39. Management (use table 3 for the answers)
a. In accordance with 383, Wis. Adm. Code, and this manual.
b. In accordance with 383, Wis. Adm. Code.
c. Graded to divert surface water around the component and sodded or seeded and mulched.

d. Unless, otherwise specifically allowed in this manual, vehicular traffic, excavation, and soil compaction are prohibited in: The plowed area, and For sloping sites - 15 feet down slope of component area. For level sites – 10 feet on both sides of component area.
e. Fertile soil material (i.e. topsoil) containing less than 15% gravel by volume and no rock fragments greater than 3 inches diameter. The texture and structure of the soil cover provides adequate water holding capacity to sustain grasses to prevent erosion, promotes runoff from precipitation events, and allows atmospheric diffusion to the distribution cell below the soil cover. Soil finer than silt loam is not recommended.

40. Installation inspection (use table 3 for the answers)
a. In accordance with 383, Wis. Adm. Code, and this manual.
b. In accordance with 383, Wis. Adm. Code.
c. Graded to divert surface water around the component and sodded or seeded and mulched.
d. Unless, otherwise specifically allowed in this manual, vehicular traffic, excavation, and soil compaction are prohibited in: The plowed area, and For sloping sites - 15 feet down slope of component area. For level sites – 10 feet on both sides of component area.
e. Fertile soil material (i.e. topsoil) containing less than 15% gravel by volume and no rock fragments greater than 3 inches diameter. The texture and structure of the soil cover provides adequate water holding capacity to sustain grasses to prevent erosion, promotes runoff from precipitation events, and allows atmospheric diffusion to the distribution cell below the soil cover. Soil finer than silt loam is not recommended.

41. Erosion and frost protection (use table 3 for the answers)
a. In accordance with 383, Wis. Adm. Code, and this manual.
b. In accordance with 383, Wis. Adm. Code.
c. Graded to divert surface water around the component and sodded or seeded and mulched.
d. Unless, otherwise specifically allowed in this manual, vehicular traffic, excavation, and soil compaction are prohibited in: The plowed area, and For sloping sites - 15 feet down slope of component area. For level sites – 10 feet on both sides of component area.
e. Fertile soil material (i.e. topsoil) containing less than 15% gravel by volume and no rock fragments greater than 3 inches diameter. The texture and structure of the soil cover provides adequate water holding capacity to sustain grasses to prevent erosion, promotes runoff from precipitation events, and allows atmospheric diffusion to the distribution cell below the soil cover. Soil finer than silt loam is not recommended.

42. Limited activities during component construction (use table 3 for the answers)
a. In accordance with 383, Wis. Adm. Code, and this manual.
b. In accordance with 383, Wis. Adm. Code.
c. Graded to divert surface water around the component and sodded or seeded and mulched.
d. Unless, otherwise specifically allowed in this manual, vehicular traffic, excavation, and soil compaction are prohibited in: The plowed area, and For sloping sites - 15 feet down slope of component area. For level sites – 10 feet on both sides of component area.
e. Fertile soil material (i.e. topsoil) containing less than 15% gravel by volume and no rock fragments greater than 3 inches diameter. The texture and structure of the soil cover provides adequate water holding capacity to sustain grasses to prevent erosion, promotes runoff from precipitation events, and allows atmospheric diffusion to the distribution cell below the soil cover. Soil finer than silt loam is not recommended.

43. Cover material (use table 3 for the answers)
a. In accordance with 383, Wis. Adm. Code, and this manual.

b. In accordance with 383, Wis. Adm. Code.
c. Graded to divert surface water around the component and sodded or seeded and mulched.
d. Unless, otherwise specifically allowed in this manual, vehicular traffic, excavation, and soil compaction are prohibited in: The plowed area, and For sloping sites - 15 feet down slope of component area. For level sites – 10 feet on both sides of component area.
e. Fertile soil material (i.e. topsoil) containing less than 15% gravel by volume and no rock fragments greater than 3 inches diameter. The texture and structure of the soil cover provides adequate water holding capacity to sustain grasses to prevent erosion, promotes runoff from precipitation events, and allows atmospheric diffusion to the distribution cell below the soil cover. Soil finer than silt loam is not recommended.

II. DEFINITIONS:

44. Definitions not found in this section are located in 380 of the Wisconsin Administrative Code or the terms use the building code definition.
a. true
b. false

45. _____ means the downward flow of water or effluent through soil that involves travel along soil surfaces or through soil pores.
a. Vertical Flow
b. Unsaturated flow
c. Slowly Permeable Soil
d. Distribution cell

46. _____ means soil with textural classifications of clay loams and silty clay loams that exhibit a moderate grade of structure; and loams, silt loams, and silts with weak grades of structure; or soils with weak to moderate grades of platy structure according to the US Department of Agriculture, Natural Resource Conservation Service classification system.
a. Vertical Flow
b. Unsaturated flow
c. Slowly Permeable Soil
d. Distribution cell

47. _____ means liquid flow through a soil media under a negative pressure potential. Liquids containing pathogens and pollutants come in direct contact with soil or fill material microsites that enhance wastewater treatment by physical, biological, and chemical means.
a. Vertical Flow
b. Unsaturated flow
c. Slowly Permeable Soil
d. Distribution cell

48. _____ means a layer of stone aggregate or synthetic aggregate that receives effluent from a distribution network and distributes that effluent onto a plowed in situ soil dispersal area.
a. Vertical Flow
b. Unsaturated flow
c. Slowly Permeable Soil
d. Distribution cell

49. _____ means a slope shape where surface drainage may converge into a limited area.
a. Concave Site

b. Component Area
c. At-grade
d. Distribution cell

50. _____ means the effective in situ soil surface area available for infiltration of effluent from the distribution cell, and the surrounding cover material.
a. Concave Site
b. Component Area
c. At-grade
d. Distribution cell

51. _____ means an on-site wastewater treatment and distribution component. The component contains a distribution cell consisting of aggregate and a distribution network on top of the plowed in situ soil and is covered by soil.
a. Concave Site
b. Component Area
c. At-grade
d. Distribution cell

III. DESCRIPTION AND PRINCIPLE OF OPERATION:

52. Treatment is accomplished predominately by physical and biochemical processes within the soil. These processes are affected by the physical characteristics of the_____.
a. effluent wastewater
b. influent application rate
c. neither a or b
d. both a & b

53. Treatment is accomplished predominately by physical and biochemical processes within the soil. These processes are affected by the physical characteristics of the_____.
a. temperature
b. the nature of the receiving soil
c. neither a or b
d. both a & b

54. Pathogens contained in the wastewater are eventually deactivated through _____ by the soil.
a. filtering
b. retention
c. adsorption
d. all of the above

55. Effluent is distributed into the distribution cell where it flows into the soil where it undergoes _____into the environment.
a. biological
b. chemical
c. physical treatment
d. dispersal
e. all of the above

56. Cover material, consisting of soil provides frost retention and moisture protection sufficient to maintain a good vegetative cover. The in situ soil serves as the treatment medium and disperses the effluent into the drain field.
a. true
b. false

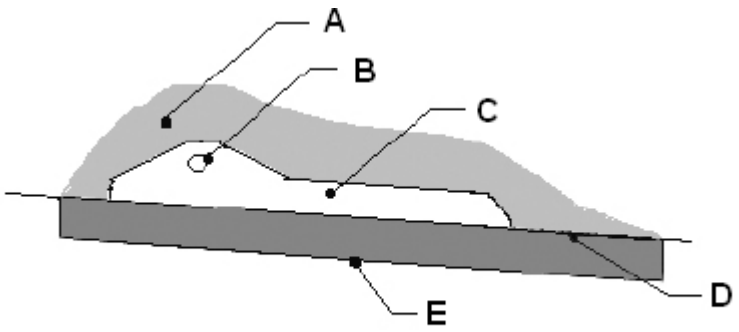
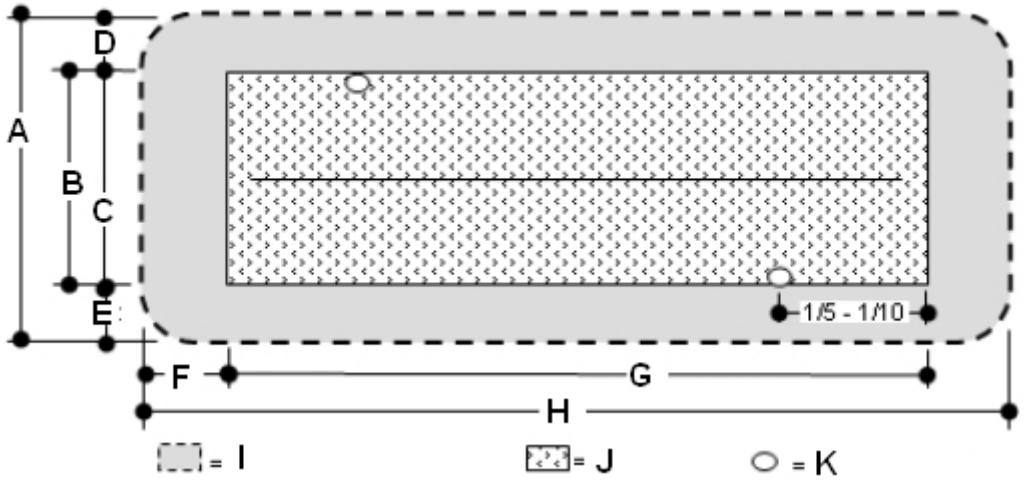


Figure 1 - A cross-section of a POWTS at-grade component

57. The letter A above represents _____.
    a. cover material
    b. distribution lateral
    c. distribution cell
    d. original grade surface
    e. plowed area
58. The letter B above represents _____.
    a. cover material
    b. distribution lateral
    c. distribution cell
    d. original grade surface
    e. plowed area
59. The letter C above represents _____.
    a. cover material
    b. distribution lateral
    c. distribution cell
    d. original grade surface
    e. plowed area
60. The letter D above represents _____.
    a. cover material
    b. distribution lateral
    c. distribution cell
    d. original grade surface
    e. plowed area
61. The letter E above represents _____.
    a. cover material
    b. distribution lateral
    c. distribution cell
    d. original grade surface
    e. plowed area

Figure 2 - L



62. The letter A above represents _____.
    a. W
    b TW
    c. A
    d. 5’
63. The letter B above represents _____.
    a. W
    b TW
    c. A
    d. 5’
64. The letter C above represents _____.
    a. W
    b TW
    c. A
    d. 5’
65. The letter D above represents _____.
    a. W
    b TW
    c. A
    d. 5’
66. The letter E above represents _____.
    a. W
    b TW
    c. A
    d. 5’
67. The letter F above represents _____.
    a. W
    b TW
    c. A
    d. 5’

68. The letter G above represents _____.
    a. B

b TW
c. A
d. 5’

69. The letter H above represents _____.
a. L
b TW
c. A
d. 5’

70. The letter I above represents _____.
a. Soil cover/plowed area
b Aggregate
c. Observation pipe
d. Level site at grade

71. The letter J above represents _____.
a. Soil cover/plowed area
b Aggregate
c. Observation pipe
d. Level site at grade

72. The letter K above represents _____.
a. Soil cover/plowed area
b Aggregate
c. Observation pipe
d. Level site at grade

73. The letter L above represents _____.
a. Soil cover/plowed area
b Aggregate
c. Observation pipe
d. Level site at grade

74. This manual specifies site characteristics, design criteria and construction techniques for an at-grade component to provide treatment and dispersal of domestic wastewater meeting the standards of _____ Wis. Adm. Code.
a. 388.44(2)
b. 383.44(2)
c. both a & b
d none of the above

75. In an at-grade component design using pressure distribution, the effluent enters the more permeable topsoil over a large area, where it can move laterally until absorbed by the less permeable subsoil.
a. true
b. false

IV. SOIL AND SITE REQUIREMENTS:

76. Some of the at-grade design is ultimately matched to the given soil and site characteristics.
a. true
b. false

77. The design approach is based on criteria that all applied wastewater is successfully transported away from the component, in a manner that will influence later wastewater additions, and that the effluent is ultimately treated.

a. true
b. false

A. Minimum Soil Depth Requirements:

78. The minimum soil factors required for successful at-grade component performance are listed in Tables _____.
a. 1
b. 2
c. 3
d. all of the above
79. Soil evaluations must be in accordance with _____, Wis. Adm. Code.
a. 382
b. 383
c. 384
d. 385
80. In addition, soil application rates must be in accordance with _____, Wis. Adm. Code.
a. 382
b. 383
c. 384
d. 385

B. Other Site Considerations

81. On sloping sites and sites with slowly permeable soils, at-grade components rely on lateral effluent movement through the upper soil horizons. Lateral movement becomes less important as soil permeability increases.
a. true
b. false
82. Open areas and low exposure to sun and wind decrease the assistance of evaporation and transpiration in the dispersal of grey water.
a. true
b. false
83. Generally, sites with large trees, numerous smaller trees or large boulders are desirable for installing an at-grade component.
a. true
b. false
84. The setbacks specified in 384, Wis. Adm. Code for soil subsurface treatment and distribution components apply to at-grade components. The distances are measured from the interior of the effective distribution cell area.
a. true
b. false

V. COVER MATERIAL

85. The cover material (above the distribution cell and absorption area) means fertile soil material (i.e. topsoil) containing less than 5% gravel by volume and no rock fragments greater than 2 inches diameter.
a. true

b. false

86. The texture and structure of the soil cover provides adequate water holding capacity to _____.
   a. sustain grasses to prevent erosion
   b. promotes runoff from precipitation events
   c. allow atmospheric diffusion to the distribution cell below the soil cover.
   d. all of the above

87. Soil finer than silt loam is not recommended.
   a. true
   b. false

VI. DESIGN

88. The means of pressurizing the distribution network must provide equal distribution of effluent along the length of the distribution cell.
   a. true
   b. false

89. Design of the at-grade component is based on the design wastewater flow and soil characteristics. It must be sized such that it can accept the daily flows and loads without causing _____.
   a. surface seepage
   b. groundwater pollution
   c. none of the above
   d. both a & b

90. Consequently, the effective distribution cell area must be sufficiently large enough to absorb the effluent into the underlying soil.
   a. true
   b. false

91. Design of the at-grade includes the following three steps
   a. calculating the design wastewater flow
   b. design of the distribution cell
   c. design of the entire at-grade component
   d. all of the above

92. Effective distribution cell size for one- and two family dwelling application is determined by first calculating the design wastewater flow (DWF). To calculate DWF use Formula 2.
   a. true
   b. false

93. Effective distribution cell size for public facilities application is determined by calculating the DWF using Formula 3.
   a. true
   b. false

94. Formula 1-DWF = _____ gallons/day/bedroom
   a. 100
   b. 125
   c. 150
   d. none of the above

95. Formula 2-DWF = Sum of each estimated wastewater flow per source per day (from Table 4) x 1.5
   a. true

b. false

96. Design of the Distribution cell; This section determines the required effective cell area of the
a. distribution cell
b. dimensions for the soil cover material
c. neither a or b
d. both a & b

97. The design-loading rate equals the soil application rate of the soil horizon in contact with the distribution cell. Use Table_____, Wis. Adm. Code, to determine the soil application rate.
a. 383.44-1
b. 383.44-2
c. neither a or b
d. both a & b

98. The effective area of the distribution cell is calculated by multiplying design wastewater flow (DWF) by the design-loading rate (DLR).
a. true
b. false

99. Choose an effective distribution cell credit width, this will include:
a. The effective credit width can not exceed 10 ft.
b. Determine the distribution cell length (B).
c. The distribution cell length (B) is calculated by dividing the effective area of the distribution cell by the effective width (A) of the distribution cell.
d. all of the above

100. The linear loading rate is calculated multipling the design wastewater flow (DWF) by the distribution cell length (B).
a. true
b. false

101. For systems that have in situ soil having a soil application rate ≤ 0.3 gal/ft2/day that are within 12 inches below the distribution cell, the linear loading rate (LLR) can not exceed _____ gal/ft/day.
a. 3.5
b. 4.5
c. 5.5
d. 6.5

102. If the LLR exceeds _____ gal/ft/day for such soils, the component must be lengthened to reduce the LLR to 4.5 gal/ft/day or less.
a. 3.5
b. 4.5
c. 5.5
d. 6.5

103. The maximum deflection of a concave distribution cell of an at-grade system is _____%.
a. 1
b. 5
c. 10
d. 15

104. The effective distribution cell length of the concave distribution cell is the distance between the furthest points along the contour line of the down slope edge of the concave distribution cell.
a. true
b. false

105. The deflection of a distribution cell on concave slopes is calculated using Formula ____.

a. 1
b. 2
c. 3
d. 4

106. Percent of Deflection = (Deflection ÷ Effective distribution cell length) x 100 would be Formula _____.

a. 4
b. B
c. 2
d. 3

107. Actual distribution cell length = [(% of deflection x 0.00265) + 1] x effective distribution cell length would be Formula _____.

a. 4
b. B
c. 2
d. 3

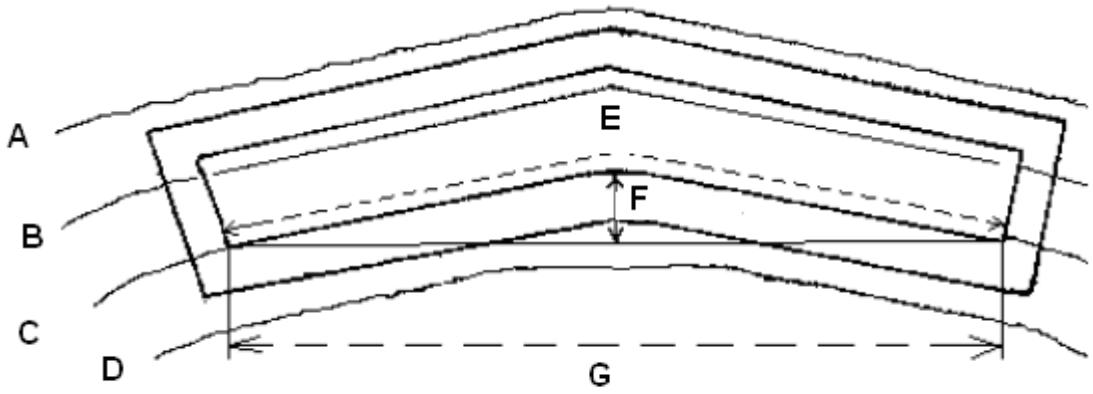


Figure 4 – H

108. The letter A represents:

a. 102’
b. 100’
c. 98’
d. 69’
e. actual cell length
f. deflection
g. effective cell length of concave distribution cell
h. concave at-grade and distribution cell

109. The letter B represents:

a. 102’
b. 100’
c. 98’
d. 69’
e. actual cell length
f. deflection
g. effective cell length of concave distribution cell
h. concave at-grade and distribution cell

110. The letter C represents:
    a. 102’
    b. 100’
    c. 98’
    d. 69’
    e. actual cell length
    f. deflection
    g. effective cell length of concave distribution cell
    h. concave at-grade and distribution cell
111. The letter D represents:
    a. 102’
    b. 100’
    c. 98’
    d. 96’
    e. actual cell length
    f. deflection
    g. effective cell length of concave distribution cell
    h. concave at-grade and distribution cell
112. The letter E represents:
    a. 102’
    b. 100’
    c. 98’
    d. 69’
    e. actual cell length
    f. deflection
    g. effective cell length of concave distribution cell
    h. concave at-grade and distribution cell
113. The letter F represents:
    a. 102’
    b. 100’
    c. 98’
    d. 69’
    e. actual cell length
    f. deflection
    g. effective cell length of concave distribution cell
    h. concave at-grade and distribution cell
114. The letter G represents:
    a. 102’
    b. 100’
    c. 98’
    d. 69’
    e. actual cell length
    f. deflection
    g. effective cell length of concave distribution cell
    h. concave at-grade and distribution cell
115. The letter H represents:
    a. 102’
    b. 100’
    c. 98’

d. 69’
e. actual cell length
f. deflection
g. effective cell length of concave distribution cell
h. concave at-grade and distribution cell

116. Design of the entire at-grade component: This includes sizing the total width and length of the_____.
a. distribution cell
b. component height
c. neither a or b
d. both a & b

117. Design of the entire at-grade component: This includes sizing the total width and length of the_____.
a. location of the effluent distribution lateral
b. observation pipes
c. neither a or b
d. both a & b

118. Determine the total width of distribution cell for level sites, the total width of distribution cell (TW) is equal to or greater than the effective distribution cell credit width (A). This math formula would be_____.
a. TW ≥ A
b. TW ≥ A + 2 feet
c. W ≥ TW + 10 ft
d. L ≥ B + 10 ft

119. For sloping sites, the total width of distribution cell is equal to or greater than the effective distribution cell credit width (A) plus 2 feet. This math formula would be_____.
a. TW ≥ A
b. TW ≥ A + 2 feet
c. W ≥ TW + 10 ft
d. L ≥ B + 10 ft

120. Determine the overall width (W) of the component: The minimum width of component must be equal to or greater than the total width of distribution cell plus 10 ft for soil cover. This math formula would be_____.
a. TW ≥ A
b. TW ≥ A + 2 feet
c. W ≥ TW + 10 ft
d. L ≥ B + 10 ft

121. Determine the overall length (L) of the component: Minimum overall length of component must be equal to or greater than the distribution cell length (B) plus 10 ft for soil cover. This math formula would be_____.
a. TW ≥ A
b. TW ≥ A + 2 feet
c. W ≥ TW + 10 ft
d. L ≥ B + 10 ft

122. Horizontal location of distribution lateral in the distribution cell includes:
a. Level site with one effluent distribution lateral; the lateral is located in the center of distribution cell.

b. Level site with more than one effluent distribution lateral; the laterals are equally spaced apart with the center two laterals the same distance from center of the cell and the distance from the outside laterals to the edge of the cell being one half the lateral spacing.
c. neither a or b
d. both a & b

123. Horizontal location of distribution lateral in the distribution cell includes:
a. Sloping site with one lateral; the effluent distribution lateral is located 2 feet down slope from up slope edge of the distribution cell.
b. Sloping site with more than one effluent distribution lateral; one lateral is located 2 feet down slope from the up slope edge of the distribution cell and the other(s) is (are) down slope of the upper lateral and
up slope of the mid point of the distribution cell effective width.
c. neither a or b
d. both a & b

124. Vertical location of distribution lateral in the distribution cell: The distribution lateral must be at least ___ inches above the elevation of original grade before plowing.
a. 3
b. 4
c. 5
d. 6

125. Determine the height of the component includes:
a. Height of component over the distribution lateral must be equal to or greater than 6 inches of aggregate beneath distribution pipe plus the nominal diameter of distribution lateral plus 2 inches above the distribution lateral plus 12 inches of soil cover.
b. Height of component over the rest of the distribution cell must be equal to or greater than 6 inches of aggregate plus 12 inches of soil cover.
c. neither a or b
d. both a & b

126. Location of the observation pipes includes:
a. Components on a level site must include two observation pipes. The observation pipes are along opposite ends of the distribution cell and located at a distance equal to 1/5 to 1/10 of the distribution cell length measured from the end of the cell.
b. Components on a sloping site must include two observation pipes. The observation pipes are along the down slope toe at opposite ends of the distribution cell and located at a distance equal to 1/5 to 1/10
of the distribution cell length measured from the end of the cell.
c. neither a or b
d. both a & b

127. A pressure distribution network conforming to Department of Commerce publications SBD-10573-P or SBD-10706-P, entitled “Pressure Distribution Component Manual for Private Onsite Wastewater Treatment Systems” and based on pipe sizing methods contained in Small Scale Waste Management Project publication 9.6 entitled “Design of Pressure Distribution Networks for Septic Tank – Soil Absorption Systems” must be used.
a. true
b. false

VII. SITE PREPARATION AND CONSTRUCTION:

128. It is emphasized that the soil only be plowed when it is frozen and the moisture content is high to avoid compaction and puddling.
    a. true
    b. false
129. The construction plan to be followed includes:
    a. Equipment
    b. Sanitary Permit
    c. Construction Procedures
    d. all of the above
130. Proper equipment is essential. Wheel type tractors or other equipment that will compact the atgrade area or the down slope area are required.
    a. true
    b. false
131. Prior to the construction of the component, a state Sanitary Permit shall be obtained and posted in a clearly visible location on the site.
    a. true
    b. false
132. Check the moisture content of the soil to a depth of 18 inches or to the anticipated plow depth, whichever is less.
    a. true
    b. false
133. Smearing and compacting wet soil will result in reducing the infiltration capacity of the soil. Proper soil moisture content can be determined by rolling a soil sample between the hands. If it rolls into a 1/4-inch wire, the site is too wet to prepare.
    a. true
    b. false
134. Determine where the force main from the dosing chamber will connect to the distribution system in the distribution cell. Place the pipe either before or after plowing. If the force main is to be installed in the down slope area, the trench for the force main may not be wider than _____ inches.
    a. 8
    b. 10
    c. 12
    d. 16
135. The required observation pipes must have slots on the bottom ____ inches of the observation pipe.
    a. 8
    b. 10
    c. 6
    d. 16

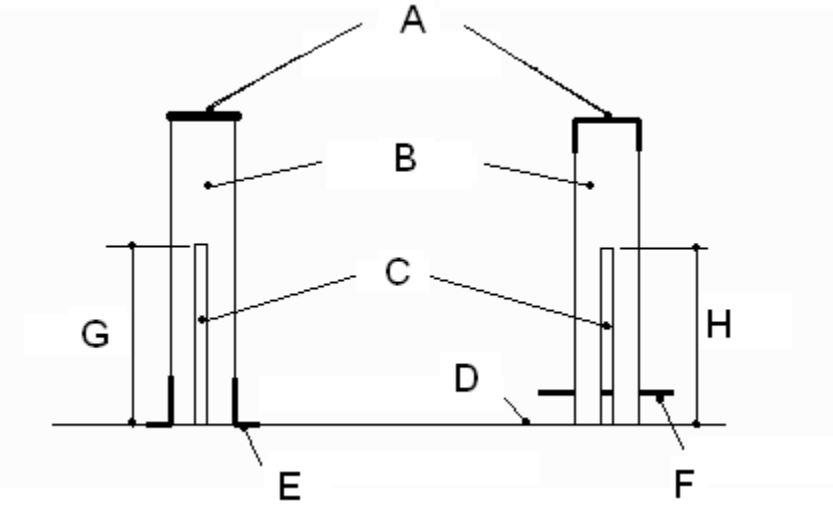


Figure 5 Observation pipes

136. The Letter A represents _____.
    a. Water tight cap
    b. 4’ minimum diameter
    c. Slot
    d. Infiltration surface
    e. Bar (3/8 minimum diameter)
    f. 6” minimum
    g. Water Closet Collar
137. The Letter B represents _____.
    a. Water tight cap
    b. 4’ minimum diameter
    c. Slot
    d. Infiltration surface
    e. Bar (3/8 minimum diameter)
    f. 6” minimum
    g. Water Closet Collar
138. The Letter C represents _____.
    a. Water tight cap
    b. 4’ minimum diameter
    c. Slot
    d. Infiltration surface
    e. Bar (3/8 minimum diameter)
    f. 6” minimum
    g. Water Closet Collar
139. The Letter D represents _____.
    a. Water tight cap
    b. 4’ minimum diameter
    c. Slot
    d. Infiltration surface
    e. Bar (3/8 minimum diameter)
    f. 6” minimum
    g. Water Closet Collar
140. The Letter E represents _____.

a. Water tight cap
b. 4’ minimum diameter
c. Slot
d. Infiltration surface
e. Bar (3/8 minimum diameter)
f. 6” minimum
g. Water Closet Collar

141. The Letter F represents _____.
a. Water tight cap
b. 4’ minimum diameter
c. Slot
d. Infiltration surface
e. Bar (3/8 minimum diameter)
f. 6” minimum
g. Water Closet Collar

142. The Letter G represents _____.
a. Water tight cap
b. 4’ minimum diameter
c. Slot
d. Infiltration surface
e. Bar (3/8 minimum diameter)
f. 6” minimum
g. Water Closet Collar

143. The Letter H represents _____.
a. Water tight cap
b. 4’ minimum diameter
c. Slot
d. Infiltration surface
e. Bar (3/8 minimum diameter)
f. 6” minimum
g. Water Closet Collar

144. Immediate application of at least ___ inches of aggregate is required after plowing.
a. 8
b. 10
c. 6
d. 16

145.Shape the aggregate to obtain a uniform minimum depth of at least ___ inches above the original 16 of 33 grade.
a. 8
b. 10
c. 6
d. 16

146. On sloping sites, vehicle traffic is also prohibited for ___ ft. down slope and ___ ft. on both sides of level sites.
a. 11, 16
b. 16, 10
c. 15, 10
d. none of the above

147. Place at least 12 inches of aggregate over the lateral(s).

a. true
b. false

148. Place geotextile fabric conforming to requirements of 374, Wis. Adm. Code, over the aggregate.
a. true
b. false

149. Blank no question

150. Complete final grading to divert surface water drainage towards the at-grade. Sod or seed and mulch only the lower areas of the at grade component.
a. true
b. false

VIII. OPERATION, MAINTENANCE AND PERFORMANCE MONITORING:

151. The POWTS Maintainer is responsible for the operation and maintenance of the component.
a. true
b. false

152. The _____ may make periodic inspections of the components, checking for surface discharge, and ponded effluent levels in the observation pipes, etc.
a. county
b. department
c. POWTS service provider
d. all of the above

153. The county, department or POWTS service provider may make periodic inspections of the components, checking for _____in the observation pipes, etc.
a. surface discharge
b. ponded effluent levels
c. neither a or b
d. both a and b

154. The _____ is required to submit necessary maintenance reports to the governmental unit or designated agent.
a. owner
b. owner's agent
c. neither a or b
d. both a and b

155. Design approvals and site inspection _____ the construction is accomplished by the governmental unit or other appropriate jurisdiction
a. before
b. during
c. after
d. all of the above

156. Treatment and dose tanks along with related mechanical components are to be inspected every 6 months and maintained when convenient in accordance with the management plan.
a. true
b. false

157. Inspections of the at-grade component are required at least once every four years.
a. true
b. false

158. These inspections include checking the liquid levels in the observation pipes and examination for any seepage around the component.
    a. true
    b. false
159. Traffic, including lawn maintenance, on the at-grade component is not permitted to avoid frost penetration in winter and to minimize compaction during other times.
    a. true
    b. false
160. A good water conservation plan within the house or establishment will help assure that the at-grade component will be overloaded and then flushed out.
    a. true
    b. false
161. A user's manual is to accompany the at-grade component and be provided to the owner following installation.
    a. true
    b. false
162. At a minimum, the manual is to contain the following information:
    a. Diagram(s) of all components and their location. This should include the location of the reserve area, if one is provided.
    b. Names and phone numbers of local governmental unit authority, component manufacturer or POWTS service provider to be contacted in the event of component failure or malfunction.
    c. neither a or b
    d. both a and b
163. At a minimum, the manual is to contain the following information:
    a. A management plan that contains information on the periodic inspection, maintenance or servicing of the component, including electrical/mechanical components.
    b. What activities can or cannot occur on the reserve area, if one is provided.
    c. Notice that the dose chamber, if one is utilized, may fill due to flow continuing during pump malfunction or power outages. One large dose when the power comes on or when the pump is repaired may cause the distribution component to over load. In this situation, the pump chamber should be pumped by a certified septage servicing operator before pump cycling begins or other measures shall be used to dose the at grade component with only the proper amount of influent. This may include manual operation of the pump controls until such time the pump chamber has reached its normal level.
    d. all of the above
164. Performance monitoring must be completed on at-grade components installed in accordance with the recommendations provided by the POWTS inspectors.
    a. true
    b. false
165. The frequency of monitoring must be:
    a. At least once every three years after installation
    b. At time of problem, complaint, or failure
    c. neither a or b
    d. both a and b
166. The minimum criteria addressed in performance monitoring of at-grade components are:
    a. Type of use.
    b. Age of component.
    c. neither a or b

d. both a and b

167. The minimum criteria addressed in performance monitoring of at-grade components are:
a. Nuisance factors, such as odors or user complaints.
b. Mechanical malfunction within the component including problems with valves or other mechanical or plumbing components.
c. neither a or b
d. both a and b

168. The minimum criteria addressed in performance monitoring of at-grade components are:
a. Material fatigue or failure, including durability or corrosion as related to construction or structural design.
b. Neglect or improper use, such as overloading the design rate, poor maintenance of vegetative cover, inappropriate cover over the at-grade, or inappropriate activity over the at-grade component.
c. neither a or b
d. both a and b

169. The minimum criteria addressed in performance monitoring of at-grade components are:
a. Installation problems such as compaction or displacement of soil, improper orientation or location.
b. Pretreatment component maintenance, including dosing frequency, structural integrity, groundwater intrusion or improper sizing.
c. neither a or b
d. both a and b

170. The minimum criteria addressed in performance monitoring of at-grade components are:
a. Pump or siphon chamber maintenance, including improper maintenance, infiltration, structural problems, or improper sizing.
b. Ponding in distribution cell, prior to the pump cycle. Ponding may be evidence of development of a clogging mat or reduced infiltration rates.
c. neither a or b
d. both a and b

171. The minimum criteria addressed in performance monitoring of at-grade components are:
a. Siphon or pump malfunction including dosing volume problems, pressurization problems, breakdown, burnout, or cycling problems.
b. Overflow or seepage problems, as shown by evident or confirmed sewage effluent, including backup if due to clogging.
c. neither a or b
d. both a and b

172. Reports are to be submitted to the governmental unit or designated agent in accordance with ____, Wis. Adm. Code.
a. 380
b. 381
c. 382
d. 383

X. AT-GRADE WORKSHEET:

173. Evaluate the site and soils report for the following:
a. Surface water movement.
b. Measure elevations and distances on the site so that slope, contours and available areas can be determined.

c. neither a or b
d. both a and b

174. Evaluate the site and soils report for the following:
a. Description of several soil profiles where the component will be located.
b. Determine the limiting conditions such as bedrock, high groundwater level, soil permeability, and setbacks.
c. neither a or b
d. both a and b

175. Determine the design loading rate (DLR) for the site from Table 383.44-1 or -2, Wis. Adm. Code.
a. true
b. false

XI. EXAMPLE WORKSHEET:

176. Evaluate the site and soils report for the following:
a. Surface water movement.
b. Measure elevations and distances on the site so that slope, contours and available areas can be determined.
c. neither a or b
d. both a and b

177. Evaluate the site and soils report for the following:
a. Description of several soil profiles where the component will be located.
b. Determine the limiting conditions such as bedrock, high groundwater level, soil permeability, and setbacks.
c. neither a or b
d. both a and b

XII. PLAN SUBMITTAL AND INSTALLATION INSPECTION:

178. General Submittal Information to include:
a. Legible photocopies of reports forms, plans, and other documents are acceptable. However, an original signature is required on certain documents (e.g. index page).
b. Submittal of additional information requested during plan review, or questions concerning a specific plan shall be referenced to the Identification number assigned to that plan by the reviewing agency.
c. Plans or documents must be permanent, legible copies or originals.
d. all of the above

179. Soils Information to include:
a. A completed Soils Evaluation Report form, (SBD-8330) signed and dated by a certified soil tester, with credential number.
b. Separate sheet showing the location of all borings. The location of all borings and observation pits must be able to be identified on the plot plan.
c. neither a or b
d. both a and b

180. Inspection shall be made in accordance with ch. 145.20, Wis. Stats., and 383.26, Wis. Adm. Code.
a. true
b. false

AT-GRADE USING PRESSURE DISTRIBUTION COMPONENT QUIZ

| | | |

AT-GRADE USING PRESSURE DISTRIBUTION COMPONENT QUIZ

121	a	b	c	d		141	a	b	c	d	e	f	h	g	161	a	b	c	d
122	a	b	c	d		142	a	b	c	d	e	f	h	g	162	a	b	c	d
123	a	b	c	d		143	a	b	c	d	e	f	h	g	163	a	b	c	d
124	a	b	c	d		144	a	b	c	d					164	a	b	c	d
125	a	b	c	d		145	a	b	c	d					165	a	b	c	d
126	a	b	c	d		146	a	b	c	d					166	a	b	c	d
127	a	b	c	d		147	a	b	c	d					167	a	b	c	d
128	a	b	c	d		148	a	b	c	d					168	a	b	c	d
129	a	b	c	d		149	Blank								169	a	b	c	d
130	a	b	c	d		150	a	b	c	d					170	a	b	c	d
131	a	b	c	d		151	a	b	c	d					171	a	b	c	d
132	a	b	c	d		152	a	b	c	d					172	a	b	c	d
133	a	b	c	d		153	a	b	c	d					173	a	b	c	d
134	a	b	c	d		154	a	b	c	d					174	a	b	c	d
135	a	b	c	d		155	a	b	c	d					175	a	b	c	d
136	a	b	c	d	e	f	h	g	156	a	b	c	d		176	a	b	c	d
137	a	b	c	d	e	f	h	g	157	a	b	c	d		177	a	b	c	d
138	a	b	c	d	e	f	h	g	158	a	b	c	d		178	a	b	c	d
139	a	b	c	d	e	f	h	g	159	a	b	c	d		179	a	b	c	d
140	a	b	c	d	e	f	h	g	160	a	b	c	d		180	a	b	c	d

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----------Educational Course Attendance Verification Form ----------

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Address_____

Credential Number_____Phone#_____

Course Title and Name At Grade Pressure Distribution #11238 Fax#_____

List the name of each credential held by attendee_____

_____Credited Hours 6 hours **Fee $55.00**

Email _____

To be completed by Gary Klinka My credential link #70172

Course Password_____Course ID#_____

Attendee passed the course with a greater than 70% score on Date_____

Instructor Signature_____