Example of Draft List of Materials, Components, and Equipment For a Conventional Septic Tank and Trench Disposal Works Design

A list of materials, components and equipment shall be submitted with the Notice of Intent to Discharge for all Type 4 General Permit on-site wastewater treatment facilities pursuant to A.A.C. R18-9-A309(B)(4).

Example of R18-9-A309(B)(4) for Design Information Presented on Page 2

1 ea **1250-gallon septic tank with effluent filter meeting the requirements of Arizona Administrative Code (A.A.C.) R18-9-A314.**

2 ea **Riser with cover, [brand/model] or equivalent, meeting the requirements of A.A.C. R18-9-A314(1)(d).**

1.5 yd^3 **Pea gravel or equivalent bedding for septic tank per manufacturer's handling and installation instructions required by R18-9-A314(3)(d)(ii).**

15 ft **Sewer line pipe, DMV, Schedule 40, ASTM F891, and fittings.**

50 yd^3 **Aggregate meeting A.A.C. R18-9-101(1).**

25 feet **Distribution pipe and fittings.*** *[5 ft + 10 ft + 10 ft, see page 2]*

150 feet **Disposal pipe, perforated, and fittings.****

1 ea **Distribution box with seals, minimum of 2 outlet holes, [mfgr/model] or equivalent.**

150 feet **Geotextile, 24-inch min, [mfgr/product ID] or equivalent.**

Notes: Typical pipe specifications that might be used in disposal field installations:

See manufacturer's information for plastic pipe, such as at:

http://www.certainteed.com/NR/rdonlyres/DA3BEEF3-15F8-4D4C-8FCF-F7380D8A1D41/0/ap_sdpipe.pdf and

http://www.certainteed.com/NR/rdonlyres/F81394FC-338D-415D-B769-7FBFC51E5ACB/0/ap_dwv.pdf .

*** Normal solid PVC pipe:**

a. PVC distribution pipe, 3-inch, ASTM D2729
b. PVC distribution pipe, 4-inch, ASTM D3034 (IAPMO Listed) or ASTM D2729.

**** Perforated PVC pipe:**

a. PVC disposal pipe, perforated, 3-inch, ASTM D2729
b. PVC disposal pipe, perforated, 4-inch, ASTM D2729.

Design Information for R18-9-A309(B)(4) List Shown on Page 1

System Design Inputs

1. Proposed system is for a 3-bedroom home.
2. Fixture count in house is 25.
3. Percolation tests per Arizona Administrative Code R18-9-A310(F) show that the soil percolation rate is 25.0 min/in.
4. No surface or subsurface limiting conditions are identified at the site.
5. Inlet to septic tank will be 15 ft from building drain.

Disposal Trench Design Based on Inputs

1. Design flow is 600 gal/day based on table at R18-9-A314(4)(a)(i). *[450 gal/day for a 3-bedroom house plus another 150 gal/day for fixture count more than 21]*

2. Design liquid capacity of septic tank is 1250 gallons based on same table.

3. SAR is 0.40 gal/day/ft^2, using the table at R18-9-A312(D)(2) based on the tested percolation rate of 25.0 min/in.

4. Trench is designed to be 2 ft wide, with 4 ft of sidewalls below disposal pipe.

5. Based on selected trench configuration, the trench absorption area is 10 square feet per linear foot of trench. *[(4 ft + 2 ft + 4 ft) x 1 ft/linear ft]*

6. Wastewater loading in trench is 4.0 gal/day per linear foot *[10 ft^2/linear ft x 0.40 gal/day/* ft^2*]*

7. Trench length, therefore, is 150 linear feet. *[600 gal/day ÷ 4 gal/day/linear ft]*

8. Decision is made to construct two parallel 75' trenches served by distribution box. Distribution box is located 5 ft from septic tank and each trench will be constructed after a 10 ft run of pipe from distribution box.

9. Total volume of aggregate in the disposal field is 50.00 cubic yards.
   a. 44.44 yd^3 beneath disposal pipe
      [4 ft x 2 ft x 150 ft ÷ 27 ft^3/yd^3 = 44.44 yd^3]
   b. 5.56 yd^3 around and above disposal pipe
      [(4 in of pipe height + 2 in above pipe = 0.5 ft) x 2ft x 150 ft ÷ 27 ft^3/yd^3 = 5.56 yd^3]

10. Total volume of pea gravel bedding below septic tank is 1.5 yd^3 based on typical manufacturer's specification of 6 in of fill below septic tank, typical dimensions for 1250-gal septic tank of 10.25 ft x 5.25 ft, and 0.5 ft over dig of hole on each side *[{(10.25 ft + 0.5 ft + 0.5 ft) x (5.25 ft + 0.5 ft + 0.5 ft)} x 0.5 ft ÷ 27 ft^3/yd^3 = 1.30 yd^3, say 1.5 yd^3]*